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# An economic analysis of gambling industry in Italy

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## Summary

# Abstract

This study analyses the Italian gambling industry's economic and social dimensions, focusing on its historical evolution and socio-economic impact. Italy, the fourth Europe's largest gambling market, has experienced significant growth, generating substantial state revenues but also facing challenges such as gambling addiction and social costs.

Also, the Italy's regulatory framework is investigated, with the Custom and Monopolies Agency (ADM) that regulates this sector. While ADM has introduced measures to ensure transparency, promote responsible gambling, and combat illegal operations, inconsistencies in regulation and bureaucracy inefficiencies remains. These challenges hinder effective oversight, particularly in the rapidly evolving online gambling sector.

The aim of this study is to quantify how some socioeconomic variables, namely per-capita taxable income, proportion of age groups, proportion of male and proportion of immigrants, affect the amount gambled, first at provincial level, then at municipal level through a linear regression model.

Policy recommendations include enhancing consumer protections, reducing payout percentages to discourage excessive gambling and improving public awareness of gambling risks. Addressing these issues is critical to protect vulnerable populations and mitigate social harm.

# Chapter 1 - Gambling products

## 1.1 Historical notes

### 1.1.1 The evolution of gambling

The etymology of "gambling" traces back to several linguistic roots, that reflects the evolution of the concept over time. The word "game" comes from Old English "gamen", which means fun, joy, amusement or sport. This word itself is derived from Proto-Germanic "gamanan", used to indicate the participation in recreational activities. The sense of play and enjoyment is intrinsic to the term. Later, around the 18th century, appeared the word "gamble". It is believed to be derived from the Middle English word "gamel", meaning to play or jest, which came from the Old English "gamenian", meaning to play. However, some suggest it may have come from an Anglo-Dutch influence, possibly from the word "gambler", a term used to refer to people who played risky games. The suffix "-le" in English is usually added to verbs implying repetitive action, suggesting the act of taking repeated risks.

For millennia, gambling has been practiced in all cultures; it is believed that this practice developed alongside humanity itself. It is presumed that gambling was already in practice 5,000 years ago, suggested by the numerous findings of numbered dice discovered in China, India, Japan, and the Middle East[1].



*Figure 1 – The first world Casinò, Casinò di Venezia*

Some scholars think that gambling initially had a religious purpose, to understand the will of divine entities through the roll of dice, and later on, it was used for more secular activities related to daily life. However, actual gambling as we know it developed later; the Greeks first and then the Romans practiced this activity. In particular, the Ancient Romans occasionally organized what we would now call gambling dens. At that time, it was legal to bet, for example, on chariot races or gladiator fights, but it was an activity that had to be conducted according to laws and regulations, much like today.

Over time, gambling has evolved and spread dramatically, due in part to the increase in places where it is possible to play, such as with the advent of virtual casinos where one can gamble

from the comfort of home, and the growing appeal and diversification that game developers have managed to create, expanding the economic scope of the sector.

Conceptually, one can say that gambling has evolved over time. In the beginning, it was just a means of interpreting divine will, then it was used for amusement, and eventually, the desire to play and bet for money emerged. The evolution also affected the places where such activities are conducted; probably at first, people gambled wherever they could, then it moved to more specific locations, with atmospheres and venues created for that purpose. Today, one can gamble almost anywhere; just enter a bar, and it is easy to find a slot machine or download an app on a smartphone to access a poker room.

The characteristics that a gambling game must have to be considered such are mainly three: the bet, an event to bet on, and chance. A game must always have at least these three characteristics to be defined as gambling.

Regarding the places where it is practiced, we must start with the concept of the place being discussed here. The place is where supply and demand meet, meaning player and dealer or just players; in this case, it can even be our home, through an internet connection and a computer or more simply, at a table where four, five, or six friends play Italian poker.

## 1.1.2 An historical problem: the stake division

Gambling has given rise to some of the biggest problems in statistics, and probability statistics itself. In 1654, Blaise Pascal and Pierre de Fermat, in an attempt to solve the problem of the division of the stake at the moment when it was decided to interrupt a series of plays, introduced the notion of expected value of a random variable (expected gain).

The problem is stated as follows:

*"Two people - A and B- decide to play some games and deposit the same amount. In each game, one or the other of the two players wins, which have the same chance of winning. The first to win -n matches win the entire stake. After a certain number of games, when A has won n-a and B has won n-b, the two players decide to stop the game. How should the mail be divided?[2]"*

At the time of the interruption, it only counts how many matches each player has left to win the stake. In order to be sure that one of the two players wins the entire stake, N games must be played:

$$N = a + b - 1.$$

In fact for player A to win the entire stake he should win a number of matches, while in the same game B should win at least one match (insufficient for final victory). If player A wins a-1 games, they would not be enough for the final victory, whereas in this case player B, winning b, would win the entire stake. Let's calculate the number of possible outcomes of the N games, as if they were actually played. For example, in case of a=1, b=3, and then N=3, the possible outcomes are:

AAA, AAB, ABA, ABB, BAA, BAB, BBA, BBB
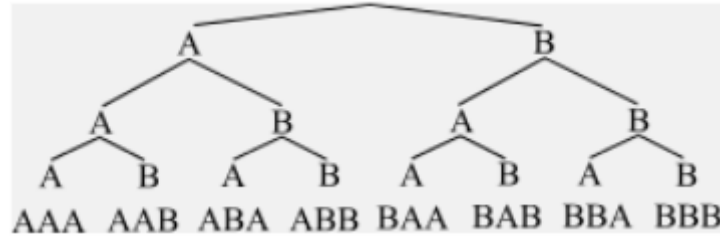
*Figure 2 – Possible outcomes*

The number of possible outcomes is therefore given by $2^N$. We calculate how many of the possible outcomes are favourable to A and how many to B. Suppose that a≤b and we indicate with $F_A(a,b)$ the number of outcomes favourable to A and with $F_B(a,b)$ the number of outcomes favourable to B. Of the possible $2^N$ outcomes of the N matches, the results favourable to B are all those in which they appear at the highest a-1 winnings of A, given by the sum:

$$P_N^{(0,N)} + P_N^{(1,N-1)} + P_N^{(2,N-2)} + ... + P_N^{(a-1,N-(a-1))},$$

Where $P_N^{(k,N-k)}$, with k=0,1,2,...,a-1 represents the number of permutations with repetition of N objects, of which k are equal to each other and N-k are equal to each other. Therefore, bearing in mind that:

$$P_N^{(k, N-k)} = \frac{N!}{k!(N-k)!},$$

Turns out:

$$F_B(a,b) = \sum_{k=0}^{a-1} PN(k, N-k) = \sum_{k=0}^{a-1} \frac{N!}{k!(N-k)!}, \qquad F_A(a,b) = 2^N - F_B(a,b).$$

Now we have all the elements to calculate how the stake between A and B should be divided, and also the relative chances of winning the entire stake of each player. Then, if we give the probability of A with $P_A(a,b)$ and the probability of B with $P_B(a,b)$, we have:

$$P_B(a,b) = \frac{F_B(a,b)}{2^N}, \qquad P_A(a,b) = 1 - P_B(a,b).$$

In conclusion, the relationship between the parts of the stake belonging to A and those belonging to B is indicated by R (a,b):

$$R(a,b) = \frac{PA(a,b)}{PB(a,b)}.$$

## 1.2 Gambling categories

### 1.2.1 Physical and virtual games and casinos

In general, it can be said that the places where gambling is played (legally) are casinos or, more commonly, gambling houses. In the popular imagination, these are the quintessential places where gambling occurs. In casinos, the house (which is the casino itself) is akin to those in Las Vegas, Venice, and Monte Carlo, and the typical games found in almost every casino worldwide include roulette, blackjack, and slot machines. In Italy, gambling is prohibited in other public places.

Casino operations are always profitable, and according to the law of large numbers, a casino wins the more players and bets are placed in the gambling house. This is the reason for their great success, besides the fact that these commercial venues are often very attractive and sometimes spectacular.

In Italy, it is illegal to open gambling houses, but in derogation of the penal code[3], there are four authorized casinos: Casino di Campione in Campione d'Italia (Lombardy), Casino de la Vallée in Saint-Vincent (Aosta Valley), Casino di Sanremo in Sanremo (Liguria), and the renowned Casino di Venezia in Venice (Veneto), known worldwide as the oldest gambling house in the world[4].

The decision made by the Italian legislator may seem strange and may cause confusion. So gambling is legal? And if so, why are there only four casinos and all of them concentrated in the north of the country? On the other hand, if it is not legal, how do the four casinos on the Italian territory exist and operate? Probably the choice to authorize gambling activities in four casinos stems from the desire to exploit the tax revenues of these highly lucrative establishments. Additionally, in all four cases, there is an effort to minimize the flow of players going abroad, where gambling is legal. This is undoubtedly the case for Sanremo, which is only a few kilometres from Monaco.

Another significant reason could be the desire not to eliminate the important economy surrounding gambling in those areas that historically rely on this activity. However, what has brought gambling to the forefront are the so-called online games. Initially, these were slot machines, machines that allowed various games to be played in "common" public places like bars, pizzerias, restaurants, social centres, and betting centres.

But the most important innovation in this sector occurred in the 2000s with online casinos, websites that offer the possibility to gamble through an internet connection and a device with the appropriate applications and software. Access requires three components: a website, software, and a server. Besides browsers, one can also play by downloading free applications from virtual stores of operating systems and using various mobile devices, such as smartphones and tablets, making gambling even faster and more immediate.

With the 2006 finance law[5], the legislator decided to block Italian users' access to websites that allow online gambling in virtual casinos and betting. Since then, dozens of online gambling sites have been blocked and continue to be blocked, redirecting users to the State Monopolies page if they attempt to access them.

Since December 3, 2012, online poker has been declared legal, as some variants are considered skill games rather than gambling, allowing it to be played in tournaments, becoming sports poker, on all sites that have obtained a license. Without this license, the site is blocked by the AAMS.

Therefore, since 2013 in Italy, online gambling can only be done on sites that have been licensed directly by the Public Authority. This concession is subject to numerous requirements that sites must meet to guarantee their reliability to consumers and limit their proliferation. Additionally, registration requires proof of age by sending a photo of an ID card via email.

The advent of online gambling and new slots and VLTs has introduced in a new era, a new development in gambling (in terms of volume and opportunities) that has brought this sector to the forefront. Physical casinos are thus seen in the collective imagination as "the house of gambling," but in the economic reality of our country, they have almost negligible, symbolic economic weight. Another factor that contributed to the growth of the online market was the covid-19: due to the impact of the coronavirus pandemic (COVID-19), revenues from online gambling in Italy increased significantly in March 2020, compared to the previous year. Online poker tournament revenues have more than doubled, from €7.2 million to over €16 million. Similarly, while online casinos generated revenues of €72.6 million in March 2019, this figure rose to €94 million in March 2020. While online gambling is constantly growing thanks to websites, casinos are facing a real economic crisis.

## 1.2.2 The entertainment equipment

The "new slots" (as referred to by the legislator) are the "old" slot machines, that is, devices with a certificate of compliance with current regulations issued by the Ministry of Economy and Finance - Autonomous Administration of State Monopolies (AAMS). These automatic, semi-automatic, and electronic devices are programmed for gambling, involving a wager and allowing purely random winnings of any type of prize, in money or kind. They usually feature one or very few simple games, and their software is designed to randomly pay out a certain percentage of winnings, with each device having its own independently functioning board.

VLTs, an acronym for Video Lottery Terminals, also known as Videolotteries, are very similar in appearance to slot machines. They typically include only a few additional aesthetic differences, like an integrated chair. However, the most important differences lie in their software and operation. These are multi-game machines, meaning each device has a certain number of installed games for entertainment. Unlike slots, VLTs accept coins and prepaid cards and allow higher bets, up to 10 euros (instead of 2 euros). The differences also extend to winnings: VLTs can pay out up to 5,000 euros and have jackpots that reach 500,000 euros, while slots can pay a maximum of 100 euros. All winnings are issued in the form of a ticket, which is exchanged for cash from the manager where the VLT is installed.

This is possible thanks to a real-time connection to a management server. All VLTs are connected to this central server, which constantly communicates with a national centralized server. The secret of these machines' immense popularity lies in the high technology of their games, which are graphically very appealing, and the high payout percentage. VLTs return a percentage not lower than 83% of what they collect as winnings, while slots have a much lower percentage (not less than 65% of the amount collected). Additionally, slots have their own game board, which can be tampered with to pay out fewer winnings, although this is a criminal offense for both the owner and the manager of the device.

The correct operation of the VLT system is guaranteed by certified providers and the oversight activity of the AAMS. Unlike "regular" slot machines, VLTs can only be installed in venues with specific characteristics and with the explicit authorization of the Concessionaire, who issues an appointment letter for the Authorization as required by law and issued by the relevant police headquarters.

Now that we've explained the world of slots, let's talk numbers. In Italy, there are about 600,000 machines (among those in paragraphs 6, 6 bis, and 7 of art. 110 TULPS). There are almost 100,000 establishments with new slots, and given the number of devices, it can be said that each establishment on average "owns" just under four machines. For Videolotteries, there are about 4,500 venues with over 50,000 devices, averaging over eleven VLTs per venue.

From these data, we understand the widespread presence of classic slots and the high profitability and attractiveness of the more technologically advanced Videolotteries. The devices under paragraph 7 of art. 110 of the 2008 TULPS are very widespread, with over 115,000 units, but have a very low economic impact, collecting "only" 131 million euros during 2019.

The figures are very different for the first two. Thanks to the widespread presence of new slots, they collected 22.9 billion euros in the last year (a decrease of 9.6% compared to 2013), a sum almost matched by the still "young" VLTs, which collected 23.6 billion euros in the last year.

Together, these two account for almost half of the entire gaming industry (42%) with 46,5 billion euros collected, which is why in recent years many have taken an interest, from all perspectives, in this "big planet of games." The reason for their widespread presence is not only their "attractiveness." These machines are very profitable for the installers. If the amount collected (46,5 billion) is reduced by the portion paid out as winnings (36,2 billion) and the amount due to the Treasury (6,7 billion), the concessionaires will have a profit of 3,6 billion, representing over 40% of the profits made from all games, achieved with a very low expenditure compared to the organization and maintenance of other games.

### 1.2.3 Skill games, cards and fixed odds games

Having analysed the world of casinos and entertainment devices, let's move on to the second sector in terms of economic value: skill games, card games, and fixed-odds games. With this type of entertainment, the AAMS (the body responsible for the legality and security of public games) has introduced online skill games with cash prizes through regulations aimed at protecting the player. In skill games with cash prizes, the outcome depends predominantly on the player's skill, as well as on elements of chance. Those authorized to sell these games must commit to guaranteeing:

1) The security of the game;
2) The return of winnings at a minimum percentage set by law;
3) The transparency and confidentiality of the information handled.

The issuance of these authorizations is subject to verifying the compliance of the gaming platform and the individual game with regulatory requirements. Currently, administrative procedures for granting these authorizations are being defined[6].

It is clear that the legislator intends to legalize a series of games where luck is less significant compared to the player's abilities. This type of game can only be played online (to avoid the opening of physical gambling houses) and by entities that have obtained a license from the State, as only the State can regulate gambling. Since their introduction (in 2006 with Bersani Decree No. 223, converted into Law 248 of 2006), these games have seen enormous growth in

terms of popularity and revenue, likely due to advertising campaigns and television programs dedicated to these games, particularly Texas Hold'em.



*Figure 3 – Poker hand rankings of winning*

Tournament games represent a substantial source of revenue and profits for companies, but it is the cash game mode that truly captures the players. Unlike tournament mode, there is no real winner, as in sports poker. In Italy, it is considered gambling and, apart from the four aforementioned casinos, it is legal only via the internet and is regulated by the AAMS under Article 24 of Law No. 88 of July 7, 2009.

In this case, the gaming houses do not play the role of the house but have the simple task of allowing players to meet in dedicated poker rooms. The income for these houses comes from the rake, a percentage of the pot.

## 1.2.4 Lotteries

These impressive numbers aside, Italians are passionate about lotteries, perhaps the most well-known form of gambling with cash prizes in the country. Lotteries have deep roots, with the first signs appearing before the birth of Christ in China, while the first Italian lottery was held in January 1449 in Milan to replenish the coffers of the then Golden Ambrosian Republic. On that occasion, tickets were sold in Piazza Sant'Ambrogio, and at the end of the day, the winning ticket was drawn.

Typically, lottery prizes amount to 50% of the total value of all issued tickets. There are hundreds of lotteries worldwide, and in Italy, the State lotteries include: Lotto, 10eLotto, SuperEnalotto, Lotteria Italia, and Win for Life. These are five different types of lotteries, all with cash prizes, but there are only two concessionaires. Lottomatica (now GTECH) manages Lotto and 10eLotto, Sisal handles SuperEnalotto and Win for Life, and Lotteria Italia (the national lottery), which has been linked to a RAI television broadcast since the 1960s, takes place in the final months of the year with the drawing on January 6th. Lottomatica also manages scratch cards (Gratta e Vinci) on behalf of AAMS, representing the most common form of lottery in Italy, partly due to the new "instant lottery" type that allows online play.

