# CORRUPTION, INEQUALITY AND POVERTY

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**Abstract.** The UN 2030 Agenda for Sustainable Development identifies the reduction of corruption, inequality, and poverty as key goals. These three phenomena are, in fact, closely interconnected, and action in one area can significantly impact outcomes in the others. Recent developments in the measurement of corruption have led to the identification of a series of risk indicators based on the relationship between corruption and various cultural, legal, economic, social, and political-institutional factors that may influence its spread and persistence, including inequality and poverty. These factors are considered primarily for their social implications: greater economic inequality is associated with a higher likelihood of criminal behavior; moreover, when individuals perceive unfair treatment, their inclination to seek shortcuts to achieve economic well-being may increase.

## 1. Corruption, inequality, poverty and Sustainable Development Goals

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015[1] "*provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. The 17 SDGs with 169 associated targets, which are integrated and indivisible, stimulate action over the next years in areas of critical importance for humanity and the planet. SDGs recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth, all while tackling climate change and working to preserve our oceans and forests*"[2].

The UN 2030 Agenda highlights that sustainable development cannot be achieved without peace and security and that these, in turn, will be at risk without sustainable development. In particular, Goal 16 aims to: "*Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and*

[1] https://sdgs.un.org/2030agenda.
[2] https://sdgs.un.org/goals.

*build effective, accountable, and inclusive institutions at all levels"*. Among the main factors contributing to violence, insecurity, and injustice, the Agenda also identifies corruption, which is the focus of a specific target: "*16.5 Substantially reduce corruption and bribery in all their forms*".

However, the Agenda also identifies Goal 1 "*End poverty in all its forms everywhere*" and Goal 10 "*Reduce inequality within and among countries*" as important objectives.

Regarding these three phenomena, there exists an extremely vast and diverse body of theoretical, empirical, and interdisciplinary literature, ranging from economics to statistics, and from philosophy to sociology (see, for example, the recent contribution by Chandler (2023) on inequality, which synthesizes previous research on the subject).

The SDGs are integrated, that is, they recognize that action in one area affects outcomes in others. Inequality is not just about money; it's about access to opportunity (for example, education and health). Poverty is not just low income; it's about multidimensional deprivation. And corruption isn't just about stealing, it erodes trust in others and in public institutions. It's a vicious cycle: these three problems feed into one another. Corruption leads to more inequality, inequality leads to more poverty, and poverty makes corruption harder to stop. Corruption reduces efficiency and disproportionately benefits elites. Inequality increases the perception of unfairness, encourages clientelism, and concentrates power. Poverty makes people more vulnerable to corruption and blocks social mobility.

## 2. Corruption risk indicators

Today, there is widespread consensus that corruption is one of the main obstacles to economic, political, and social development. It is also a factor that exacerbates poverty and inequality, and distorts the implementation of public policies. Corruption can undermine citizens' trust in institutions, lower the quality of life, and diminish overall well-being.

However, in order to prevent and combat corruption, it is essential to develop a deep understanding of this latent phenomenon, which is notoriously difficult to measure. Achieving any objective necessarily requires the most accurate possible understanding of the phenomenon in question. This calls for a multidisciplinary approach to examine the main methodologies and recent developments in the field of corruption measurement.

At the international level, however, there is a lack of structured data on corruption that goes beyond the measurement of so-called "perceptions" or ad hoc scientific studies, whose content and results are often difficult to generalize (Gnaldi and Ponti,

2018; Picci, 2024). Corruption is a hidden phenomenon, often compared to an iceberg: we only see the tip, while the submerged part is much larger than what appears on the surface. To improve understanding of the phenomenon, the United Nations itself has made significant efforts to develop a statistical framework to measure corruption and guide countries in the implementation of national information systems on the issue (UNODC, 2023).

A significant step forward in understanding the phenomenon had already been taken by the Italian National Anti-Corruption Authority (ANAC), which provides the public with seventy indicators for measuring corruption risk across different territories. These are organized into three dashboards: public procurement, municipalities, and context[3].

### *2.1. Procurement and municipal risk indicators*

One of the key dimensions concerns public procurement, which includes seventeen risk indicators providing information related to the purchasing activities of administrations located in the Italian provinces (Sbicca, 2024b). An example of a corruption risk indicator in public procurement is the use of discretionary procedures or tenders with very few bidders, as well as delays and cost overruns. The literature highlights that low competition in tenders, combined with a high degree of discretion, is typically a signal of corruption risk.

It is important to emphasize the central role of risk indicators as tools for preventing and combating irregularities in public procurement markets, including fraud, corruption, conflicts of interest, and collusive practices. The increasing availability of large datasets has also drawn growing attention to the potential of developing advanced algorithms, using big data analytics and artificial intelligence alongside traditional statistical analyses. In particular, machine learning can help identify more targeted red flags, both at the level of individual transactions and in the overall purchasing behavior of a specific administration or a group of administrations within a given territorial area (Sbicca, 2024a).

The five municipal indicators are calculated at the level of individual administrations, in this case, the 745 Italian municipalities with a population equal to or greater than 15,000 inhabitants. These indicators were derived from a statistical analysis of the relationships between variables potentially related to corruption (including per capita taxable income, which reflects the level of socioeconomic well-being) and corruption episodes that occurred at the level of individual administrations.

[3] https://www.anticorruzione.it/il-progetto.

### *2.2. Context indicators*

A section of ANAC's corruption risk indicator system, consisting of forty-eight "context indicators," draws clear intellectual inspiration from *The Report on Equitable and Sustainable Well-being (Bes)* and the *SDGs Report: Statistical Information for the 2030 Agenda in Italy* (Istat, 2024a, 2024b).

ANAC's context indicators share with the Bes and SDGs reports a well-established methodology that has been used for years to measure complex, multidimensional phenomena - such as well-being and corruption - at both national and international levels. This methodology specifically involves organizing indicators into domains (or pillars) and using composite indicators to simplify the interpretation of complexity arising from multiple dimensions by reducing it to a single summary measure.

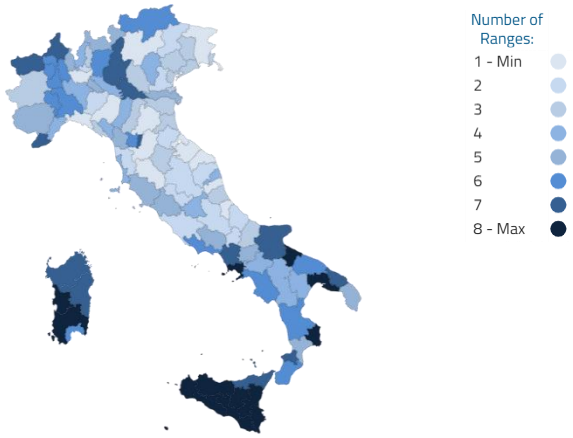
In particular, the context indicators support corruption risk analysis across territories by considering 18 provincial-level indicators grouped into four thematic domains: education, economy, crime, and social capital. The selection of these domains and their associated indicators was guided by the relationships between corruption and a range of cultural, legal, economic, social, and political-institutional factors that can influence its spread and persistence, as identified primarily in the economic literature.

For each domain, a composite index is calculated. These four thematic indices are then further synthesized into an additional "composite of composites" index. A composite index is a one-dimensional measure of a multidimensional phenomenon that cannot be directly observed, making it particularly useful for analyzing the complexity of latent factors that shape the context in which corruption occurs, a phenomenon that is inherently elusive and not easily reducible to direct, unidirectional cause-effect relationships.