It's important to note that instant lotteries, commonly called Gratta&Vinci, are not managed by the State but by Lottomatica, a private concessionaire controlled by De Agostini. However, Lottomatica does not "print" the Gratta&Vinci tickets; this task is handled by a third-party company that guarantees fairness: Scientific Games, based in Atlanta, Georgia, USA. This raises an issue of effective control to ensure all tickets are genuinely printed, as the Guardia di Finanza can only combat counterfeiting (since they have no authority in the United States), which is an entirely different matter[7].

The widespread popularity among the Italian population is due to the ease of playing and the "dream of becoming rich" by spending a minimal amount. There are almost 100,000 Lotto Receivers and Lottery Sales Points where one can participate in this form of gambling, not to mention the online instant lotteries.

Regarding the gaming volumes, Sisal, through online SuperEnalotto and Win for Life, collected 61,4 million euros in 2019, disbursing 41.4 million in winnings, with players spending nearly 20 million euros. Lottomatica, however, with Lotto, collected 8,1 billion euros in 2019, while player spending amounted to 2.4 billion euros. Finally, concerning Lotteries, they still recorded nearly 19,2 billion euros in revenue, distributing 13,6 billion euros to winners.

Combining the data, the national lottery systems are worth a significant 19,2 billion euros, accounting for about 17% of the Monopolies section (Games Division) of AAMS.

## 1.2.5 Bingo and horse racing games

Let's now discuss Bingo. This game, very similar to Tombola, was regulated in 2000 and introduced in 2001. Initially, it could only be played in traditional halls, but now there is an online version. Due to its similarity to the more popular and well-known game of Tombola, this variant engages about a million people, with more than half attending the halls regularly.

By the end of 2023, there were 185 Bingo halls across all twenty Italian regions. The popularity of this game is reflected in the volume of revenue, which is about 1.6 billion euros, with player spending around 485 million euros. This game, in all its forms, represents only 1,4% of the total gaming volume for 2019.

Moving on to horse racing and sports betting (with football being the most popular sport), these activities generated 15 billion euros, just over 14% of the total.

In this chapter, I will provide a general overview, dividing the first gaming area (horse racing games) into:

1) National Horse Racing;
2) International Horse Racing;
3) Agency Horse Racing Bets;

Regarding the second area (sports betting games), these include:

1) Totocalcio;
2) Totogol;
3) Fixed-Odds Betting;
4) Virtual Betting;

5) Big Match;
6) Big Race.

Summarizing what has been discussed so far, the following points can be made about the world of gaming:

The physical network collected more than 70 billion euros, or 67% of the total, while the remaining 33% (36,4 billion euros) was collected online.

Of the 110,5 billion euros collected in 2019, a substantial 95,5 billion euros (86,4% of the total) came from the major areas of gaming machines, lottery, skill games, and casino games.

Italians spend over 19,5 billion euros annually on gambling (in the broad sense), ranking among the top in the global standings.

## 1.2.6 Betting

The world of betting is a fascinating and complex industry that combines sport, probability and strategy. Betting has been a popular form of entertainment for centuries, but with the advent of digital technologies and online platforms, the industry has evolved rapidly, becoming accessible to an ever-wider audience. In addition to the classic sporting events today you can bet on other types of events ranging from politics to entertainment events such as reality shows. About 25% of the Italian population bets on events: in 2019, Italians spent over 7 billion euros on sports betting, representing an increase of almost 10% compared to the previous year[8]. There are different types of bets:

Single bet: Betting on a single outcome of an event

Multiple bet: combine several bets in one, in this case the potential gain will be higher as well as the risk

Live betting: bet during the event, with odds changing in real time

Special bets: bet on specific events within a match, such as the number of yellow cards or the number of corner kicks

Bets are characterized by odds, a numerical value that indicates the probability of a certain event and determines the potential win for the player if his bet is successful. The odds in bets are created by the bookmakers through a calculation process based on a combination of statistical, probabilistic and economic factors. The goal of bookmakers is to create odds that accurately reflect the probabilities of an event, while maintaining a profit margin. First of all, the bookmakers conduct a probabilities analysis based on statistical data (previous results, team shape, physical condition of players), current conditions (accidents, disqualifications, weather conditions) and historical analyses. Once the probability has been determined, it can be converted into an elevation by means of the following formula:

$$\text{Odds} = \frac{1}{Probability}$$

Bookmakers must also set a profit margin, known as overround. If the odds were to reflect exactly the real probabilities of each outcome, the sum of the implied probabilities of all possible outcomes would be 100%. However, to ensure a profit, the bookmakers adjust the

odds so that the sum of the probabilities is greater than 100%. The overround is the percentage in excess of 100% that the bookmaker applies to guarantee a profit, regardless of the final result of the event. This way the bookmakers are able to earn even though most bettors bet on the correct result. However, to be competitive in the market, bookmakers must reduce overround so that they can offer more advantageous odds to players.

## 1.3 Current industry situation

The casino and online gambling industry worldwide has experienced significant fluctuations over the past decade, reflecting broader economic, regulatory, and social changes. From 2012 to 2022, the market size has shown periods of growth, decline, and recovery, encapsulating the dynamic nature of this global industry. This graph provides a visual representation of these trends, highlighting key moments such as the initial expansion phase, a period of stabilization, the dramatic impact of the COVID-19 pandemic, and the subsequent rebound.
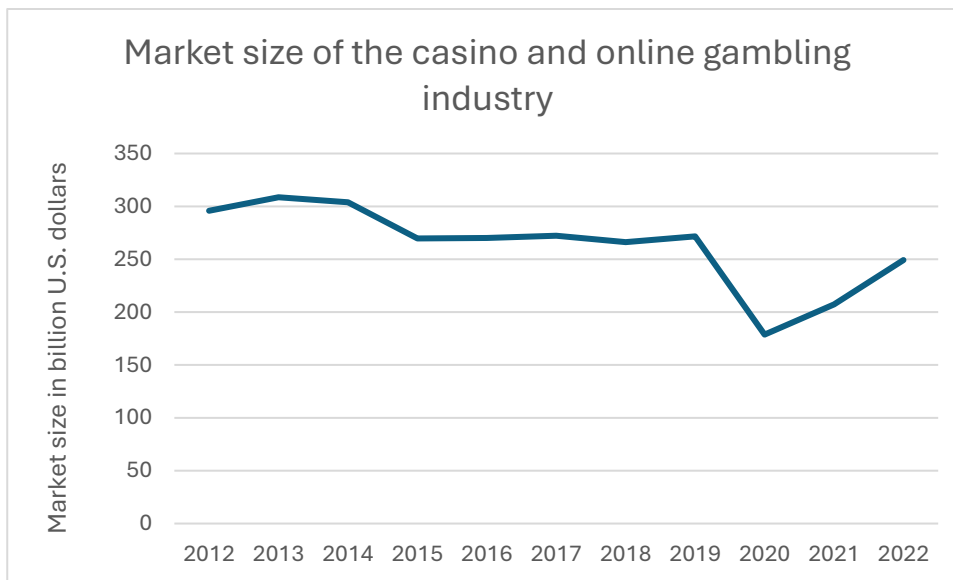


*Figure 4 – Market size of the U.S. gambling market industry*

Starting around 300 billion U.S. dollars in 2012, the market experienced slight growth, reaching a peak in 2013. This initial increase suggests a period of expansion and possibly higher consumer engagement or investment in the industry. However, from 2014 onwards, the market began to contract, decreasing to about 250 billion U.S. dollars by 2016. This downward trend could be attributed to various factors, such as regulatory changes, market saturation, or shifts in consumer behaviour. From 2016 to 2019, the market size stabilized, maintaining a relatively steady value slightly above 250 billion U.S. dollars. This stability indicates a period where the industry might have adapted to previous challenges and found a new equilibrium. The most dramatic change occurred between 2019 and 2020, where the market size plummeted sharply. This significant decline coincides with the global COVID-19 pandemic, which severely disrupted many industries, including casinos and gambling. The pandemic led to widespread lockdowns, reduced travel, and economic uncertainty, all of which likely contributed to the reduced market size. Interestingly, from 2020 to 2022, the market shows signs of recovery, with a noticeable upward trend nearing 250 billion U.S. dollars again by 2022. This recovery phase

suggests a resurgence in the industry, potentially driven by the lifting of pandemic restrictions, increased adoption of online gambling, and renewed consumer interest.

After taking an overview of the world of gambling industry, let's now analyze the Italian market: since 2003 several new forms of gambling products have been legalized, leading Italy to be the largest gambling market in Europe and the fourth largest internationally[9]. According to the Italian Customs and Monopolies Agency (AAMS ), Italian people gambled for € 101.8 billion during 2017 and they effectively spent € 18.9 billion. This is equivalent to a per capita annual gross turnover of € 1680 and to an effective per capita expenditure equal to € 312. In the same period tax revenues from the gambling sector raised by the State have grown strongly, reaching more than € 10 billion. The volume of money played in Italy in 2022 increased by 34%, reaching a value of €136 billion: the per capita collection (calculated on the adult population resident in Italy census by ISTAT in 2022) is about 2,730 euros. Expenditure and revenue also increased by 7,6% and 12% respectively.

Lombardian region stands out as the region with the highest collected amounts, winnings, and expenditure, indicating it has the most active gambling market. The data shows significant regional variations, with some regions like Valle D'Aosta having minimal market activity: sometimes, but not always, this is due to lower population.

The expenditure is obtained by subtracting the winnings from the total collected and represents the net negative balance of the gambling operations. From the table below we can see that the amount spent is about a quarter of the total collected, this because the Italian state requires that about 75% must be returned to players in the form of winning.

| Region | Collected | Winnings | Expenditure |
|---|---|---|---|
| Abruzzo | 1657,39 | 1231,39 | 425,99 |
| Basilicata | 458,18 | 332,68 | 125,5 |
| Calabria | 1623,4 | 1192,19 | 431,21 |
| Campania | 7014,49 | 5199,81 | 1814,68 |
| Emilia Romagna | 4889,07 | 3622,06 | 1267,01 |
| Friuli Venezia Giulia | 1136,08 | 824,24 | 311,84 |
| Lazio | 6240,39 | 4628,04 | 1612,35 |
| Liguria | 1507,99 | 1110,11 | 397,88 |
| Lombardia | 12138,3 | 8961,12 | 3177,15 |
| Marche | 1555,83 | 1144,2 | 411,63 |
| Molise | 302,99 | 218,83 | 84,16 |
| Piemonte | 4125,58 | 3093,79 | 1031,79 |
| Puglia | 4118,02 | 3018,72 | 1099,3 |
| Sardegna | 1373,53 | 949,23 | 424,3 |
| Sicilia | 4184,02 | 3039,99 | 1144,03 |
| Toscana | 3947,36 | 2937,68 | 1009,68 |
| Trentino Alto Adige | 907,01 | 698,62 | 208,39 |
| Umbria | 847,21 | 629,8 | 217,41 |
| Valle D'Aosta | 66,89 | 47,9 | 18,99 |
| Veneto | 4900,73 | 3638,12 | 1262,61 |

*Table 1 – General overview of Italian gambling industry*

Sometimes the flows of play change from lotteries to betting or casinos to slot machines, but in general there is a total increase. Another consideration must be made about the "ghost" game, that is it is not possible to quantify exactly how much of the game is not counted by the AAMS and therefore does not fall into this table.
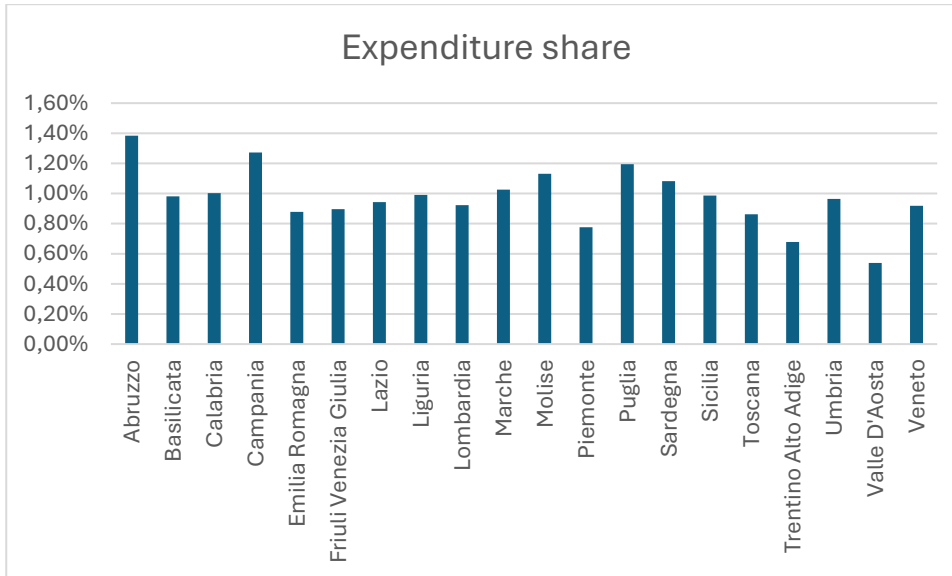


*Figure 5 – Expenditure share, namely the ratio of gambling expenditure and the total expenditure of the families*

## 1.4 Why do people gamble?

### 1.4.1 Utility function and risk aversion

Although from a rational point of view gambling is not optimal because of the expected losses, a person may decide to gamble for several reasons related to both subjective preferences and economic concepts. To better understand, let's introduce the concepts of utility and risk aversion.

Utility is how an economist measures pleasure or happiness with a product, service or job and how it relates to the decisions people make when buying or executing it. Utility measures the benefits (or disadvantages) of consuming a good or service or working, and although utility is not directly measurable, it can be inferred from people's decisions.

In economics, risk aversion is the property of an economic agent who always prefers a certain amount over a random amount. Characterizing more generally the attitude of an economic agent towards risk, we talk about:

- Risk aversion if an agent always prefers to obtain with certainty the expected value of a given random quantity over the random quantity itself.
- Risk neutrality if an agent is always indifferent between the expected value of a random quantity and the random quantity itself.
- Risk lover if an agent always prefers a given amount to get its expected value with confidence.

Risk averse people tend to accept a lower amount of money than the expected value of a bet. The certain equivalent is the safe sum that a person is willing to accept in place of a risky bet: the more an individual is averse to risk, the more the certain equivalent will be lower than the expected value of the bet. Risk averse people require a risk premium to take a risky bet. This premium represents the additional amount of income needed to compensate for uncertainty.

Risk aversion is described by the theory of expected utility. A person who is averse to risk tries to maximize his expected utility:

$$E[U(x)] = p_1U(x_1) + p_2U(x_2) + ... + p_nU(x_n).$$

Where U(x) is the utility function and $p_i$ is the probability of the outcome $x_i$.

Risk averse people can also participate in gambling under certain circumstances. This is because gambling often promises big wins with small amounts of money. Even a risk averse person can be attracted by the possibility of a very high win, despite the risk being great: in these cases, the propensity to exception outweighs the natural risk aversion. Knowing this, casino operators and gaming platforms exploit risk-averse behaviour to offer games with a negative expected value for the player, but still attract participants with the excitement of risk and the possibility of big wins.

## 1.4.2 Influence of income

There is a complex relationship between gambling and income: several studies show that people with lower incomes tend to spend a higher percentage of their income on gambling than those with higher incomes[10]. The main motivation is that people with lower incomes tend to see gambling as a possible way out of difficult economic situations. The hope of big wins may push them to invest a part of their income, albeit limited, in gambling. High income people, on the other hand, tend to see gambling as just a form of entertainment. This also explains why people with lower incomes tend to prefer games with high prizes and low chances of winning (such as lotteries), while those with higher incomes may opt for games with higher skills, such as poker.

As low-income people are most attracted to gambling, gambling taxes disproportionately influence different socio-economic groups, making this type of tax particularly regressive. A tax is regressive if it weighs proportionally more on lower than higher incomes: people with lower incomes spend a larger percentage of their income to pay that tax.
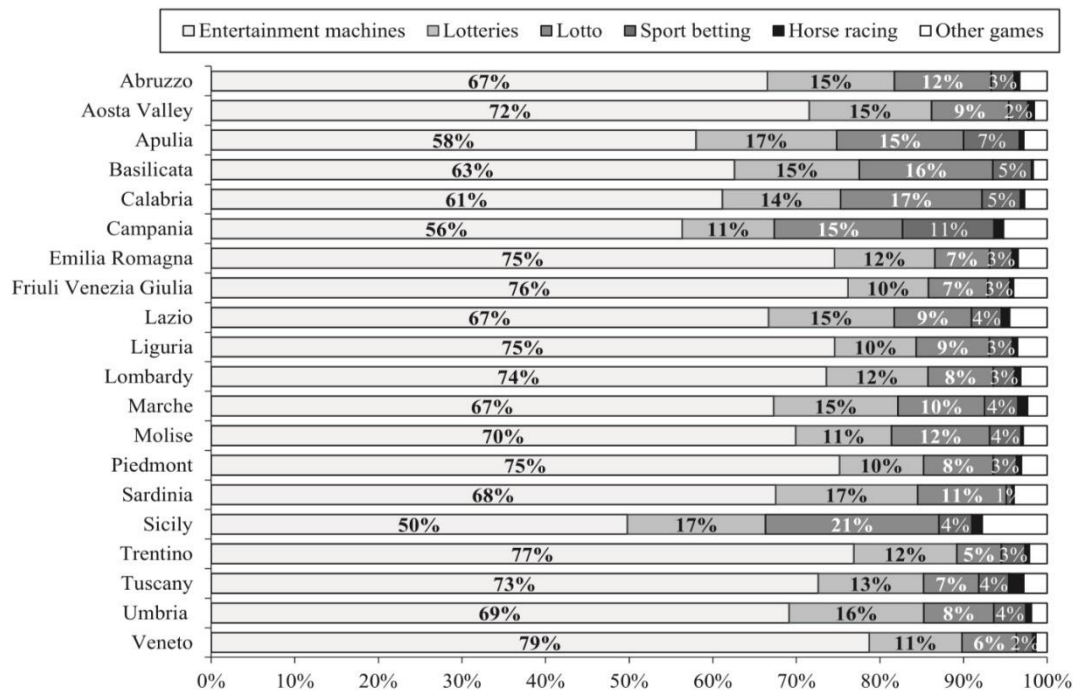
*Figure 6 – Comparison of gambling turnover across regions, year 2015, source: The demand for gambling in Italian regions and its distributional consequences.*

As shown in the table above,in Italy, the demand for gambling products varies between regions[11]:

- Low-income regions: Regions with lower incomes tend to spend a larger share of their income on gambling. This phenomenon is particularly noticeable in the south of Italy, where traditional games such as lotteries and lotteries are more widely used. Sicily and Campania have high demand for these games.

-High-income regions: in northern Italy, higher-income regions such as Lombardy show a preference for modern gambling games such as slot machines and online gaming. Lombardy is the region with the highest gross turnover, largely derived from slot machines (74%).

The regions in the south have a higher proportion of players but spend less in absolute terms, while the north has fewer players, but a higher average expenditure.

## 1.5 Negative externalities of gambling products

### 1.5.1 Social impact

Now that the general gambling system in Italy and the collection volumes for the past year have been outlined, providing a clear picture of the sector's economic relevance within the national context, I will now address the social repercussions of this phenomenon. It is crucial not to overlook this part of the topic due to the significant influence this economic sector has on society. These two aspects are closely linked by a relational thread that does not allow for accurate analysis if severed.

The legislator has specifically addressed this, considering gambling as an activity contrary to public order (a player, if affected by a negative streak, might lose self-control) and public

decency, given that gambling might spread an aversion to work and saving (creating a series of significant collective problems). These reasons led the legislator to declare gambling activities illegal[12], as well as the places where such activities are conducted, sanctioning the organization of gambling and the operation of gaming houses in public places, open to the public, or in private clubs[13], with exceptions only for those with concessions or authorization.

However, the legislator does not stop at punishing the promoters of gambling but goes further, recognizing that this is not enough. Thus, in the Stability Law of 2011, Article 1, paragraph 70 states: "With an interdepartmental decree of the Minister of Economy and Finance - Autonomous Administration of State Monopolies and the Ministry of Health, guidelines for the prevention, contrast, and recovery of phenomena of gambling addiction consequent to compulsive gambling are adopted, in agreement with the Unified Conference, within sixty days from the date of entry into force of the law."

From this initial framework, it is immediately clear how important gambling is from a social point of view, as it can affect people's well-being and health. Gambling Addiction (GA) has been recognized as a disease since 1980 by the American Psychiatric Association and is classified as "a persistent, recurrent, and maladaptive gambling behavior that disrupts personal, familial, and occupational areas of life." It is a relentless addiction that, in some cases, affects the emotional-affective-sexual sphere or leads to other disorders and pathologies.

It is therefore clear how gambling, if it develops into GA, is dangerous for society, as a dependent gambler negatively impacts at least ten other people, according to Politzer and Morrow's study, and faces not only social but also legal problems.

According to FeDerSerD, there is a relationship between compulsive gambling and criminality, even though scientific evidence is still limited. Some pathological gamblers engage in illegal activities such as embezzlement or issuing bad checks to mitigate the economic consequences of their losses. An Australian study showed that 36% of gamblers in treatment had committed crimes attributed to gambling-related debt problems.

A study by the University of Rome La Sapienza found that in 2010, about half a million adults between 18 and 74 years old exhibited problematic gambling behaviors. Similar results were found by the CNR of Pisa in 2011. For online gamblers, almost one in ten has a problematic profile. Furthermore, many reported their first gambling experience before the age of 18, which poses a higher risk of developing an addiction compared to adults. This assertion is based on statements from GA patients, who often started gambling before reaching adulthood.

It is evident that parents' attitudes towards gambling play a central role in determining young people's approach to gambling, just as with other activities[14]. The root of many problems lies in the mindset of GA gamblers, who often have similar thoughts, despite coming from different geographical areas or socio-cultural backgrounds. The website giocaresponsabile.it reveals, "People for whom gambling is a problem often have similar ways of thinking about gambling. These 'ways of thinking' can lead people to believe they can predict or control the outcome of a bet. Thoughts like 'the machine must pay out now,' or 'a particular number must come up in the lottery,' or 'I have a lucky jockey,' or 'today feels like a good day,' are all thoughts that can lead to problematic gambling behaviors."

It should not be forgotten that Italy is one of the countries with the highest rates of gambling globally. This indicator is highly significant in considering exposure to diseases and pathological debts resulting from gambling. Since 2012, healthcare services aimed at the prevention and care of pathological gamblers have been included in the minimum healthcare services universally and freely guaranteed to all Italian citizens. Furthermore, in 2015, an annual state fund was established for the first time to finance prevention and treatment programs for gambling disorders. Although the amount allocated was relatively low (€50 million) compared to the total tax revenues collected from gambling (approximately €10 billion a year), it nonetheless represents an initial attempt to re-think the current Italian gambling system. Public health responses, including educational and rehabilitation programs, appear to be the most effective strategies for controlling problematic gambling and can be easily implemented by directing a portion of gambling tax revenues towards these initiatives.

## 1.5.2 The mirage of winning

Often, gamblers believe that the odds of winning large sums are "real." For instance, in the case of the most common form of gambling in Italy, the instant lottery, the approximate safety of winning probabilities has already been discussed. Here, we address the possibility of "becoming rich." It is worth noting that the State "guarantees" that at least 75% of the revenue must be returned to players as winnings, but the probability of becoming a millionaire is almost non-existent. For example, the "Nuovo Mega Miliardario" scratch-off ticket, costing 10 euros, has a maximum prize-winning probability of 2 million euros of 0.0000128%, meaning 10 winning tickets out of 78 million printed. If you include the second-highest prize (20,000 euros), the probability "increases" tenfold, totaling 100 winning tickets.

One of the most popular games, due to the "dream of lifelong financial security," is "Turista per Sempre," costing 5 euros. It offers a prize of 300,000 euros, followed by 6,000 euros per month for twenty years, plus a final bonus of 100,000 euros. This game has even lower odds. In this case, nearly 366 million tickets are printed, with only 35 top prizes and an additional 24 prizes of 50,000 euros. There is no need for complex calculations to say that becoming a "lifetime tourist" or a "billionaire" is practically impossible. In both games, winning the top prize is almost impossible, yet every year millions of people hope for the chance.



*Figure 7 – One of the traditional games in Italy, Turista per sempre*

### 1.5.3 The Stakes, the Shadows, the Social Costs

The relationship between gambling and society does not end with an analysis of the problems caused by irresponsible gambling by individuals; it goes further. In March 2000, the National Anti-Usury Council drafted a report on the "synergies between legal and illegal" aspects of gambling, stating:

"There is not only the regulated side of gambling. Another important field is the one where criminal competition against the state's monopoly takes place. In fact, the development of judicial actions to counter illegal practices highlights a disturbing tandem between legalized and criminalized gambling: the success of the marketing operations of the former ends up reflecting on the expansion of the latter, in an interaction that has already been noted, at least by the more critical currents of economic and social thought in the country, for other forms of 'harmful' profit generators (e.g., drug consumption)"[15] .

Thus, it is evident that there is an illegal component, often linked to organized crime, that benefits from gambling activities. This component has grown in size since the 1990s when gambling was promoted by the State primarily for fiscal reasons, with the awareness that the direct consequences on the economy, society, common sense, and more generally, on ethical-political relationships (as delineated in the Italian constitutional framework) would not be easily controllable in all their facets, especially the illegal ones.

The somewhat intuitive aspect is that the expansion of legal gambling corresponds to an increase in illegal gambling. The two markets do not separate or compete but instead reinforce each other. Criminal organizations attract new potential participants, especially young people, with the allure of "risk" and a wider choice of gambling "products."

The State, in its attempt to combat "clandestine" gambling as much as possible, implements a liberalization policy for games, which multiply and are offered by more economic entities. Thus, legal gambling benefits from the illegal market, and vice versa, illegal gambling benefits from the marketing efforts of the legal side. It is a sort of vicious cycle that feeds itself continuously, where the only loser is the State. Instead of directly competing with the legal side, "illegal gambling, which operates in defiance of state laws, has entrenched itself within a mega-machine that drains money flows into slot machines, casinos, and betting halls, both physical and virtual"[16].

A detailed analysis by the National Anti-Mafia Commission reveals that an illicit market segment, managed illegally, amounts to over 8.5 billion euros solely from New Slot machines and VLTs.

Another important aspect to consider is the social costs of gambling. While the State recovers just under 9 billion euros from gambling activities through taxes paid by game operators, it is estimated that between 6 and 6.5 billion euros are borne by the community to cover the social and healthcare costs associated with the sector. These costs include the exacerbation of social phenomena such as mafia infiltration and the deterioration of health among individuals most exposed to gambling-related pathologies.

This cost is represented by the sum of three social impacts:

1) Direct (healthcare costs for treating gambling addiction and related issues)
2) Indirect (loss of work performance by the affected gambler)
3) Indirect impacts on quality of life (problems affecting the gambler's family).

From this last analysis, it is easy to understand why this sector is viewed by public opinion as more of a harm than a benefit.

# Chapter 2 – Italian Regulatory Bodies

## 2.1 The administration customs and monopolies

### 2.1.1 The Regulator



*Figure 8 – Customs and Monopolies Agency Logo*

Gambling activities are the sole responsibility of the State, which exercises this through licensed and authorized companies on its behalf or, alternatively, under its regulatory or organizational control.

The organization underpinning the system is very straightforward. It is a sort of pyramid structure with the State at the top. The State delegates a series of activities to three fiscal agencies (the State Property Agency, the Revenue Agency, and the Customs and Monopolies Agency). In this context, we focus on the Customs and Monopolies Agency, which is the institutional organization responsible for regulating the gaming and betting sector (as well as tobacco). This is a public entity with legal personality and enjoys considerable autonomy in regulating, managing, and overseeing the Italian customs and monopolies system. Since 2012, with decree law no. 95 converted into law no. 135, the Customs Agency incorporated the AAMS (Autonomous Administration of State Monopolies), an agency previously in charge of the gaming and monopolies sector, so that a single entity would handle two fundamentally important areas with the aim of reducing public spending without affecting services to citizens.

Therefore, it is the Customs and Monopolies Agency – Monopolies Area that regulates the public gaming sector in Italy through constant monitoring of the concessionaires' operations and targeted action against irregularities. It also oversees the production, distribution, and sale of processed tobacco and the collection and payment of taxes and excises levied on them.

Thus, a single entity handles this economically and socially significant area, the gaming monopoly. Within the Monopolies Area (formerly AAMS), a body has been established, the General Committee for Games, which works in collaboration with the Minister of Economy and Finance regarding the management and organization of the gaming, betting, and prediction

competitions sector. The Minister of Economy and Finance, who chairs the Committee, is responsible for appointing its members by decree, also defining their remuneration.

The Monopolies Area regulates the public gaming sector in Italy. It ensures compliance with current laws in two areas: gambling and betting, and tobacco. It is a large entity, with about 10,000 employees, and is structured into two parts: centrally, with five directorates under the agency's Deputy Director, and territorially, through 13 Regional Offices that carry out all the Monopolies Area's tasks at the local level.

The rationale for the State's presence in the gaming sector is to ensure tax revenues at a level compatible with the protection of all relevant public interests: consumers, particularly minors and vulnerable population groups, as well as combating illegality. Furthermore, it aims to economically develop gaming production and distribution activities to increase wealth and employment. In the gaming sector, the Agency fulfills its role by outlining guidelines for a dynamic and rational evolution of the sector, constantly checking the regularity of operators' behavior, devices, and entertainment equipment to ensure gaming transparency, with the primary goal of guaranteeing a legal and responsible gaming environment in a widely monitored and technologically advanced context.

## 2.1.2 Regulation

The activities undertaken to achieve the organization's objectives are numerous. For example, awareness and informational communication campaigns have been launched about gambling and the problems it can cause.

"Clear rules, maximum transparency, security for all. This is the message AAMS wants to support with the campaign 'Safe, Legal, and Responsible Gaming.' According to the organization, this is a strategic choice that emphasizes the distinction between legal and illegal gambling, contrasting the fun and excitement of state-controlled and guaranteed gaming with the negative consequences of illegal gambling. This fear is stylized with a symbol that recalls the Tricolor flag present on all products and related communications, a seal of guarantee that thousands of establishments across the territory, authorized by concession and connected to AAMS, are invited to display to communicate and commercialize its most relevant quality: the safety of the product for the player and the community. An important communication campaign to illustrate the social and economic value of transparent gaming, to reaffirm AAMS's institutional role in upholding legality through the financing of sports, horse racing, and the arts."

In order to combat illegality, AAMS has provided regulations to protect public order, players, minors, and authorized gaming operators.

In Italy, gambling regulations clearly and transparently distinguish between permitted and prohibited games. The latter are absolutely prohibited from being offered by anyone in any form, while the former can only be offered with a concession, authorization, and license issued upon request and after verification of legal requirements by the organization itself. Specifically, to combat the growing illegal activities related to online gambling with cash prizes, efforts are made to regulate the sector precisely, aiming to promote both the offering of new types of online entertainment and an effective fight against illegal gambling. AAMS's actions, in the case

of online casinos, are primarily aimed at identifying and blocking (by blacking out) sites without the required authorizations.

Currently, the only way to operate legally in the national territory is to obtain a license from AAMS. However, not all operators are willing to comply with this provision, sometimes for entirely illegal purposes such as tax evasion or to 'rig' games in casino-games, but other times because it is costly and difficult. There is an international license useful for operating in much of Europe, but this is not recognized in our country, which grants permission only if the Italian license is obtained.

## 2.1.3 Costs, requirements and licensing bureaucracy

Here arises a problem: the cost. The Italian license costs about thirty times more than equivalent European and international licenses. However, this is not the only issue. Besides this "detail," the costs for the technical infrastructure supporting the activity, especially online, are excessive since they must, by law, be located in Italy (including servers and customer support structures).

Moreover, to obtain the license, one must have a bank guarantee of at least one and a half million euros, plus an additional 350,000 euros for the provisional license, which is only valid for three years. Of course, to the 1,850,000 euros for the licensing part, other organizational, administrative, and significant marketing expenses are added.

These economic problems are compounded by bureaucratic issues. Authorization by AAMS involves passing several tests and meeting specific stringent requirements, including:

1) having an IT system capable of managing all phases of the game and being clear and secure for the customer.
2) the system must be developed to allow the regulatory body to monitor the data of gaming sessions, including those already conducted.
3) if the licensee is foreign, they must have already carried out gaming collection and management activities in the European Union, billing at least one and a half million euros in the last two financial years.
4) possessing technical-structural capabilities to ensure maximum gaming security and having bank guarantees for one and a half million euros.
5) being constituted as a joint stock company.
6) if foreign, having residency in one of the European Union members states.
7) winning a bid launched by the Ministry of Economy and Finance.

In the case of a betting centre, the concession from the Autonomous Administration of State Monopolies must be accompanied by a public security license issued by the Police Headquarters of the province where the activity is to be opened. The procedure is not swift, taking between 30 to 90 days to be issued. For the license to be granted, the owner must have a clean criminal record, and at that point, only a commercial establishment open to the public, with a VAT number, registered with the Chamber of Commerce, and, if franchised, having an agreement with a franchisor concessionaire or, if independent, winning a public bid will become an authorized retailer. The entire procedure takes an average of four months to complete. It seems that a license is also required if the business is online, i.e., through a

website. If all the aforementioned requirements are not met, the business risks being seized, and the owner could face charges of operating illegal or clandestine gambling.

In summary, the problems encountered in opening a betting centre, a VLT room, or an online casino-games are both economic (requiring substantial financial resources) and administrative (lengthy bureaucratic process and regulatory constraints).

## 2.1.4 The "question" of CTD

Given the necessity to comply with Italian regulations, particularly concerning licenses, there have been many legal disputes over the actual legality of the activities related to the collection and management of bets, which require a concession through a public tender and an authorization issued by the police headquarters.

Problems have increased with the recognition of the CTD (Data Transmission Centre) activity. In this setup, the organization of betting is the responsibility of licensed companies, either Italian or foreign. The CTD, which is essentially a local "agency," after receiving the betting proposal from the player, sends it to the company, which can either accept or reject it. The CTD owner's role is solely to connect the player with the foreign bookmaker. In other words, through the CTD mechanism, the regular ADM license could be bypassed, as the service offered was merely to connect and transmit data for the players.

This workaround allowed for simpler, faster, and more economical operations in the betting sector but led to numerous legal disputes. This type of operation is not accepted by the legislator, but foreign companies that have not obtained the concession to operate in Italy through this method have repeatedly filed complaints with the TAR (Regional Administrative Court) and the European Court of Justice. They cited a violation of the principle of mutual recognition among member states due to the refusal to grant companies, duly authorized in other member states, the authorization to operate in Italy.