The methodology used to construct these composite indices is called AMPI (Mazziotta and Pareto, 2024; 2025), which has been implemented and adopted by Istat for the Bes report, and more recently for the construction of the Municipal Fragility Index and the Educational Poverty Index. The territorial level considered by context indicators is the province, with data sourced from various institutions (Istat, Invalsi, Ministry of the Interior, Ministry of Economy, Agcom, Avis).

Below are maps illustrating the composite indicators for each pillar, summarising the corruption risk at provincial level. The indicators can range from 70 to 130, and in the base year 2014 are worth 100 for Italy as a whole. In the maps, 8 equal ranges were used, and higher levels are associated with a higher corruption risk, as indicated by the colour scale.

**Figure 1** - *Composite indice for Education.*




*Source: ANAC - elaborations based on Istat data*

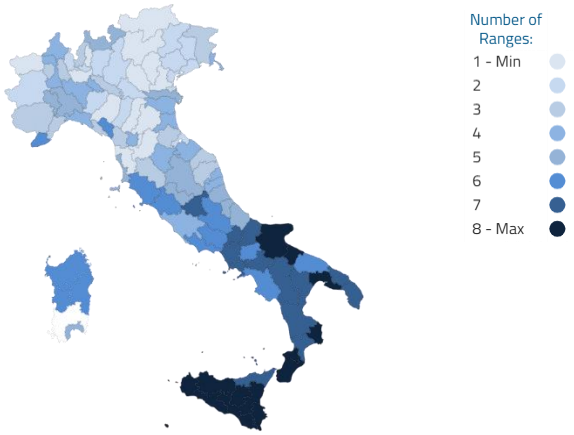
The Education pillar includes three indicators:

1. High School Graduates Indicator: number of registered people ranging from 25-64 years old who have completed at least upper secondary school per 100 people of the same age group;
2. University Graduates Indicator: number of 30-34 years old with a university degree per 100 persons aged 30-34 registered in the population register;
3. NEET Indicator: number of registered 15–29 years old not engaged in employment, education or training per 100 registered 15–29 years old.

Higher levels of corruption are associated with lower levels of education in the population. One possible explanation is that individuals with higher levels of education possess skills and knowledge that make them more aware of the value of civil liberties and less tolerant of corruption. For the same reasons, higher corruption levels are generally associated with lower levels of human capital. Moreover, in contexts where corruption is higher, the emigration of skilled individuals tends to be significantly greater, leading to brain drain issues.

In the map, the lowest values of the composite education indicator are recorded in the provinces of Bologna (80.2), Trento (84.9), and Ancona (85.1), representing the areas with the highest levels of human capital and the lowest corruption risk. Conversely, the highest values - and therefore the lowest levels of human capital and the highest corruption risk - are found in Palermo (121.7), Sud Sardegna (120.2), and Catania (118.7).

**Figure 2** - *Composite indice for Economy*.




*Source: ANAC - elaborations based on Istat and Agcom data*

The Economy pillar includes six indicators:

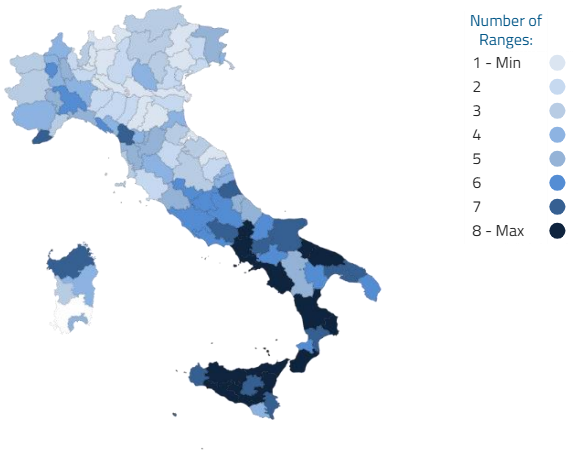
4. Income Indicator: per capita gross income;
5. Employment Indicator: number of labour force participants per 100 registrations in the population register of the age group 20-64;
6. Entrepreneurship Rate Indicator: number of enterprises per 1,000 inhabitants;
7. Attractiveness index: ratio of incoming flows of individuals in employment or study to the total number of active individuals (incoming, outgoing, and resident) in the province of residence;
8. Broadband diffusion Indicator: percentage of buildings reached by broadband;
9. Differentiated waste collection Indicator: percentage of municipal waste separately collected for recycling.