The control system implemented by AAMS and mandated by the legislator appears, therefore, to be full of discrepancies between Community Law and Italian Law, with evident negative repercussions economically, socially, fiscally, organizationally, and judicially. These discrepancies make all types of operational interventions cumbersome, aiming to make the entire system clear and secure for economic entities operating in the sector, the State, customers, and, more generally, the citizens.

## 2.1.5 Modus operandi, technical support structures for ADM.

To organize control activities, ADM relies on numerous structures, both internal and external, such as regulatory bodies that verify the legality of management software for "bets" and the information systems for gaming. One well-known company in this context is SOGEI, a company entirely owned by the Ministry of Economy and Finance (MEF), making it an in-house company.

SOGEI is a joint-stock company that performs ICT (Information and Communication Technology) activities under a monopoly regime. Founded in 1976 and transferred from Telecom to the MEF in 2002, it performs numerous activities on behalf of the State. Since 2012, with Law Decree No. 95 of 06/07/2012 (urgent measures for the review of public spending without reducing services to citizens, converted into Law No. 135 of 07/10/2012), it has been

responsible for performing IT activities reserved for the State, as well as developing and managing IT systems for public administrations (including ADM), which were previously handled by CONSIP S.p.A

Since 2002, it has implemented IT solutions that enable ADM to control and manage gaming through initiatives aimed at providing the Games Area with suitable tools for this activity. Specifically, it handles:

1) designing, developing, and operating IT systems for the management of National Totalizers and sports and horse racing betting.
2) expanding and modernizing the offering of horse racing bets.
3) verifying the compliance of New Slot and VLTs;
4) creating the International Observatory for the Gaming Market (OIG) to understand sector dynamics globally.

The in-house company certifies VLT gaming platforms at a national level, which requires a certain level of security that should be guaranteed by the UNI EN ISO/IEC 17025 standard, mandatory for certifying entities of online platforms and VLT gaming devices. However, SOGEI does not possess this certification. This means that the company responsible for controlling and certifying the system, ensuring its quality, does not meet the necessary requirements. The UNI EN ISO/IEC 17025 is a comprehensive standard of management and technical requirements, used worldwide for accrediting testing and calibration laboratories. Thus, SOGEI lacks the technical-structural-quality requirements to effectively control the entire system. When a blackout occurred in 2007, resulting in the withdrawal of 105,000 VLTs due to malfunctioning, SOGEI received numerous criticisms from industry experts, who deemed the company's technical structures inadequate.

How does AAMS control online casino sites, bookmakers, and devices under Article 110 TULS?

To use an online casino or bookmakers' accounts, users must register on the company's portal, providing all the necessary details of the adult user, including a copy of their identity card within 30 days of registration. AAMS will then start the verification process by checking the correspondence between the data provided by the user and those registered with the tax office. The first deposit into the new account can only proceed if ADM confirms that the verification was successfully completed. To protect players, the new regulations introduced a complete data check for each player by SOGEI, with a block on player profiles where any discrepancies are found.

For gambling service providers, an essential control tool they must possess is the protocol designed for secure communications over the internet. AAMS verifies the possession and effectiveness of this encryption protocol. The applied encryption protocol prevents data tampering, falsification, and interception, thus ensuring the reliability and confidentiality of communications to the benefit of the customer. Companies must possess a license, which can be acquired only if they meet the previously discussed technical and structural requirements. If they can satisfy all these requirements and win the public tender, they can operate. Further information will be provided in the next chapter; this section merely gives a general overview of the control framework to introduce the topic.

Regarding VLTs (Video Lottery Terminals), they are supplied to concessionaires only by certain certified manufacturers. The main current manufacturers are Spielo, Novomatic, Merkur Inspired, Bally, Zitro, and Ace Interactive. These machines must be installed in specially dedicated premises with specific characteristics and require explicit authorization from the concessionaire[17], who will issue a letter of assignment. After receiving approval from the competent police headquarters, they can be operated.

The system is not overly complicated. A certified manufacturer produces the machines for a company (e.g., Lottomatica), which then programs a platform (e.g., Lottomatica has created Spielo) and connects all the machines to a central server (Lottomatica operates the BetterSlot network). These machines are placed in a gaming hall with the necessary license issued by the police headquarters, and each VLT is connected to a central server managed by the concessionaire. While each model of NewSlot requires third-party certification[18] from specialized bodies to connect to the public management and control network, VLT systems are "verified" as a whole (central systems, terminals, management software, and gaming software). NewSlots must comply with the provisions of April 5, 2011 (Article 4 of the Decree), which effectively recognizes operators within the public entertainment gaming chain. Registration in this list constitutes an enabling title for those involved in the entertainment machine industry. The list is public and is published on the official ADM-Games Area website.

Besides the requirements for registration detailed in the aforementioned article, a declaration of commitment for achieving certification issued by the accreditation body ACCREDIA is highlighted. ACCREDIA is a non-profit association and is the only accreditation body in Italy, it was created in 2009 by the merger of Sit (Calibration Service in Italy), Sinal (National System for the Accreditation of Laboratories) and Sincert (Accreditation system for certification bodies). The entrepreneur must make a "commitment declaration for obtaining ISO 9001:2008 certification" within 180 days after registration, which has been mandatory since 2012. The certification will cover the design of the game board for each machine, the mechanical design of the gaming machines, video terminals, gaming systems, and all peripherals connected to them, including the necessary software for the device's operation.

For VLTs, the situation is different. In an interview, Emmanuele Cangianelli, president of Erg-Fipe, explains: "the law requires not a 'certification' (sometimes used administratively, not technologically) but a 'compliance verification' with the technical specifications of the systems, prepared by SOGEI, adopted by AAMS, and subjected to the usual community information procedures that govern the free movement of information society goods and services, even if intended for public IT systems. We are essentially talking about a testing of public technological systems, technically conducted by SOGEI in support of the Financial Administration, which is the client".

The actual development and management of the "Video Lottery Terminal system" is therefore entrusted under concession, and the Public Administration acts as the controller through SOGEI, overseeing the technologies developed by competing third-party operators.

## 2.2 Role of the state and revenues

### 2.2.1 Regulation, meaning and effects

In the gambling sector, the Italian State acts as a regulator. But what do "regulation" and "regulator" mean? In the broadest sense, regulation can refer to any form of economic and social influence, not necessarily originating from the State, but also from other sources such as markets, businesses on a voluntary basis (self-regulation), trade and professional associations, and other Italian and international organizations.

In a strict sense, regulation refers to any deliberate influence by the State on the behaviour of businesses and individuals in society, not only through strict rules and norms but also through the definition of economic incentives, allocation of rights or resources, provision of information, or other techniques. In summary, it can be defined as the imposition of limits on the discretion of choices by individuals and organizations of all kinds because economic regulation defines the boundaries for the actions of businesses and individuals[19].

The economy of regulation originally developed within the context of monopolies, with the goal of imposing limits on the behaviours of the monopolist or restricting their market power, especially regarding pricing, availability of services, and their quality. The modus operandi is similar in many regulated fields and activities, with the State establishing authorities, known as independent authorities, that operate within their area of competence.

Although the United States is constitutionally a Confederation that advocates freedom, especially in economic matters, they were the first to develop the concept of regulation with the creation of the Inter-State Commerce Commission. This aimed to limit the market power of railway companies that had become monopolists or oligopolists (depending on the region where they had emerged). In Europe, this mode of regulation was introduced in the 1950s with the establishment of the Independent Television Authority.

The main theories explaining why a State decides to regulate a sector are four:

1) The Public Interest Theory.
2) The Economic Theory of Regulation.
3) The Institutional Economic Theory of Regulation.
4) The New Public Economy Theory.

All are united by the ultimate goal of protecting the public interest. This focus aims to illustrate the concept underlying regulation, so the theories mentioned above will not be explained here.

In Italy, the first body with the function of regulating the State Monopolies sector was the AAMS (Autonomous Administration of State Monopolies), founded in 1927 in Rome by the Italian government led by Benito Mussolini. Today, the AAMS has been incorporated, as already mentioned, into another public entity, the ADM (Customs and Monopolies Agency) Monopolies Area, for economic savings reasons. It regulates the public gaming sector through constant verification of the concessionaires' operations and targeted actions against irregularities. Additionally, the ADM oversees the production, distribution, and sale of tobacco products and the collection and payment of related taxes. The ADM, therefore, has two independent areas: the Tobacco Area and the Monopolies Area.

From all this, it is easy to see how much power the regulator has, which, on behalf of the State, can actively contribute to the development or decline of an entire sector, with all the ensuing consequences: creation of wealth, new jobs, general welfare of citizens, and increased state revenue or, conversely, increased illegality, loss of jobs for those working in the sector, rise in organized crime, gambling-related illnesses, and loss of revenue flows to the State coffers.

Although these outcomes are diametrically opposed, they often occur simultaneously due to the lack of effective and efficient regulation at both national and local levels. The sector's regulations, including the regulatory body, in my opinion, do not operate with consistency. Everything is very fragmented and difficult to understand even for those working in the sector.

The State uses regulatory and control bodies that rely on other public and private bodies (for the IT part), and the laws themselves are numerous and have different legal approaches depending on the specific game. This fragmentation of activities, the organizations upstream and downstream of the sector, the numerous games, and the countless laws only exacerbate the chaos in a sector that is already far from easy to manage.

The concessionaires, who purchase the concession and by law have the right to operate in the gaming market, act as public service appointees and are therefore subject to the control of the granting Public Administration (in this case, the AAMS) and the public security authorization regime (issued by the police headquarters).

But what are concessions? A concession is the administrative measure by which the State confers new active legal positions to the recipient, expanding their legal sphere. The concessionaire has obligations, many common to all types of concessions, such as the obligation to maintain regular employment relationships with employees and pay the concession fees to the Public Administration; others are specific to each type of concession. Regarding the powers of the State, these result in very incisive control over the activities carried out by the concessionaires, consisting of an absolute power over the concessions, as it can terminate the contract unilaterally through a declaration of forfeiture, redemption, or revocation. In any case, the concessionaire is entitled to any payments that may have accrued up to that point[20].

A fundamental approach taken by the legislator involves ensuring that all activities in the sector prioritize the preservation of product typicity and adopting the tool of granting concessions for game management to qualified private operators through public selection procedures. This strategy aims to increase the number of operators in the sector while maintaining strict governance over their activities.

## 2.2.2 Social care and protection system.

An example of the expansive or contractive effect caused by state decisions in the matter of concessions and licenses can be seen in the case of lotteries. In this sector, the State uses a single-contractor system, assigning the operation and management of lotteries to only two companies: Lottomatica, owned by IGT Lottery S.p.a. (formerly Lottomatica Group), for the operation and management of the Lotto and scratch cards, and SISAL for the SuperEnalotto. Additionally, there is the Lotteria Italia, which remains the only national Italian lottery still in operation after the discontinuation of the Sanremo Lottery, also managed by Lottomatica. In

these two cases, as in any concession, the responsibility of management, including the assumption of economic risk, is transferred to the concessionaire.

The single-contractor system used to regulate this sector has had the positive effect of greater control but has also enriched two companies and limited the efficiency of the sector, without any real benefit for Italian citizens or the treasury.

Unlike lotteries, which have a single-contractor assignment system, for games other than lotteries, both physical and online, a multi-contractor concession system is used. This choice is due to the reduced need for unified operation and management by a single company. However, this system is subject to constraints, where market entry is dependent on structural, organizational, and technical requirements that all concessionaires must meet.

The system mentioned above has opened the market to numerous operators, making it more efficient by increasing competition. The broader offer has also made it more dynamic, technological, and flexible to consumer needs, benefiting them with more products and services to choose from and benefiting the State, which has seen increased revenues and job growth in the sector over the years.

From this analysis, opening the gaming market while continuing to regulate it seems the most efficient choice for everyone: entrepreneurs, investors, consumers, the State, and society as a whole.

The final role the State plays in this sector is perhaps the most important. The State is responsible for protecting public health and has enacted numerous legislative measures over the years to defend or assist problem gamblers.

To this end, it established the Observatory at the ADM to evaluate the most effective measures to combat the spread of pathological gambling and severe addiction[21]. A National Action Plan (PAN) aimed at preventing gambling-related problems has also been approved

The PAN, proposed and coordinated by the Head of the Department for Anti-Drug Policies of the Prime Minister's Office, was defined in collaboration with and with the contribution of expert members identified by the Ministries of Health, Education, Universities and Research, Economic Development, representatives of family and youth associations (AGE, MOIGE, Codacons), and representatives of municipalities.

Additionally, a consultative support committee was involved to identify the most suitable measures to combat pathological gambling. This committee was established to enable broad and cross-sectional participation of civil society in defining the plan. Representatives of the Regions and Autonomous Provinces were also consulted.

The PAN consists of a series of guidelines to develop coordinated action through concrete activities that each entity, within its competence and responsibility, can reference to develop projects consistent with the shared strategy. Once the situation was monitored, a series of communication initiatives focused on prevention, through commercials on national and local networks, were implemented.

Specifically, with the law of 23 December 2014, n. 190, known as the 2015 Stability Law, 50 million euros are allocated annually, starting in 2015, for the prevention, treatment and rehabilitation of people suffering from gambling addiction (DGA). A part of this fund, with a limit of 1 million euros for the years 2015, 2016 and 2017, is intended to test methods of controlling people at risk of addiction. In this way the Minister of Health guarantees, thus, services aimed at prevention, treatment and rehabilitation for subjects affected by such dependence. With this law the Observatory was transferred to the Ministry of Health with a change in composition to ensure the presence of experts in the field of gambling addiction.

In addition, to protect citizens and better manage the negative social and economic consequences related to excessive gambling, the D.lg. 12 July 2018, n. 87 (Decree Dignity), converted into Law 9 August 2018 n. 96 , deals ex novo with the issue of advertising. Prohibits advertising, in any form and by any means, of games or bets where cash wins are expected. Excluding national lotteries, local raffles and logos with the safe and responsible gambling statement.

The plan represents the first concrete and significant step enabling institutions and national organizations to provide a tangible response to the emergence of a significant phenomenon in the country's social context[22].

## 2.2.3 The revenue from taxes

Let's now analyse the state revenue. The State decided to legalize the gambling sector, albeit with great difficulty and following detailed regulation. This decision was undoubtedly made considering the financial contributions this sector can provide to the state treasury, as well as the jobs it creates.

There is often talk of low taxation on gambling. However, let's examine the numbers. In 2012, the state collected just over 8 billion euros from the sector, and in 2019, nearly 10.1 billion from physical gambling and 470 million from online gambling, with an increase of about 31.25 percent. This amount seems quite low considering the volume of gambling, which was around 88.5 billion in 2012 and 110.5 billion in 2019. In other words, in relation to the total amount wagered, the tax revenue was just under 10%. This comparison seems unfounded; it's more sensible to relate the tax revenue to the players' expenditure. This data provides a better measure of the effective taxation on gambling.

By processing the data, we can derive some very interesting information summarized in the following table. For each type of game, it shows the volume of bets, winnings, expenditure (difference between bets and winnings), and state revenue for the year 2019:

| Game type | Collected (M€) | Winnings (M€) | Tax revenues (M€) | Expenditure (M€) | % |
|---|---|---|---|---|---|
| Entertainment equipment | 46679 | 36242 | 6757 | 10429 | 64,8 |
| Bingo | 1651 | 1166 | 190 | 485 | 39,3 |
| Sport betting | 16618 | 14657 | 438 | 2038 | 21,5 |
| Lotteries | 19186 | 13631 | 3002 | 5555 | 54,1 |

| Skill games | 26328 | 25350 | 243 | 978 | 24,9 |
| Total | 110465 | 91049 | 10632 | 19485 | 54,6 |

*Table 2 – Tax revenues in Italy during 2019*

Observing all the data, it's easy to see that it's not entirely true that gambling is untaxed or lightly taxed. Some types of gambling contribute little to state revenue, such as sports betting or skill-based games, which stop at around 20%. However, others, like lotteries and gaming machines, are far from untaxed, with tax rates nearing 50% for lotteries and almost 60% for entertainment equipment.

For a complete analysis, it's worth noting that the players' expenditure, over 19 billion euros, is not yet profit for the companies, as all management costs still need to be deducted. Unfortunately, the spread of incorrect or, rather, distorted information about gambling taxation leads people to be horrified by certain data.

Some people are convinced that the tax on gambling is extremely low, but these people make a mistake: they divide the state's revenues by the total amount played. This gives a figure of only 9.6%. The mistake you make in this case is to neglect the winnings of players (that is money that does not end up in the revenues of gambling companies). If we consider the revenues of companies (to which operating costs should be subtracted), we can see that gambling is taxed appropriately: on average, the state retains 54.6% of company revenues.

With the 2020 budget law, the state has once again increased taxation on virtual machines. In doing so, the aim is to reduce the excessive proliferation of these devices and increase tax revenues. As of 1 January 2020, the single tax levy on AWP and VLT appliances has been modified: for AWP appliances until 31 December 2020, it is 23.85% and from 1 January 2021 it rises to 24%. For the VLT luminaires, it is 8.5% until 31 December 2020 and from 1 January 2021 it will rise to 8.60%. The Act provides for a minimum payout of 65% for AWP and 83% for VLTs. This manoeuvre would lead to immediate state revenue but, subsequently, there could be a contraction in the tax base due to a decline in demand.

## 2.3 Regulatory framework

### 2.3.1 General provisions

Let's now delve into the network of norms and regulatory provisions governing the gambling sector. The first general consideration is that the Italian legal system prohibits gambling, yet there exists a state monopoly over the sector, which includes state control over the management of its revenues. It's as if to say, "Gambling is against public order (as the altered behaviour of gamblers could disturb order) and good morals (since it could generate aversion to work and savings), hence it is illegal, except when run by the State." This may seem paradoxical, but it is not. Thus, four primary articles of the Penal Code are issued: articles 718, 719, 720, and 721 of the Penal Code.

Article 721 of the Penal Code states: "Games of chance are those in which the purpose of profit and the winning or losing is entirely or almost entirely random; gambling houses are places intended for games of chance, even if private, and even if the purpose of the game is disguised in any form."

This introductory article refers to two key concepts: the characteristics of gambling and the gambling house. The first is understood as games where the winning or losing is influenced, partly or entirely, by chance, accompanied by the profit motive pursued by the parties, whether in money or other assets. The second concept refers to the gambling house, understood functionally as any place suitable for conducting the aforementioned activity, regardless of the physical characteristics of the place.

Article 718 of the Penal Code states: "Anyone who, in any public place or place open to the public, or in private clubs of any kind, engages in gambling or facilitates it, shall be punished with imprisonment from three months to one year and a fine of not less than 206 euros. If the offender is a habitual or professional contravener, bail for good conduct may be added to the probation."

This article highlights three key points: the place, understood as a constitutive element of the crime; the practice and facilitation of gambling, meaning that both the organizer-administrator-manager who provides the means (even if not actively participating) and the facilitator, who makes the illegal activity possible or easier in any way, including by omission, are punishable; and finally, the sanctions, which include both administrative penalties and imprisonment.

Article 719 of the Penal Code complements the previous one by stating that: "The penalty for the crime provided for in the previous article is doubled:

- if the offender has established or maintained a gambling house.
- if the offense is committed in a public place of business.
- if significant stakes are involved in the game.
- if persons under the age of eighteen are among those participating in the game.

In this article, there are four aggravating factors that multiply the penalties of the previous article. Note the logic of the article: if you establish a gambling house, you are doubly punished because a casino is likely to have greater attractiveness for gamblers; the stakes are significant from an objective point of view, so as to be punishable equally in all cases; and if minors are playing, thus excluding the case of simple observation by them.

Finally, Article 720 of the Penal Code concludes the punitive measures by applying penalties to gamblers as well: "Anyone who, in a public place or open to the public, or in private clubs of any kind, without having participated in the offense provided for by Article 718, is caught while taking part in gambling, shall be punished with imprisonment for up to six months and a fine of up to 516 euros. The penalty is doubled:

- if caught in a gambling house or public place of business;
- for those who have placed significant stakes in the game."

In this concluding article, the aim is to discourage gambling practices by extending penalties to gamblers as well, with aggravating circumstances of gambling in houses of gaming and for significant stakes. These four norms extracted from the Penal Code appear, in my opinion, to be a good starting point for understanding the logic followed by the legislator in all subsequent regulations, serving as guidelines for future enactments.

## 2.3.2 Exceptions

These provisions express the general rule that gambling is not permitted and is not subject to protection. However, they contrast with other provisions that introduce numerous exceptions.

The first exception dates back to 1924 when Legislative Decree No. 636 "authorized the operation of gambling and betting, including games of chance, in the Casinos of Campione d'Italia, Sanremo, Saint Vincent, and Venice." The Constitutional Court, in ruling No. 152 of 1985, indicated that this is an apparent deviation from the sectoral penal norms because the revenues in question are legitimate. For the State, these revenues constitute income allocated to funding public interest projects, thus the public use of resources from gambling justifies the exception to the penal norms. From this point onward, the legislator continues to issue "exceptions" to the general rule, with closures towards some sectors such as lotteries, which are always and exclusively reserved for the State[23].

But the true wave of exceptions to the primary rule of closing gambling (with the exception of the State-run Lotto) began in the 1990s. During this period, various regulations were issued, including:

- Provisions for the opening of new games operated by private concessionary companies entrusted with the management of public games;
- Provisions regulating public games, establishing rules regarding every aspect of the games, from platforms to mandatory minimum winnings;
- Provisions concerning the procurement, application and documentation, concession, and authorizations that interested companies must submit to the competent authorities, such as the AAMS or the relevant Police Headquarters, to operate legally.

Regarding gaming, the legislative text to refer to is the T.U.L.P.S. (Consolidated Act of Public Security Laws), and articles 86, 88, and 110 establish the requirements to be met to offer gaming in public places, including through electronic devices or for the exercise of betting.

Article 86, in the third paragraph, states that a license is necessary to possess automatic, semi-automatic, and electronic devices that provide (random) cash winnings.

Article 88 establishes that the authorization or public security license is issued exclusively to the concessionaire and to individuals appointed by the concessionaire by virtue of the concession act. Additionally, the license for betting operations can only be granted to concessionaires or those authorized by Ministries or other entities to whom the law reserves this faculty.

Article 110, paragraphs 6 and 7, indicates that devices certified as compliant with current regulations by the Ministry of Economy and Finance – Autonomous Administration of State Monopolies, and obligatorily connected to the AAMS telematic network for the telematic management of the devices[24] (this network allows the telematic management of lawful gaming provided for the devices mentioned above) and that feature not only a random element but also a skill element, are lawful.

### 2.3.3 Online gaming licenses and the Balduzzi Decree

It has been seen how the general system and the regulations for gaming devices work, but for online gambling, which allows us to play the most popular "casino" games from home, the situation is a bit different.

The first problem encountered when analysing this aspect of the sector is the current inadequacy of Italian legislation regarding gambling[25] (as noted by the Constitutional Court), leaving aside the procedural, moral aspects, and the rulings (including European ones) that condemn the Italian system (which should also be examined from these points of view), let's focus on the practical aspect.

Normatively, the Italian State regulates online gambling, such as poker, betting, and casinos, and for the legislator, it is legal only if an operator has the permits established by law and has the authorization from ADM.

An operator that does not meet the legislator's requirements is illegal. The situation becomes complicated when a foreign operator (without authorization) accepts Italian players. Even if the foreign operator has European licenses but not Italian ones, it is still illegal, and thus AAMS blocks the operator's site. One could argue about the legitimacy of this operation since Europe operates under the principle of free movement of goods and services, but this is not the appropriate place to discuss the legislator's actions. It is sufficient to know that Italy has often been reprimanded for laws that violate this principle.

The State justifies this action by declaring the impossibility of controlling the legality of the foreign operator without a license. In other words, the role of controller would be nullified. It is as if an Canadian, British, or Maltese license is not suitable for guaranteeing the safety of bets, implying that foreign states do not conduct enough checks.

Lastly, but not of lesser importance, the "Balduzzi Decree[26]" must be analysed, "containing urgent provisions to promote the development of the country through a higher level of health protection" and "preventive measures to combat gambling addiction and for non-competitive sports activities."

Article 7 is the first to provide provisions to combat gambling addiction, indicating as "illegal any advertisements that incite gambling or exalt its practice and the absence of warning messages on the risk of addiction, as well as the indication of the possibility to consult the informational notes on the chances of winning on the institutional websites of AAMS." Moreover, it is prohibited to provide, at any public establishment, devices that allow customers to play on online gambling platforms from subjects without any concessionary or authorization title issued by the competent authorities.

The Decree also specifies all the information that must be made known to customers regarding games, potential winnings, and problems caused by pathological gambling. This article also sets a minimum of 5,000 checks that law enforcement must conduct annually in places where gambling is offered in various forms.

To protect young people (under eighteen), entry into areas dedicated to games with cash prizes, such as bingo halls, video lottery rooms, and betting agencies (on sports events, including

horse racing and non-sporting events) is prohibited. For those, like the operator of a bar or a gaming hall, who do not comply with all the provisions regarding information and warnings, there are substantial administrative sanctions that can reach up to 20,000 euros (if minors are present in the premises) or 50,000 euros (if the required information and warnings are missing).

Finally, it is noted that the Balduzzi Decree also incorporates regulations related to the sale of alcoholic beverages and the related prohibitions. These two sectors (gambling and alcohol) have been modified to make them safer for the population, particularly young people.

In summary, gambling is considered illegal, but there are exceptions under strict regulation. The provision of gambling services is allowed, but only under the supervision and control of the State. While the State does not run these services directly, it authorizes private companies to operate in this sector through specific licenses. These companies must comply with regulations, with the State acting as a controller and regulator to ensure all legal requirements are met. For example, devices used in gambling, particularly those mentioned in Article 110, paragraphs 6 and 7 of the TULPS, must adhere to specific legal standards. If they fail to meet these requirements, their use is deemed illegal.

Lotteries, on the other hand, are typically managed by either a single operator or a limited number of licensed companies, ensuring tight control over the industry. Online casinos and betting services are offered by a wider range of authorized operators, each subject to strict regulatory oversight.

Any companies that operate without an Italian license are considered illegal, and their websites are blocked by the AAMS, the agency responsible for monitoring and enforcing gambling laws in Italy. This ensures that only compliant, licensed operators can provide gambling services within the country.

# Chapter 3 - Main economic players in Italy

## 3.1 Historical companies

### 3.1.1 Main Italian Companies

Since the gambling sector has opened new market prospects, certainly economically viable, new economic actors have emerged: at first only Italian, now they have entered foreign companies. Present throughout the country, with turnover that have little to envy the large Italian industrial companies, over the years they have become real giants.

The main one, if only for the history of the company, is Sisal, an Italian company founded in 1945 by sports journalist Massimo Della Pergola and that deals with games to forecast. It has a network of 45,000 stores and offers almost every type of game, including SuperEnalotto. In 2004, Sisal acquired Matchpoint, a company network spread across the peninsula for collecting sports bets of all kinds. We are talking about a giant with a turnover of almost 700 million euros[27] and more than 2000 employees. Since 2022 Sisal has been part of Flutter Entertainment, a global online sportsbook and cash games operator listed on the London Stock Exchange.



*Figure 9 – Snai Logo*

No less known, also from the historical point of view, is the SNAI. Snaitech was founded in 1990 with the establishment of SNAI Servizi S.r.l. as a company originally dedicated to the management of horse racing facilities and the provision of administrative and logistical services for the telephone collection of horse racing bets. Share and corporate acquisitions lead to the evolution of SNAI Services and the creation, in 1999, of the SNAI Group, specialized in the provision of telematic services for the collection and management of horse-race bets, sports, betting competitions and automatic entertainment devices. On 29 March 2011, Global Games S.p.a. acquired 50.68% of SNAI, followed by a bid for 2.364 euros per share for the remaining 49.32%. In September 2024, Flutter Entertainment, the same company that acquired Sisal, announced that it had agreed to acquire Snaitech with a transaction worth €2.3 billion. With about three thousand betting points, the SNAI's network of agencies and corners is the most extensive in the area. The group's revenues amount to almost half a billion euros.

No less important is Lottomatica, an Italian holding company that heads a group of companies active in the legal public gambling market authorized by the Customs and Monopolies Agency. Listed on Euronext Milan of the Italian Stock Exchange, in 2023 it exceeded a million and a half

euros in turnover, with around 1600 employees. The majority shareholder is Apollo Global Management, a company listed on the New York Stock Exchange and active in the management of alternative investments worldwide.

### 3.1.2 Foreign Companies

As mentioned above, there are also many foreign companies operating in Italy, especially in the field of online gambling and betting. These companies have licenses issued by the Customs and Monopolies Agency, which allows them to offer their services in compliance with Italian regulations.

First among them is the UK's Bet365, one of the largest online sports betting platforms in the world. Despite being a UK company, it has an ADM license to operate legally in Italy. In 2022, the Bet365 Ltd group recorded a profit of 442 million euros, with a turnover of more than 3.8 billion dollars, ranking itself eighth[28] among the world's major betting companies.

Since 2011 the company William Hill operates legally in Italy, having acquired a license ADM: this betting company is among the most popular in the United Kingdom, the first in Ireland. It has over 70 years of experience in the betting industry and record turnover. Today, William Hill is one of the world's leading online gambling companies with over 17,000 employees in different countries and a capillary network of around 2,400 betting rooms in the UK.

Founded in 1997 and listed on the FTSE 250, 888 Holdings plc is a leading online gambling website, famous for its wide range of slots, table games and online poker. The company operates under a licence issued by the government of Gibraltar, except for Italy and Spain where they operate under licences issued by their respective governments. In August 2017, 888 was fined £7.8 million by the UK Gambling Commission (UKGC) for failing to comply with the legislation on combating pathological gambling, allowing numerous players in self-exclusion status to continue using their gaming platform. The company's 2023 turnover was up 38% year-on-year to £1,710.9 million. Adjusted EBITDA increased 41% to £308.3 million, with a margin up 18.0% from 16.8% in fiscal year 2022.

There are other foreign companies operating in the gambling sector, but those listed above are the most renowned.

### 3.1.3 How do companies compete?

The competitive landscape of the Italian gambling market is shaped by a variety of factors, each playing a crucial role in how operators maintain and grow their market share.

One of the most significant aspects is the distribution network. The reach and availability of betting points, whether physical or online, greatly affect how accessible a company's services are to players. A well-established network allows customers to easily place bets wherever they are, making convenience a key part of the competition

Another important factor is the quality of the odds being offered. Players naturally gravitate toward platforms that provide higher odds, as this directly translates into potentially larger winnings. For many, the value they get from their bets is one of the most decisive aspects when choosing between different operators.

Then there's the growing demand for live betting, which has become a major trend in the gambling world. The ability to bet on events as they unfold in real time adds excitement and engagement for users, making it a must-have feature for any competitive operator.

Customer service is also a key battleground. Having responsive and helpful support teams builds trust and loyalty among players. When problems arise, the speed and quality of customer assistance can make a lasting impression on the consumer's experience and their likelihood of returning.

Over time, a company's reputation becomes an influential factor. Players want to engage with brands they can trust, and this trust is built on years of reliability, transparency, and customer satisfaction. A solid reputation can be a game changer, setting one operator apart from others, especially in an industry where confidence is critical.

The variety of sports and events available is another area where operators compete. A broader selection means more opportunities for players to find something they're interested in betting on, from popular sports like football and basketball to niche markets that might appeal to specialized audiences.

Bonuses and promotions, particularly those offered upon account registration, are another major draw. These incentives can often be the tipping point that encourages players to choose one platform over another, especially when the offers are generous and frequent.

Operators are also expanding their appeal by offering related products, such as online casinos, poker, and lotteries. By diversifying their offerings, they can keep customers entertained with more than just sports betting, thereby increasing the time users spend on their platforms.

With the rise of smartphones, mobile betting has become essential. Offering apps that provide a seamless, user-friendly experience on mobile devices is now a must, as more and more players prefer betting on-the-go.

Lastly, security is an indispensable factor in the decision-making process for consumers. Players want to know that their personal information and funds are safe. Being linked to ADM (Agenzia delle Dogane e dei Monopoli), Italy's regulatory body, gives operators an extra layer of credibility, reassuring users that they are gambling in a secure and regulated environment.

## 3.2 The problem of .com agency

### 3.2.1 Cross-border bookmakers

In Italy, the gambling business, particularly involving new slots, lotteries, and betting, is a significant industry worth tens of billions and employing over a hundred thousand people in thousands of physical outlets and hundreds of websites, with millions of customers spread evenly across the country. Some companies in this sector are historical, fully transparent, and legal, such as Lottomatica and Snai. However, others present a different situation. It is essential to distinguish, case by case, the situation of those companies that do not meet all the requirements set by Italian law.

There are underground operators that offer no guarantees to their customers, illegal "companies" that operate outside any national or international norms, in a dark area that only

brings uncertainties about the legality of the bet. These are two extreme cases, certainly legal and certainly illegal, but there is a middle ground (ambiguous situations from a regulatory perspective that nonetheless offer betting security). This is the case with companies that are legal in an EU country but illegal in Italy.

European countries have signed agreements on the free movement of goods and services to create a common market benefiting all stakeholders – the state, citizens, and companies – in the name of development and progress. It cannot be expected that every company operating in the gaming service sector acquires a license valid for every single state in the EU. A company cannot be deemed illegal just because it does not possess the license as per D.M. 178/98, Art. 88 TULPS, as replaced by Art. 37 paragraph 4 of Law 388/2000.

If there are still doubts about the legitimacy of the limits set by the Italian legislator, one only needs to read the European Court of Justice ruling of 11/6/2003, according to which "A national regulation, containing prohibitions – penalized – on conducting activities of collecting, accepting, booking, and transmitting betting proposals, particularly related to sporting events, without a concession or authorization issued by the member state concerned, constitutes a restriction on the freedom of establishment and the free provision of services," and further, Italy "has perpetuated an illegitimate protectionist regime, affecting the rights of establishment and the free provision of services, without providing self-correction of the provisions issued illegitimately [...] The discrimination, only seemingly removed, still persists, operating to the detriment of foreign companies indirectly and covertly, contrary to an immediate application of EU rules (Treaty), which establish fundamental freedoms that cannot be derogated by a member state with exclusionary provisions."