A high level of income and a fair distribution of wealth, employment, the ability to attract both domestic and foreign investment, and support for the creation and growth of entrepreneurial activities - as well as strong market competition and economic freedom - are all factors associated with lower levels of corruption. Furthermore, higher levels of Internet usage are linked to lower corruption levels, as the web facilitates the spread of information and serves as a tool for monitoring the exercise of public power. Finally, efficient management of urban waste - a sector often vulnerable to corruption due to potential capture by economic operators and organized crime - is also associated with lower levels of corruption.

The lowest values of the composite economy indicator are found in the provinces of Milan (79.5), Bologna (84.2), and Florence (85.8), identifying them as areas with the most favorable economic conditions and the lowest corruption risk. At the

opposite end, the highest values - indicating the least favorable economic contexts - are observed in Crotone (119.2), Agrigento (118.6), and Enna (118.3).

***Figure 3*** *- Composite indice for Social Capital.*




*Source: ANAC - elaborations based on Invalsi, Avis and Ministry of the Interior data*

The Social Capital pillar includes five indicators:

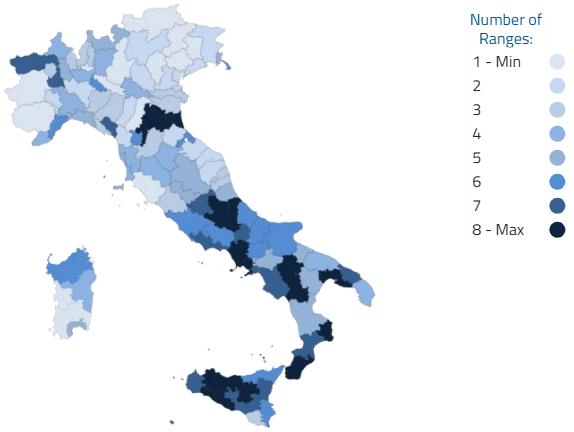
10. Invalsi Segregation Indicator: "Economic, Social and Cultural Status" (ESCS) gap indicator (provides a measure of the difference between the average socio-economic-cultural status of the families of students in a class, compared to the average ESCS of the school);
11. Invalsi Mathematics Test Cheating Indicator: likelihood that the class in which the student is placed has engaged in opportunistic behaviour when completing the Invalsi tests;
12. Invalsi Mathematics Test Between-Class Variability Indicator: percentage of schools in which the variance in Invalsi mathematics test scores between classes is higher than the national figure;
13. Blood Donation Indicator: percentage ratio between the number of donations and the resident population;
14. Women's Participation in Politics Indicator: percentage of elected women out of the total number of mayors.

Community cohesion - along with reliability, loyalty, and mutual trust among social actors - forms the foundation for the effective development of economic transactions and the relationship between citizens and institutions. Greater trust in institutions and the political system (vertical trust), and in interpersonal social relations (horizontal trust), is associated with lower levels of corruption.

There is strong empirical evidence, based on social learning models, showing that pro-social behavior at the individual level is significantly influenced by the conduct of fellow citizens and political leaders. Conversely, corrupt politicians generate (and legitimize) corrupt citizens. There is also a risk that adults involved in corruption internalize these antisocial behavioral norms and pass them on to their children - either directly or through peer interactions - leading the younger generation to adopt dishonest behavior, such as cheating.

The lowest values of the composite social capital indicator are recorded in Lecco (91.5), Sondrio (92.3) and Modena (92.1), highlighting areas with strong social cohesion and civic engagement, typically associated with lower corruption risk. Conversely, the highest values are found in Reggio Calabria (116.4), Isernia (116.2), and Caserta (115.6), indicating weaker social capital and greater potential vulnerability to corruption.