### 3.2.2 Illegal bookmakers vs legal-foreigners

Let's now examine the operators that operate illegally in Italy without any formal or substantial requirements to do so. There are myriad pseudo-agencies, both in Italy and abroad, that come under the scrutiny of authorities every year, especially the Guardia di Finanza. These are fraudulent companies, often owned by criminals, lacking even the minimum requirements and authorizations to operate. They organize illegal gambling dens, accept bets on all types of events in total illegality, possess entirely illegal and often rigged entertainment devices to increase the gains of these criminal "organizations," and sell alcohol and spirits without the necessary licenses. Often, basic hygiene, safety norms, and any form of respect for the customer are violated in these establishments.

Once the presence of an illegal establishment is confirmed, it is shut down with the appropriate seals, and both the organizers and the customers are reported according to Italian law, with the associated criminal procedures. In these cases, which number in the hundreds each year across the country, with a prevalence in the south, the State is fully legitimate in its operations. These are extreme cases, blatantly disrespectful of the law and should be prosecuted with a "heavy hand."

There is another to consider, that of legally-registered foreign companies. Numerous foreign companies operate in the sector and are "sought after" for their supposed illegality. These companies are not illegal because of the nature of their activities or the way they conduct them.

They employ thousands of workers, are legally registered with chambers of commerce, and comply with the laws and requirements of other nations. Often, these are significant companies that hold a substantial share of the market in Europe, with years of experience in the betting sector and the broader gaming industry, serving tens of thousands of customers in multiple countries.

A significant portion of these companies' revenues comes through telematic channels like the internet. They offer the most advanced security systems and technologies available today, ensuring maximum security in service delivery and data protection for all their customers. Their technological solutions are on par with those of market leaders. In other words, the seriousness and professionalism of these companies are indisputable.

In an increasingly international competitive environment for any manufacturing, industrial, or service enterprise, these companies face challenges in internationalizing their offerings. They often operate in states that do not allow them to maximize their profits or reach their full economic potential, causing harm to shareholders and external stakeholders.

This damage is justified by governments with inconsistent reasons. If gambling is allowed in Italy, albeit with many operational and legislative constraints, why should a foreign company in the same sector with the same organizational and functional characteristics be considered "illegal"?

This is a question that cannot be answered with economically and legally valid arguments. However, the fact remains that the Italian state and others within the Union consider them illegal, blocking their websites and trying to make their operations impossible.

In reality, it is impossible to block the activities of these companies today due to the multitude of methods available to circumvent any form of blockade imposed by the competent state authorities.

### 3.2.3 Operation of .com agency in Italy

Foreign betting agencies have two ways of providing their services: via the internet or through physical agents. In Italy, the telematic (internet) channel or the physical one is theoretically rendered unusable. The current regulation aims to combat the phenomenon of illegal and irregular gaming with "the primary objective of the legislator and the government, and as such, of AAMS, to protect public order, players, minors, and authorized gaming operators." If the possibility of using both the telematic and physical channels is inhibited, then one might wonder, "How do illegal companies provide gaming services in Italy?"

Before delving into how this works, it is appropriate to provide information regarding the tools they use. In the first case, the direct method, the company's website is used, through which one registers to become a customer. Then, one must fill out the initial screen where all essential customer information is requested, and within 30 days of registration on the site, send an ID card (obviously in electronic format) to verify the true identity of the applicant and their age. Once registration is complete, a discretionary sum of money, usually at least ten euros, is deposited into the "player's account" using electronic cards, whether credit or debit. Once these formalities are completed, the customer can start using the company's website.

It should be noted that without sending the ID card, the customer can play and "load" money into their account (and possibly use the welcome bonuses that have become customary), but they cannot "withdraw" money, i.e., transfer the amount from the player's account to their debit/credit card. This is what would happen if one wanted to register on a site with a regular AAMS license, but what about those without? In this case, it has been said that the website is unusable because it is blocked. So how is it possible that Italian players use the web telematic tool?

The websites of .com agencies without a regular license are blocked, regardless of the provider used; this is the general rule. However, the block can actually be "removed," allowing access to the blocked site.

The operation that is simplest and most effective for a user, which they can implement themselves (without needing special knowledge), is to modify the Domain Name System (DNS) used by their device for internet connection. By changing the default and alternate DNS settings, the block that prevented the device from accessing one of the over 500 websites that the ADM has decided to block can be bypassed.

The legislator's decision to block access to "illegal" sites aims to protect Italian players who, otherwise, might play on unauthorized and uncontrolled sites. Additionally, such foreign sites would not pay taxes in Italy, causing economic damage to the country. But what is the position of the individual player who does not respect the block? Paragraph 3 of Law No. 401 of 1989 states that "anyone who participates in competitions, games, bets managed in the manner referred to in paragraph 1, outside the cases of involvement in one of the crimes provided for therein, is punished with arrest for up to three months or with a fine from 51 euros to 516 euros."

The criminal principle mentioned above is clear, and to the question "If an Italian resident plays on unauthorized websites, does it constitute a crime?" the answer can only be affirmative: the individual commits an offense and can be punished. However, this rule needs a different perspective when referring to Community bookmakers who do not have authorization in Italy but possess a license from another member state.

The European Commission itself, while acknowledging the discretion of each legislator to regulate a specific sector, has reminded that the principle of freedom of establishment of European citizens applies in Europe and for member states. Therefore, it is forbidden to discriminate against an entrepreneur based on nationality, guaranteeing the possibility to establish and manage a business or undertake any economic activity in a European Community country, including through the opening of agencies, branches, and subsidiaries.

In conclusion, the matter is not entirely clear, and the legislator will need to restructure the regulations, providing a comprehensive view to make the system perfectly compatible with community rules. This could include, for example, indicating that using illegal websites in Italy, as in other community countries, is unlawful due to the lack of authorizations, while using legal websites in other member states is lawful. Otherwise, there will continue to be legal disputes between foreign companies and the Italian legislator, disputes that harm both parties and the Italian citizen-client, who is ultimately the subject to be protected.

### 3.3.3 Local agencies, CSPs and TDCs/CEDs

Although it may seem like the only way, the internet is not the only means used by .com companies to conduct business among Italian citizens. There is also the collection at physical points, but before delving into the operation of this collection, it is necessary to provide general information about the physical "means" most used today. The collection of bets generally occurs through so-called "agencies." These are easy to recognize as they have a sign indicating the betting company used, for example, "Matchpoint" by Sisal. In this case, the premises will be affiliated with the Sisal concessionaire.

Agencies are the most common and easily found means for placing bets, as the location is dedicated to betting and may also have a few slot machines. In these places, everything reminds one of sports betting; even the exterior, such as the windows, displays images of soccer players, cars, and everything related to professional sports. It is practically a real "shop" explicitly dedicated to betting activities. To open your own agency, you must necessarily participate in public tenders to acquire the necessary licenses and meet all the legal requirements, with very high costs and bureaucratic procedures that can take several weeks to complete. However, it is possible to work in a franchise, meaning asking an already established operator in the market with the necessary license for affiliation, with Sisal or Lottomatica being typical and common examples.

This is the most common form of business, but it carries significant risks due to the costs of bringing the premises up to standard and making them attractive. The investment amount can be very high, and the franchisor often does not grant high winning percentages to their affiliates, making the business very uncertain from a profitability standpoint. It is precisely for this reason that the number of corners in Italy is increasing exponentially. These are a form of hybrid agencies, meaning that two or more economic activities are present in the same premises, one of which is betting.

Who uses this form of business? Typically, the owner of a tobacco shop, bar, or other common activity decides to become a corner, thus adding the betting activity to their core business. By doing so, the entrepreneur can, with minimal investment, expand their portfolio of activities, and if the activity proves to be highly profitable, they will still have their existing core business to ensure profits. Moreover, the two activities often complement each other well, forming synergies that significantly increase the profitability of both businesses. Think of a bar that allows customers to watch matches and place bets. Customers can consume beverages and watch the soccer matches they have bet on, making the whole experience more enticing. This practice is increasingly widespread due to lower economic uncertainty, fewer bureaucratic problems, lower financial resources required (for license acquisition and brand creation), and, finally, no need to wait for the public tender from AAMS.

Another tool is the PDC, or Point of Commercialization, where customers can register an account and play on .it or .com websites, even autonomously using a common computer. Often, PDCs are not fully branded like a betting corner, so they can freely choose one site over another.

Similar to the PDC is the PDR, or Point of Research, an exclusive solution for .it websites, allowing players to choose a (legally approved) site and place bets. As with the PDC, the owner cannot "issue tickets" nor is responsible for paying out in case of winnings. In other words, with PDCs and PDRs, unlike corners, the player will place bets only via telematics.

The last method used is the Data Processing Center (CED) or Data Transmission Center (CTD). With this method, the shop owner collects and transmits the bet proposal from the individual bettor to a bookmaker who, connected via telematics to the CTD, accepts it (although they might not). The CTD thus provides an intermediation or consulting service for the parties, remaining otherwise uninvolved in the specific operation (bet). This last method is by far the most suitable for foreign sites, making it the most used. Due to its usual application, CED owners have faced numerous attacks from the press, public opinion, and parliament, considering that a legal tool is commonly used for illicit activities. It is a very particular situation because the bookmaker-intermediary-player relationship is not yet regulated by Italian law, a situation in which a foreign operator, already holding a license from a member state, offers their services online directly to the player through a CTD located directly and physically in the Italian state.

Given the regulatory situation and the use of the CTD tool, many activities of this type directly connected to foreign bookmakers without AAMS or police authorization have often been sealed. However, CTD owners have always appealed to the courts to assert their reasons and have so far always won in the first instance or progressively up to the European Court of Justice. The Court itself notes that "a contract occurs between the consumer and the operator, and physical control of the intermediaries (CED) of the company present on the territory is possible for public security purposes." In other words, in the case of cross-border activity, since physical control of intermediaries present on the territory (the CTD owners) is possible under articles 11 and 88 of TULPS for public security purposes, a second Italian AAMS license for the foreign bookmaker is not necessary as "the goal of preventing these operators from being involved in criminal or fraudulent activities" is met by imposing the Italian public security police license on the CTD.

This situation is very complicated from a technical-legal point of view: on one hand, there is the objectively protectable activity of mere intermediation by the CTDs, and on the other, there is an evident use bordering on the legal of an organizational structure performing activities requiring a government license

### 3.3.4 The sanatory of 2015

In 2015, the legislator took a step back with an extraordinary and temporary measure designed to address a specific market situation. The main objective was to bring to light and regularize those operators who, although not connected to the national totalizer of the Customs and Monopolies Agency, offered bets in Italy through unauthorized foreign platforms. In the Stability Law of 2015, CTDs can indeed regularize their status by signing a concession contract with the ADM, a solution that seems to translate into temporary authorization to operate through intermediaries, even with foreign entities not authorized to operate in Italy. This solution aligns with the possibility of using a specific tax code (5381) for income tax declaration. The Stability Law provides a model for the declaration of commitment to fiscal regularization for emerging

entities: "Active as of October 30, 2014, who nonetheless offer betting with monetary winnings in Italy, on their own behalf or on behalf of third parties, including foreign ones, without being connected to the national totalizer of the Customs and Monopolies Agency, are allowed to regularize their position."

To this end, the interested parties must: "Submit to the ADM, no later than January 31, 2015, the model with the declaration of commitment to fiscal regularization, as well as connection to the national totalizer, with the simultaneous payment of 10,000 euros via the F24 model."

As mentioned above this was a temporary "remedy", which is no longer in force today: the Italian legislator has adopted an increasingly rigid approach towards customers operating without a license. Controls have been stepped up and sanctions for those operating without authorisation have been strengthened. The operations to counter illegal activities mainly focus on CTD which act as brokers for foreign bookmakers without a licence.

# Chapter 4 – Industry analysis

## 4.1 Methodology

Now that we have a general picture of what the gambling sector is in Italy, let's analyze a part of this industry. In particular, we will focus on the amount played physically, not considering online gambling and the black market. The data analysed refer to 2019, and come from the ISTAT database, except for those of gambling, for which reference was made to the customs and monopolies agency (ADM) database. This is a quantitative analysis whose objective was to understand how certain socio-economic variables affect the amount played. At first, we conduct an analysis at provincial level and then, to better collect unexplained variability and obtain more robust results, we perform an analysis at municipal level. The estimation sample consists of 6878 municipalities, a lower number than the Italian 7914 municipalities registered on 14 October 2019, this difference is due to the fact that some municipalities, especially those with few inhabitants (<500), do not have a physical place prepared for gambling. Statistical data analysis was done using Stata statistical software, chosen for its ability to manage large datasets and advanced econometric analysis capabilities, which are essential for this study. In addition, by offering a simple and reproducible scripting language, it makes the process transparent and replicable. The spread of Stata in academic research and the availability of extensive documentation have contributed to the choice of this software. Using State, a linear regression model was created and to consider the heteroscedasticity we compute the robust standard errors. A sample of random variables is heteroscedastic if there are subpopulations within it which have different variances. Ignoring it can lead to unreliable results.

## 4.2 Variables

### 4.2.1 Amount played

The amount played is the response variable (or explained variable) of the regression model. Amount played is the amount of money that people living in a given municipality (or province) gambled during 2019. It is important to note the difference between the amount played and the amount spent: the amount played represents the total amount of money wagered or used to play, including all the money that a person (or a group of people in this case) puts in play, regardless of whether you win or lose. The amount spent is the net loss, which is the amount of money that a person actually lost at the end of the game. This study refers to the amount played as it is useful for measuring the frequency and intensity of gambling behaviour and gives an idea of the involvement in gambling.

### 4.2.2 Per-capita taxable income

Using the ISTAT database, we had access to taxable income and number of inhabitants per individual municipality.

Dividing the taxable income by the total number of inhabitants per municipality we compute the taxable income per capita, that is the average taxable income for each individual in a given municipality. This represent one of the main regressor in this analysis. Like all goods, indeed, also for gambling products is possible to compute the income elasticity of demand,

understanding how the consumption of these goods change with different level of income. Taxable income is also an indicator of economic well-being: a high taxable income per capita indicates greater economic availability and, therefore, a possible higher propensity to discretionary expenditure.

It should be remembered that taxable income per capita is an average and does not necessarily reflect the distribution of income or internal inequalities. Unreported income, which is particularly high in some areas, is also not taken into account.

### 4.2.3 Age groups

The ISTAT database also provides the possibility to view and download the data on the number of inhabitants for each age between 0 and 100 years. In this study four age groups were considered, divided as follows:

- Group 1, children and adolescents, individuals aged 0-18 years.
- Group 2, young adults, individuals aged 19 to 40.
- Group 3, adults, individuals aged between 41 and 60 years.
- Group 4, mature adults and elderly, individuals over 60 years of age.

To obtain the number of individuals for each age group, it was sufficient simply to carry out a summation on the individuals grouped by age.

Group 1 includes all those individuals who are not actively involved in gambling, or at least not legally, group 2, on the other hand, includes young people who may be starting to have more or less stable income and may show interest in gambling as a form of entertainment. Group 3 includes people with a higher income tendency, but they may be more cautious and play less frequently than young people. Finally, the latter group of older people may have a higher propensity for games considered social and low-risk and avoid high-risk gambling.

In order to better interpret the variables, it was decided to introduce proportional variables into the regression model: to obtain the proportion for each age group, the number of individuals in each group was simply divided by the total population.

### 4.2.4 Fraction of male

The male variable, represents the proportion of male individuals in a given municipality (or province). The data on the number of male individuals for each municipality were taken from the ISTAT database and then divided by the total population of each municipality. This variable was used to analyse how the presence of a higher proportion of men affects the amount played, a positive coefficient linked to this variable would indicate that a higher percentage of men is related to an increase in the amount played.

### 4.2.5 Fraction of immigrants

In this study, we also use a variable to take into account how the presence of individuals of foreign origin in a population affects gambling activity, the fraction of immigrant.

In addition to the pleasure of gambling, the reason that immigrants go to places where there are slots, sports betting and other games is the illusion of being able to earn "easy money" and thus improve their personal or family economic conditions. Many immigrants, driven by the

despair of losing their job or a low salary to meet the needs of their family, are drawn into this spiral, which only leads them to increased difficulties.

In this study, the term immigrant refers to an individual born abroad and resident in Italy, so-called first-generation immigrants. The data on the number of immigrants per municipality, taken from the ISTAT database, allowed us to calculate the proportion of foreigners in each individual municipality, dividing this figure by the total population of each individual municipality. The immigrant fraction is useful to provide a measure of how relevant the presence of immigrants in each municipality is.

Unfortunately, due to lack of data, we were not able to go into more detail on the origin of immigrants. As the player's behaviour depends heavily on the cultural context, it would be interesting to analyse this variable in more detail: immigrants come from social backgrounds, cultural and geographical differences and may have different behaviour depending on the country of origin.

## 4.3 Descriptive statistics

### 4.3.1 Descriptive statistics at provincial level

The tables below show the descriptive statistics of the variables. With the data at provincial level, we can say that in Italy the annual per-capita amount gambled has a mean value of €1,206.

```
                        Amount Played
        ----------------------------------------------------------
        Percentiles      Smallest
   1%       704.76         533.31
   5%       834.39         704.76
  10%       891.39         717.68       Obs                    107
  25%      1028.86          738.9       Sum of Wgt.            107

  50%      1188.69                      Mean                1206.1
                           Largest      Std. Dev.          301.4188
  75%         1384        1704.78
  90%      1487.04        1757.85       Variance           90853.31
  95%      1549.29        1780.23       Skewness           2.211608
  99%      1780.23        3092.24       Kurtosis           15.72139
```

In Italy the population, on average, is composed for 16.42% of people belonging to group 1 (0-18 years old), for 23.87% of people within group 2 (19-40 years old), for 30.73% of individuals within group 3 (41-60 years old) and the group 4 (individuals with more than 60 years old) is accounted for 26.07%.

```
                          Group 1
-----------------------------------------------------------
      Percentiles     Smallest
  1%    .1374708      .1339778
  5%    .1420489      .1374708
 10%    .1439656      .1392466     Obs                  107
 25%     .153798      .1413841     Sum of Wgt.          107

 50%    .1633081                   Mean            .1642149
                      Largest      Std. Dev.       .0143566
 75%    .1732896      .1893799
 90%    .1830178      .1965771     Variance        .0002061
 95%    .1871498      .2005693     Skewness        .1913059
 99%    .2005693      .2006607     Kurtosis        2.640075
```

```
                          Group 2
-----------------------------------------------------------
      Percentiles     Smallest
  1%    .2024495      .1979016
  5%    .2103735      .2024495
 10%    .2134263      .2032896     Obs                  107
 25%      .22622      .2051802     Sum of Wgt.          107

 50%    .2361801                   Mean            .2386893
                      Largest      Std. Dev.       .0193024
 75%    .2531686      .2759377
 90%    .2641217      .2784262     Variance        .0003726
 95%    .2703495      .2837314     Skewness        .2283354
 99%    .2837314      .2848746     Kurtosis        2.487322
```

```
                          Group 3
-----------------------------------------------------------
      Percentiles     Smallest
  1%    .2853732      .2795447
  5%    .2898424      .2853732
 10%    .2919723      .2869905     Obs                  107
 25%    .3005938      .2897433     Sum of Wgt.          107

 50%    .3090555                   Mean            .3072707
                      Largest      Std. Dev.       .0096886
 75%    .3135841      .3228105
 90%    .3184598       .323194     Variance        .0000939
 95%    .3216261      .3246734     Skewness       -.3126351
 99%    .3246734       .334495     Kurtosis        3.060575
```

49

```
                          Group 4
        ---------------------------------------------------------
        Percentiles      Smallest
  1%       .2258872        .2211984
  5%        .24791         .2258872
 10%       .2594009        .2404787      Obs                   107
 25%       .2711546        .2409515      Sum of Wgt.           107

 50%       .2883164                      Mean            .2898251
                          Largest        Std. Dev.       .0260752
 75%       .3056838        .3403756
 90%       .3271938        .341827       Variance        .0006799
 95%       .3350239        .3443804      Skewness        .0255423
 99%       .3443804        .3455898      Kurtosis        2.769914
```

The annual average per-capita taxable income in Italy is about €13,468.

```
                    Per-capita Taxable Income
        ---------------------------------------------------------
        Percentiles      Smallest
  1%       8157.14         7605.83
  5%       8757.14         8157.14
 10%       9048.89         8584.36       Obs                   107
 25%      10556.14         8604.66       Sum of Wgt.           107

 50%      14359.31                       Mean             13468.81
                          Largest        Std. Dev.         3010.53
 75%      15906.73        17818.93
 90%       16710.7        18448.69       Variance          9063292
 95%      17614.71        19007.73       Skewness        -.2189815
 99%      19007.73        20250.96       Kurtosis         1.896994
```

The average provincial fraction of immigrant, in Italy, is of 7.85%, with a minimum value of 1.77% and a maximum value of 17.72%.

```
                      Fraction of Immigrant
        ---------------------------------------------------------
        Percentiles      Smallest
  1%         .021          .0177
  5%         .028          .021
 10%        .0322          .0241         Obs                   107
 25%        .0506          .0253         Sum of Wgt.           107

 50%        .0834                        Mean            .0784981
                          Largest        Std. Dev.        .033162
 75%        .1026          .1363
 90%         .119          .1378         Variance        .0010997
 95%        .1263          .1421         Skewness        .0716439
 99%        .1421          .1772         Kurtosis        2.390251
```

In Italy, the population is equally divided into provinces between the two genders (male and female), with an average provincial proportion of male of 48.80%

```
                        Fraction of Male
        -------------------------------------------------------------
             Percentiles       Smallest
        1%        .4793           .4759
        5%        .4799           .4793
       10%         .482           .4794        Obs                 107
       25%        .4845           .4796        Sum of Wgt.         107

       50%         .488                        Mean           .4880224
                                  Largest      Std. Dev.      .0048461
       75%        .4917           .4963
       90%        .4943           .4964        Variance       .0000235
       95%        .4955           .4964        Skewness       .0520474
       99%        .4964           .5028        Kurtosis       2.718823
```

## 4.3.2 Descriptive statistics at municipal level

A more detailed analysis, the municipal one, shows that in Italy the annual per-capita amount gambled has a mean value of €870.10.

```
                        Amount Played
        -------------------------------------------------------------
             Percentiles       Smallest
        1%      10.48517       -.0075287
        5%      82.7876                0
       10%     161.4628                0       Obs               6,878
       25%      358.632                0       Sum of Wgt.       6,878

       50%     640.1783                        Mean           870.1016
                                  Largest      Std. Dev.      1110.366
       75%     1035.603         17251.12
       90%     1648.863         17861.16       Variance        1232912
       95%     2259.729         19478.03       Skewness       9.044176
       99%     4629.028         32979.38       Kurtosis       163.1019
```

The Italian population is composed on average for 15.98% of individuals within group 1 (0-18 years old), for 23.40% of people within group 2 (19-40 years old), for 30.74% of individuals within group 3 (41-60 years old) and the group 4 (individuals with more than 60 years old) is accounted for 29.88%.

```
                            Group 1
        ----------------------------------------------------------------
            Percentiles        Smallest
     1%       .0848656          .0263158
     5%       .1125461           .037037
    10%       .1237237          .0433213        Obs                  6,878
    25%       .1423047          .0445205        Sum of Wgt.          6,878

    50%       .1612432                          Mean              .1597721
                                 Largest        Std. Dev.         .0280734
    75%        .179139          .2540338
    90%       .1936238          .2545205        Variance          .0007881
    95%       .2032298          .2753886        Skewness         -.3332454
    99%        .221131          .2835188        Kurtosis          3.578131


                            Group 2
        ----------------------------------------------------------------
            Percentiles        Smallest
     1%       .1603053          .0454545
     5%       .1878841          .1018519
    10%       .1988725          .1052632        Obs                  6,878
    25%       .2166794          .1111111        Sum of Wgt.          6,878

    50%       .2342975                          Mean              .2340575
                                 Largest        Std. Dev.         .0283906
    75%       .2519802          .3409809
    90%       .2693012          .3445702        Variance           .000806
    95%       .2801724           .350282        Skewness         -.1463953
    99%         .30187          .3841378        Kurtosis          4.062718


                            Group 3
        ----------------------------------------------------------------
            Percentiles        Smallest
     1%       .2558783          .2045929
     5%       .2738908          .2127976
    10%       .2820809          .2222222        Obs                  6,878
    25%        .295174          .2223105        Sum of Wgt.          6,878

    50%       .3077391                          Mean              .3073627
                                 Largest        Std. Dev.         .0200348
    75%       .3202875          .3799127
    90%        .331895          .3824451        Variance          .0004014
    95%       .3389516          .3858859        Skewness         -.1592772
    99%       .3552631          .3917526        Kurtosis          3.768347
```

```
                              Group 4
    ---------------------------------------------------------------
           Percentiles       Smallest
     1%      .1858873        .1192509
     5%       .220608        .1214086
    10%      .2365684        .1406567       Obs                6,878
    25%      .2644416         .141283       Sum of Wgt.        6,878

    50%      .2949756                       Mean            .2988077
                              Largest       Std. Dev.       .0523633
    75%      .3296089         .559499
    90%       .364678         .568327       Variance        .0027419
    95%      .3888591        .6136364       Skewness        .6323124
    99%      .4458874            .625       Kurtosis        4.659696
```

The annual average per-capita taxable income in Italy is about €12,661.

```
                        Per-capita Taxable Income
    ---------------------------------------------------------------
           Percentiles       Smallest
     1%      6487.881        4650.744
     5%      7570.528        4906.886
    10%      8212.702        5364.488       Obs                6,878
    25%      9705.221        5377.812       Sum of Wgt.        6,878

    50%      13143.33                       Mean            12661.77
                              Largest       Std. Dev.       3303.324
    75%      15168.06           28197
    90%      16554.74         29955.8       Variance        1.09e+07
    95%      17532.65        32369.01       Skewness        .1347583
    99%         19831        36252.31       Kurtosis        3.020589
```

The average municipal fraction of immigrant, in Italy, is of 6.69%, with some municipality have zero immigrant. The maximum value of this proportion is 33.10%.

```
                      Fraction of Immigrant
     ---------------------------------------------------------------
          Percentiles       Smallest
     1%      .005814              0
     5%      .0128971             0
    10%      .0187421             0        Obs                  6,878
    25%      .034662              0        Sum of Wgt.          6,878

    50%      .0606982                      Mean              .0669199
                              Largest      Std. Dev.         .0413691
    75%      .0918996         .292011
    90%      .1226198         .3035962     Variance          .0017114
    95%      .1437198         .3080242     Skewness          .9295594
    99%      .186747          .3310179     Kurtosis           4.26642
```

Also at municipal level, in Italy, the population is equally divided into between the two genders (male and female), with an average municipal proportion of male of 49.44%

```
                        Fraction of Male
     ---------------------------------------------------------------
          Percentiles       Smallest
     1%      .4652344         .4357542
     5%      .4748708         .4396285
    10%      .4793661         .4401914     Obs                  6,878
    25%      .4859946         .4438903     Sum of Wgt.          6,878

    50%      .4935038                      Mean              .4944294
                              Largest      Std. Dev.         .0136006
    75%      .501237          .5706215
    90%      .51              .5727273     Variance           .000185
    95%      .5180995         .5775862     Skewness          .9045728
    99%      .5372617         .6162791     Kurtosis           6.64404
```

## 4.4 Results

### 4.4.1. Results at provincial level

The first regression model used as regressor is the per capita taxable income, the fraction of men and age groups. The number of observations is 107, which is the number of provinces in Italy. In this model, the constant has only a geometric and not economic meaning. It tells us how much would be played in a province with zero men, a null per-capita taxable income and composed of individuals belonging to the first age group (that is what legally cannot play).

```
Linear regression                                    Number of obs   =        107
                                                     F(5, 101)       =       6.07
                                                     Prob > F        =     0.0001
                                                     R-squared       =     0.1993
                                                     Root MSE        =     276.31


             |               Robust
 amm_giocat~c |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 uomini_fraz |  -5261.298   4916.575    -1.07   0.287    -15014.46    4491.865
       redpc |   .0182131   .0108221     1.68   0.095     -.003255    .0396811
   eta_2_prop | -1133.119   6097.117    -0.19   0.853    -13228.16    10961.92
   eta_3_prop |  9104.768   5388.007     1.69   0.094    -1583.589    19793.13
   eta_4_prop | -3868.315   3429.327    -1.13   0.262    -10671.18    2934.548
        _cons |  2122.393   4460.914     0.48   0.635    -6726.861    10971.65
```

In this first model, however, none of the variables taken into account is statistically significant at conventional level of 0.05, either because the sample may be too small or because there may be other relevant factors not included in the model.

The first subsequent step was to create a new variable by multiplying the fraction of men with age groups, in order to measure possible interactions between them. All the new variables have a positive coefficient and are not statistically significant.

```
Linear regression                                    Number of obs   =        107
                                                     F(7, 98)        =          .
                                                     Prob > F        =          .
                                                     R-squared       =     0.2035
                                                     Root MSE        =     279.77


             |               Robust
 amm_giocat~c |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 uomini_fraz |  -576609.1   921576.2    -0.63   0.533     -2405447     1252229
       redpc |   .0192827   .0108615     1.78   0.079    -.0022716    .0408371
   eta_2_prop | -437993.1   693289.5    -0.63   0.529     -1813804    937817.3
   eta_3_prop | -355960.8   586250.6    -0.61   0.545     -1519356    807434.5
   eta_4_prop | -221859.1   408641.8    -0.54   0.588     -1032795    589077.3
     fraz_eta1 |        0   (omitted)
     fraz_eta2 |   891887.5   1408672     0.63   0.528     -1903576     3687351
     fraz_eta3 |   746275.8   1193917     0.63   0.533     -1623013     3115565
     fraz_eta4 |   443968.9   828910.3    0.54   0.593     -1200977     2088914
        _cons |   281963.5   453440.5    0.62   0.535     -617874.3     1181801
```

At this point, we can think that the relationship between per-capita taxable income and the amount played is not linear, and a possible relation between these two variables is the quadratic one. In this regard a new variable was introduced obtained by increasing the taxable income to the square.

```
Linear regression                               Number of obs   =        107
                                                F(6, 100)       =       6.25
                                                Prob > F        =     0.0000
                                                R-squared       =     0.2801
                                                Root MSE        =     263.31
```

| amm_giocat~c | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| uomini_fraz | -7886.528 | 4946.502 | -1.59 | 0.114 | -17700.25 | 1927.19 |
| redpc | .4036254 | .1394335 | 2.89 | 0.005 | .1269933 | .6802575 |
| red_pc2 | -.0000135 | 4.95e-06 | -2.74 | 0.007 | -.0000234 | -3.72e-06 |
| eta_2_prop | 4296.526 | 6388.921 | 0.67 | 0.503 | -8378.911 | 16971.96 |
| eta_3_prop | 5618.432 | 5953.348 | 0.94 | 0.348 | -6192.84 | 17429.7 |
| eta_4_prop | -3314.256 | 3357.827 | -0.99 | 0.326 | -9976.089 | 3347.578 |
| _cons | 404.8658 | 3813.82 | 0.11 | 0.916 | -7161.645 | 7971.376 |

The increases of the R-squared from the 20.35% to the 28.01% let us think that this new model is able to explain better how the amount played varies with the variation of the regressor. As for the shake of the parabola we can see that it is a quadratic term with negative coefficient. This means that the amount played increases with the increase of income up to the vertex of the parabola, which corresponds to a value of 14,905 €. As we can see from descriptive statistics the per-capita taxable income has a mean value of 13,468€, so the vertex of the parabola is over the mean value. A possible explanation is that people with a high income tend to play less because they see gambling as an occasional source of entertainment, otherwise individuals with low incomes tend to see gambling as an opportunity to improve their current economic condition. The fraction of men has a negative coefficient, suggesting that in provinces where there are more men less is played, and at a confidence level of 5% in not statistically significant. A possible explanation of this apparently controversial result is given by the fact that our dataset does not contain information about online gambling. As online gambling is composed by numerous skill games, and men tend to play more in skill games, compared to classic games.

```
Linear regression                               Number of obs   =        107
                                                F(8, 98)        =       6.86
                                                Prob > F        =     0.0000
                                                R-squared       =     0.2829
                                                Root MSE        =     265.47
```

| amm_giocato_pc | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| uomini_fraz | -6751.266 | 4931.151 | -1.37 | 0.174 | -16536.97 | 3034.442 |
| redpc | .368913 | .1304292 | 2.83 | 0.006 | .1100805 | .6277454 |
| red_pc2 | -.0000123 | 4.42e-06 | -2.79 | 0.006 | -.0000211 | -3.55e-06 |
| eta_2_prop | 3453.809 | 8786.301 | 0.39 | 0.695 | -13982.32 | 20889.94 |
| eta_3_prop | 5832.078 | 6892.372 | 0.85 | 0.400 | -7845.61 | 19509.77 |
| eta_4_prop | -3608.883 | 4665.35 | -0.77 | 0.441 | -12867.12 | 5649.351 |
| dummy_macroarea1 | 47.73946 | 142.2683 | 0.34 | 0.738 | -234.5874 | 330.0664 |
| dummy_macroarea3 | 6.953602 | 191.0021 | 0.04 | 0.971 | -372.0838 | 385.991 |
| _cons | 293.9995 | 4140.322 | 0.07 | 0.944 | -7922.334 | 8510.333 |

To analyse how the geographical context influences the amount played, three new binary variables, dummy, were created for each macro area: north, centre, south and islands. Dummies suggest that the north is the macro area where people play least, although they are not statistically significant.

```
Linear regression                               Number of obs   =        107
                                                F(9, 97)        =       5.34
                                                Prob > F        =     0.0000
                                                R-squared       =     0.3699
                                                Root MSE        =     250.11

---------------------------------------------------------------------------
                  |              Robust
   amm_giocato_pc |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------+--------------------------------------------------------
      uomini_fraz |  -7691.044   4938.005   -1.56   0.123    -17491.62    2109.53
            redpc |   .2903331    .112109    2.59   0.011     .0678277    .5128385
           red_pc2 |  -.0000105   3.85e-06   -2.74   0.007    -.0000182   -2.90e-06
     fraz_stranieri |  4924.155   2963.096    1.66   0.100    -956.7712   10805.08
        eta_2_prop |   878.8986   9421.553    0.09   0.926    -17820.28   19578.07
        eta_3_prop |   7515.023   6205.724    1.21   0.229    -4801.622   19831.67
        eta_4_prop |  -3554.479   4262.825   -0.83   0.406    -12015.01    4906.05
   dummy_macroarea1 |  23.96195   116.6974    0.21   0.838    -207.6501    255.574
   dummy_macroarea3 |  188.8197   270.0559    0.70   0.486    -347.1664   724.8058
             _cons |  1108.239    4275.14    0.26   0.796    -7376.731   9593.209
```