**Figure 4** - *Composite indice for Crime.*




*Source: ANAC - elaborations based on Istat data*

The Crime pillar includes four indicators:

15. Corruption, Extortion, and Embezzlement Crimes Indicator: ratio between the criminal proceedings initiated because of crimes of corruption, extortion and embezzlement, and the resident population;
16. Crimes Against Public Order and Environmental Crimes Indicator: ratio of criminal proceedings initiated because of crimes against public order and the environment to the resident population;

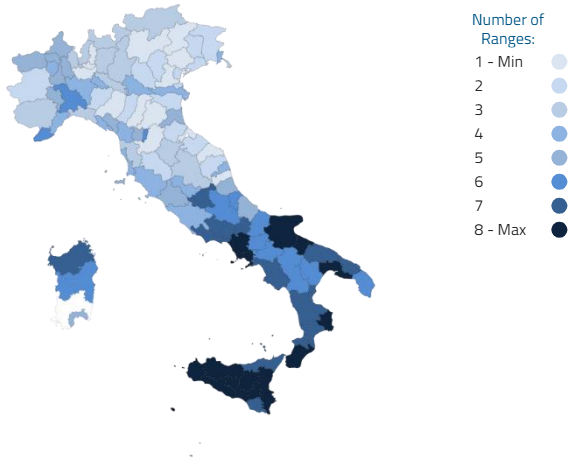
17. Crimes Against Property and the Public Economy Indicator: ratio of criminal proceedings initiated for crimes against the public heritage and economy to the resident population;
18. Other Crimes Against the Public Administration Indicator: ratio between criminal proceedings initiated for other crimes against the Public Administration and the resident population.

The spread of corruption can be significantly influenced by overall crime levels, the effectiveness of the judicial system in combating them, and the degree of protection offered to those harmed by corrupt activities. The higher the number of criminal proceedings initiated for these offenses, the higher the associated corruption risk.

The provinces with the lowest values of the composite criminality indicator are Vicenza (93.9), Monza and Brianza (94.7), and Sud Sardegna (94.8), which show lower levels of criminal activity and reduced corruption risk. On the contrary, the highest values - signaling more critical situations - are recorded in Pescara (122.6), Enna (122.5), and Reggio Calabria (119.8).

The map that follow depict the "composite of composites" index.

**Figure 5** - *Composite of Composites index.*

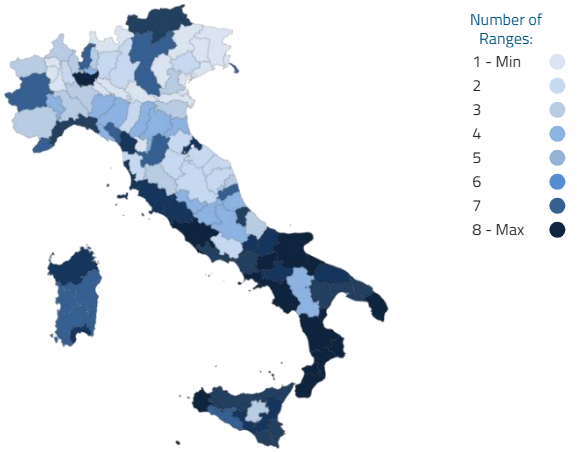



*Source: ANAC - elaborations based on Istat, Agcom, Invalsi, Avis and Ministry of the Interior data*

The overall composite indicator, which summarizes all the dimensions considered, records its lowest values in the provinces of Milan (90.6), Bologna (91.9), and Modena (92.1). These areas represent the most virtuous provinces in terms of socio-economic and institutional performance and therefore show a lower corruption risk. Conversely, the highest values - and thus the greatest overall

vulnerability and higher corruption risk - are observed in Enna (115.8), Crotone (115.1), and Palermo (114.6).
The map that follow depict one of the 25 additional simple indicators not included in the thematic domains: the Gini Inequality Index.