By adding another regressor, the immigrant fraction, we see that the model explains better the phenomenon, reaching an R-squared of 36.99%, a very high value since our dataset contains information on aggregated data. The vertex of the parabola has moved further to the left, with a value of € 13,774 (still over the mean value of € 13,468). The positive coefficient of the immigrant fraction indicates that the amount played increases with the relative proportion of immigrants at the provincial level. The proportion of immigrants is statistically significant, as is the per capita taxable income. Amount gambled increases by €49.24 if proportion of immigrant increases by one percentage point (about 4% of the mean value of the amount played).

```
Linear regression                                    Number of obs   =        107
                                                     F(25, 80)       =          .
                                                     Prob > F        =          .
                                                     R-squared       =     0.5170
                                                     Root MSE        =     241.12

-----------------------------------------------------------------------------------
                |               Robust
   amm_giocato_pc |    Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
----------------+------------------------------------------------------------------
    uomini_fraz |  -8187.528   5441.932    -1.50   0.136    -19017.32    2642.262
          redpc |   .0058584   .1127797     0.05   0.959    -.2185804    .2302972
        red_pc2 |  -1.88e-06   3.69e-06    -0.51   0.611    -9.22e-06    5.46e-06
  fraz_stranieri |   4048.381   4139.55      0.98   0.331    -4189.586    12286.35
      eta_2_prop |    1013.84   10284.22     0.10   0.922    -19452.42    21480.1
      eta_3_prop |   11842.54   7388.872     1.60   0.113    -2861.782    26546.87
      eta_4_prop |  -3528.469   4729.865    -0.75   0.458     -12941.2    5884.262
  dummy_regione2 |  -502.6247   168.3819    -2.99   0.004    -837.7155    -167.534
  dummy_regione3 |  -586.9335    166.483    -3.53   0.001    -918.2453   -255.6217
  dummy_regione4 |  -332.7863   183.3851    -1.81   0.073    -697.7344    32.16173
  dummy_regione5 |  -275.7356    279.127    -0.99   0.326    -831.2159    279.7448
  dummy_regione6 |  -248.2633   223.8105    -1.11   0.271    -693.6605    197.1338
  dummy_regione7 |  -425.9527   174.7606    -2.44   0.017    -773.7374   -78.16802
  dummy_regione8 |  -211.5848   268.3855    -0.79   0.433    -745.6889    322.5193
  dummy_regione9 |  -172.7451   237.0223    -0.73   0.468    -644.4345    298.9444
 dummy_regione10 |  -187.7854   157.4044    -1.19   0.236    -501.0301    125.4592
 dummy_regione11 |  -160.3997   185.1849    -0.87   0.389    -528.9293    208.1299
 dummy_regione12 |  -327.0907   214.8998    -1.52   0.132    -754.7549    100.5735
 dummy_regione13 |  -341.3108   167.3529    -2.04   0.045    -674.3537   -8.267821
 dummy_regione14 |  -543.0514   211.6405    -2.57   0.012    -964.2294   -121.8734
 dummy_regione15 |  -610.5872   154.9657    -3.94   0.000    -918.9787   -302.1957
 dummy_regione16 |  -207.3707   184.5845    -1.12   0.265    -574.7055     159.964
 dummy_regione17 |   -283.416   272.2799    -1.04   0.301    -825.2703    258.4383
 dummy_regione18 |  -386.7291   193.9048    -1.99   0.050     -772.612   -.8462058
 dummy_regione19 |  -698.1682   197.7058    -3.53   0.001    -1091.615   -304.7211
 dummy_regione20 |  -316.0845   243.8073    -1.30   0.199    -801.2764    169.1074
           _cons |   2630.171   5776.638     0.46   0.650    -8865.705    14126.05
```

To capture the omitted factors of territorial differences, dummy variables were introduced for each region. This approach allows to capture the specific effect of each region on the dependent variable, checking for local variables that could influence the phenomenon under consideration. The inclusion of regional dummy variables allows to capture unobservable economic, social and infrastructural differences that may vary between regions. The coefficients of the regional dummy variables represent the average difference in the dependent variable compared to the reference category, which in this case is Abruzzo. Therefore, a positive coefficient for a given region has a higher value of the dependent variable than Abruzzo, keeping other things constant.

The analysis shows that Basilicata, Calabria, Lazio, Sardinia, Sicily and Valle d'Aosta have a negative coefficient statistically significant compared to Abruzzo, indicating an average amount played lower. For the other regions, the coefficients of the regional dummies are still negative but are not statically significant.

Dummy variables capture a large share of variability, even if they do not significantly improve the understanding of the model. Their excessive impact could obscure more important elements.

## 4.4.2. Results at municipal level

Further step, which allow us to have a more detailed and more precise analysis, was to run this study at a more disaggregated level, namely at municipal level. In general, the results obtained at provincial level are confirmed also at municipal level. Although higher precision of the data and higher numerosity of the sample, allow to obtain much more precise results.

Compared to the provincial level analysis, the coefficients of the regional level one is estimated in a more precise way, in fact municipal robust standard errors are lower. The signs of the coefficients do not change between these two analyses, except for group 2 age. However, the values of coefficients remain almost the same.

```
Linear regression                               Number of obs   =      6,878
                                                F(5, 6872)      =      80.43
                                                Prob > F        =     0.0000
                                                R-squared       =     0.0460
                                                Root MSE        =     1084.9


               |                 Robust
  amm_giocat~c |      Coef.    Std. Err.      t     P>|t|     [95% Conf. Interval]
---------------+----------------------------------------------------------------
   uomini_fraz |  -8498.328     811.727   -10.47   0.000    -10089.56   -6907.092
         redpc |   .0488074    .0055283     8.83   0.000     .0379702    .0596446
     eta_2_prop |   6822.907    1137.613     6.00   0.000     4592.834     9052.98
     eta_3_prop |   3337.482    961.7985     3.47   0.001     1452.059    5222.904
     eta_4_prop |  -248.3493    594.6635    -0.42   0.676    -1414.074    917.3751
          _cons |   1905.376    766.4782     2.49   0.013     402.8414     3407.91
```

The fraction of men has a negative and statistically significant coefficient, indicating that with increasing proportion of men there is an average decrease in the amount played, confirming the provincial result previously found.

Both the second and third age groups have positive coefficients that are statistically significant, an increase in the proportion of these two groups leads to an increase in the dependent variable. Income has a positive coefficient and statistically significant, unlike the provincial study.

```
Linear regression                            Number of obs   =     6,878
                                             F(6, 6871)      =     69.90
                                             Prob > F        =    0.0000
                                             R-squared       =    0.0472
                                             Root MSE        =    1084.3

-----------------------------------------------------------------------------------
                 |              Robust
  amm_giocat~c   |    Coef.    Std. Err.     t     P>|t|    [95% Conf. Interval]
-----------------+-----------------------------------------------------------------
   uomini_fraz   |  -8765.68   814.3174   -10.76   0.000   -10361.99   -7169.366
         redpc   |   .117328   .0309986     3.78   0.000    .0565611    .1780949
       red_pc2   | -2.59e-06   1.21e-06    -2.13   0.033   -4.97e-06   -2.11e-07
     eta_2_prop  |  7147.997   1159.951     6.16   0.000    4874.133    9421.86
     eta_3_prop  |  3127.491    974.883     3.21   0.001    1216.418    5038.563
     eta_4_prop  | -226.3256    593.133    -0.38   0.703    -1389.05    936.3986
         _cons   |  1595.184   780.8218     2.04   0.041    64.53137    3125.836
-----------------------------------------------------------------------------------
```

As we did for the provincial data, we also enlarge the model by insert a parabola. The substantial difference respect to the previous analysis regards the position of the vertex of the parabola. This time the summit is well above the average (12661 €) and even over 90% of the distribution, with a value of 22657 €.

Let's now insert the immigrant variable to uncertain whether previous results are robust or not. In the provincial study, the amount played was positively influenced by a higher proportion of immigrants, and this finding is further confirmed by a larger sample.

```
Linear regression                            Number of obs   =     6,878
                                             F(7, 6870)      =     64.75
                                             Prob > F        =    0.0000
                                             R-squared       =    0.0534
                                             Root MSE        =    1080.8

-----------------------------------------------------------------------------------
                 |              Robust
 amm_giocato_pc  |    Coef.    Std. Err.     t     P>|t|    [95% Conf. Interval]
-----------------+-----------------------------------------------------------------
   uomini_fraz   | -9567.734   816.0186   -11.72   0.000   -11167.38   -7968.085
         redpc   |  .0670294   .0314397     2.13   0.033    .0053979    .1286609
       red_pc2   | -1.22e-06   1.23e-06    -0.99   0.321   -3.62e-06    1.19e-06
 fraz_stranieri  |  2423.916   352.3524     6.88   0.000    1733.196    3114.636
     eta_2_prop  |  6975.916   1155.239     6.04   0.000     4711.29    9240.543
     eta_3_prop  |  4232.965   985.8296     4.29   0.000    2300.434    6165.496
     eta_4_prop  |   149.126    597.868     0.25   0.803    -1022.88    1321.132
          cons   |  1819.541   778.3101     2.34   0.019    293.8125     3345.27
-----------------------------------------------------------------------------------
```

The fraction of immigrants has a positive coefficient and is statistically significant, confirming what was previously found. A typical value of the immigrant fraction is between 0 and 20%, and the result highlight that the amount played increase by 24.23€ if the fraction of immigrant increases by one percentage point. The vertex of the parabola has moved further to the right from the average, reaching a value of 27567 €, even if now the coefficient of the square of income, while remaining negative, has lost its statistical significance.

```
Linear regression                                    Number of obs    =      6,878
                                                     F(25, 6852)      =      27.51
                                                     Prob > F         =     0.0000
                                                     R-squared        =     0.0699
                                                     Root MSE         =     1072.8

-----------------------------------------------------------------------------------
                 |                Robust
  amm_giocato_pc |      Coef.    Std. Err.       t     P>|t|     [95% Conf. Interval]
-----------------+-----------------------------------------------------------------
      uomini_fraz |   -9702.707    914.7855    -10.61   0.000    -11495.97    -7909.444
            redpc |    .0355773    .0099459      3.58   0.000     .0160802     .0550745
    fraz_stranieri |   2654.226    423.1615      6.27   0.000     1824.698     3483.754
        eta_2_prop |   5200.993     1433.78      3.63   0.000     2390.338     8011.648
        eta_3_prop |   3060.955    1036.685      2.95   0.003      1028.73      5093.18
        eta_4_prop |   -331.4034    685.6908     -0.48   0.629     -1675.57     1012.763
   dummy_regione2 |   -381.0474    94.39333     -4.04   0.000    -566.0876    -196.0072
   dummy_regione3 |   -395.8499    96.60801     -4.10   0.000    -585.2315    -206.4682
   dummy_regione4 |   -114.9997    98.30798     -1.17   0.242    -307.7139     77.71442
   dummy_regione5 |   -332.9436    115.5163     -2.88   0.004    -559.3914    -106.4959
   dummy_regione6 |   -303.2463    121.9406     -2.49   0.013    -542.2877    -64.20481
   dummy_regione7 |   -329.6943    94.06332     -3.51   0.000    -514.0876     -145.301
   dummy_regione8 |   -339.7213    112.8826     -3.01   0.003    -561.0063    -118.4363
   dummy_regione9 |   -107.9765     114.193     -0.95   0.344    -331.8301     115.8772
  dummy_regione10 |    -305.894    103.4167     -2.96   0.003    -508.6228    -103.1652
  dummy_regione11 |    -204.062    99.67841     -2.05   0.041    -399.4626    -8.661387
  dummy_regione12 |   -430.8439     113.609     -3.79   0.000    -653.5528    -208.1351
  dummy_regione13 |   -210.2088    94.65618     -2.22   0.026    -395.7643    -24.65336
  dummy_regione14 |   -146.6304    91.03647     -1.61   0.107    -325.0901     31.82935
  dummy_regione15 |   -388.2967    95.44395     -4.07   0.000    -575.3964    -201.1969
  dummy_regione16 |    -391.294     106.225     -3.68   0.000     -599.528      -183.06
  dummy_regione17 |   -651.935     114.4059     -5.70   0.000     -876.206     -427.664
  dummy_regione18 |    -399.413    102.6358     -3.89   0.000    -600.6109    -198.2151
  dummy_regione19 |   -729.7359    165.2325     -4.42   0.000    -1053.643     -405.829
  dummy_regione20 |   -323.8252    110.8301     -2.92   0.003    -541.0866    -106.5638
            _cons |   3250.675    816.5936      3.98   0.000     1649.898     4851.452
```

We simplify the model by the omission of the non-linearity in in the per-capita taxable income, since now the vertex of the parabola is over the 90% of distribution, affecting a very small fraction of population. In this model, the amount played always increase linearly with the per-capita income. As well as the provincial study, to understand the impact of territorial differences, dummy variables were introduced for each region. Again, Abruzzo was chosen as the reference region. The analysis shows that all regions have a statistically significant negative coefficient, apart from Campania, Lombardy and Sardinia which are not statistically significant. This means that there are still some omitted factors at regional level that we do not consider in our model. On average, in Abruzzo the value of the dependent variable is higher than in other regions.

An increase in the fraction of immigrant of one percentage point leads to an increase in the amount gambled of 26.54€ (about 3% of the amount played mean), and it is statistically significant.

The amount played increases by 52.00€ if the proportion of group 2 (individuals between 18 and 40 years old) increases of one percentage point and increases by 30.60€ if age group 3 increases of one percentage point. The ancient group, otherwise, seems to play less. In fact,

amount played decreases by 3.31€ if the proportion of this group increases of one percentage point.

## 4.5 A comparison with previous results

During the last years, European governments have progressively legalised the gambling sector to increase taxes revenues. The impact of taxes revenues on government balance is positive, an increase of 6.4% of fiscal revenues for each percentage point of increment in gambling. However, the consumption of gambling products may lead to a decrease in other expenditure, thus decreasing the net effect.[29]

In Italy, the literature on immigrant gambling behaviour is very limited, and most of the previous studies have been on groups of adolescents. However, even in these cases immigrants have a higher propensity to play than other subjects. Immigrant adolescents show an high level of risk related to problematic gambling behaviour respect to the Italian native one. Sensation seeking amplify the risk associated to immigrant status[30].

From previous literature, we can also see that people with high level of income are more attract by traditional games (Lotto and Bingo). Traditional games are more popular among female than male[31].

Immigrant status is significantly associated with greater problem severity and, more specifically, rates of adolescent at-risk/ problem gambling were twice as high among first-generation immigrants than non-immigrant students. This result confirms previous findings and extends research in the gambling studies field by demonstrating that foreign born individuals (first-generation) may be more likely to experience gambling problems than native born children of foreign-born parents (second-generation). Although causation cannot be determined from these findings, the results suggest that immigrant status may pose significantly greater risk to vulnerable youth, with fewer safeguards to prevent them gambling excessively and developing problems. In contrast to findings for the first-immigrant generation, second-generation immigration was not significantly related to problem gambling severity. Thus, results indicated that the odds of being an at-risk/problem gambler were higher among first-generation immigrants than among non-immigrants[32].

# Chapter 5 – Conclusion remarks

In conclusion, this study analyses the gambling industry in Italy with a geographical perspective, piecing together ADM data and Istat socio-economic data. Results are, on the one hand, in line with the received literature. In traditional games, the presence of female on territory affects positively the amount gambled, as already found by previous literature. Likewise, the favourable immigrant behaviours with respect to gambling is confirmed, since their presence led to an increase of the amount gambled. On the other hand, respect to previous literature, we are now able to quantify the effect of the presence of both women and immigrants. This study is, to the best of our knowledge, the first one to quantify the impact of these variables on the amount gambled. We also found that the amount gambled strongly depends on the per-capita taxable income, an increase of this variable leads to an increase of the amount played. The different proportion of age groups play also a crucial role in determine the amount played. Thus, an increase in the proportion of the second and third groups determine an increase in the amount wagered, while an increase in the proportion of the ancient group is translate in a decrease of the amount played.

A further step to refine the result of the present thesis is to take full advantage of municipal level data by introducing data on educational level. Furthermore, a more detailed data on age groups can lead to more precise results.. Another limitation of this study concerns the cultural variety within the immigrant group, which is not explored in depth. Treating immigrants as a homogeneous group can be a significant limitation, as it ignores the possible differences in gambling behaviours and perceptions between different cultures of origin. Indeed, cultures vary widely in terms of the accessibility and prevalence of gambling, in some cultures gambling is a common and socially accepted practice, while in others it may be stigmatised or even banned for ethical or religious reasons. To overcome this limitation, future research could focus on the analysis of cultural subgroups, dividing individuals by geographical area of origin or religious beliefs. This would allow us to see whether certain specific cultures are more vulnerable to problematic gambling behaviour than others.

This study has also a limitation for what concern its time span. In fact, we analyse only one observation over time (2019) due to the scarcity of data before or after this date. This limits the understanding of the evolution of the phenomenon and makes it impossible to observe any temporal variations. The study is vulnerable to external factors or particular events that may have affected the results at that specific time, with more observations over time, these effects can be better controlled and balanced.

Most importantly, more detailed results can be obtained only with individual-level data which are, at present, unavailable.

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