**Figure 6** - *Gini index.*




*Source: ANAC - elaborations based on Ministry of Economy and Finance data*

The Gini Inequality Index is of particular interest due to the complex socio-economic implications arising from the phenomenon it measures, namely, economic inequality. The reasons for considering this indicator are primarily related to the social sphere. Greater economic inequality is associated with a higher likelihood of criminal behavior; moreover, when individuals perceive that they are being treated unfairly, their tendency to seek shortcuts to achieve economic well-being may increase. As previously mentioned, there exists a dangerous vicious cycle. Only the rich or well-connected have access to opportunities and can use their wealth to influence laws. The result is fewer investments in healthcare, education, and infrastructure. The poorest segments of the population suffer the most, as they depend more heavily on public services. Citizens may lose trust in institutions and come to believe that corruption is the only path to success. For these reasons - as already noted - inequality is listed among the factors identified by the UN 2030 Agenda as contributing to violence, insecurity, and injustice (preceding corruption, government inefficiency, and the illicit flows of arms and money).

In the map, the lowest values of the Gini Index (2018) - expressed as actual Gini coefficients and not normalized through the composite indicator methodology, since this index does not belong to any pillar - are observed in Belluno (36), Pordenone

(37), and Lodi (37). Conversely, the highest levels of inequality are recorded in Milan (48), Crotone (47), and Reggio Calabria (46), where income disparities are more pronounced, suggesting higher socio-economic polarization and greater potential vulnerability to corruption.

### *2.3. The importance of social capital.*

Regarding the four domains, it is interesting to note that two of the analyzed dimensions - human capital (here expressed in terms of education) and social capital - are considered by modern economic literature as key determinants of both economic growth and social well-being. Specifically, social capital can be understood through concepts such as community cohesion, reliability, loyalty, and mutual trust among social actors. These factors form the foundation for the effective development of economic transactions and relationships between citizens and institutions (Banfield, 1958; Putnam, 1993). Greater trust in institutions, the political system, and interpersonal relationships is consistently associated with lower levels of corruption.

The five social capital indicators can be described as reflecting behaviors such as opportunistic attitudes in school tests, socio-economic segregation in schools, and, conversely, altruism and gender equality. Notably, the last two indicators are both included in the Bes framework (respectively, in the social relations domain and cross-cutting across other domains), while one is a specific target of the UN 2030 Agenda under Goal 5 "*Achieve gender equality and empower all women and girls*".

Social capital is therefore a useful indicator for representing the context in which the phenomenon of corruption manifests. However, the relationship is also bidirectional, as the harm caused by corruption likely exceeds the immediate monetary waste it generates. Corruption brings with it numerous distortions that affect both the public and private spheres, including the erosion of trust it causes among citizens. For this reason, corruption undermines the very fabric of civil life and can consequently reduce social capital, thereby also hindering growth and well-being.

## 3. Conclusion

In conclusion, the corruption risk indicator system developed and made publicly available by ANAC - through an interactive dashboard accessible to the entire community - represents a significant national contribution to the achievement of Goal 16.5 of the UN 2030 Agenda: "*Substantially reduce corruption and bribery in all their forms*".

In particular, the indicator system designed by ANAC was intentionally conceived to be clear and user-friendly, with a strong focus on transparency, dissemination, and sharing of results. Behind this platform lies a complex structure of IT infrastructures, datasets, and algorithms; yet the dashboards remain intuitive and visually engaging, especially for younger generations, encouraging reflection, participation, and civic awareness. The underlying perspective of the indicator portal is to strengthen ethical awareness and collective understanding of the serious social damage caused by corruption. While prevention and enforcement are necessary conditions to address this phenomenon, they are not sufficient on their own. In the long term, the most effective lever remains the growth of social capital.

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