Stepping up the EU's efforts to tackle corruption

Cost of Non-Europe Report
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Corruption, which can be defined as the 'abuse of entrusted power for private gain', poses a significant threat in the European Union. Corrupt practices can lead to a misuse of public funds and can contribute towards an erosion of democracy and the rule of law. The European Union can do more to tackle corruption and curb its negative impacts on society.

This report draws on a quantitative analysis of corruption in the EU with a focus on three aspects: i) democracy and the rule of law; ii) public trust in institutions; and iii) public procurement. Further EU action to tackle corruption could strengthen trust in public institutions and enhance regulatory certainty. In quantitative terms, the social and economic gains could reach up to €58.5 billion per year.
Executive summary

Why this study?
Corruption – defined broadly as ‘abuse of entrusted power for private gain’ – can take many forms, including paying bribes or exercising power to gain privileged access to public services, goods or contracts. Corrupt practices can lead to a misuse of public funds and can contribute towards an erosion of democracy and the rule of law. The United Nations’ Sustainable Development Goal 16 recognises corruption as a major obstacle to peace, justice and strong institutions.¹

A 2022 Eurobarometer survey found that a majority of EU citizens (68 %) believe that corruption is rife in their country; 40 % consider that the risks of corruption have increased over time.² About 70 % of respondents consider that anti-corruption policies are ineffective. Citizens are especially concerned about government corruption and government's impunity from wrongful acts, such as permitting the use of personal connections to obtain better access to public services.³

There is some evidence to suggest that the COVID-19 pandemic heightened the risk of corruption in the health sector and public procurement. The Group of States against Corruption (GRECO), the Council of Europe’s anti-corruption monitoring body, released guidelines in the first months of the pandemic.⁴ The organisation’s anti-corruption body emphasised the importance of applying ‘transparency, oversight and accountability’ when distributing public expenditure aimed at mitigating the impacts of the COVID-19 pandemic, including from the EU’s recovery fund.

The European Commission will propose an update of the EU’s legislative framework to tackle corruption in 2023. In her September 2022 State of the Union address, Commission President Ursula von der Leyen noted that corruption erodes trust in institutions and that more attention would be paid to offences such as illicit enrichment, trafficking in influence and abuse of power. A proposal to include corruption in the EU’s human rights sanction regime can also be expected.⁵

What is the scope?
This study assesses the potential gains of further EU action to tackle corruption risks with regards to three aspects:

• rule of law;
• public trust in institutions; and
• public procurement.

The analysis builds on previous work carried out by the European Parliament.⁶ Additional quantitative analysis to support the study was carried out by RAND Europe (see Annex).

The analysis presented in the study draws on a range of publicly available data including the European Social Survey, the World Justice Project’s Rule of Law index, the European Quality of Government Index, Opentender and Eurostat. Table 1 presents key insights from the baseline

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¹ United Nations, Sustainable Development Goals.
² European Commission, Special Eurobarometer 523 on Corruption, 2022.
³ Transparency International, Global Corruption Barometer - EU 2021, 2021. The survey was conducted with more than 44 000 individuals in all 27 EU Member States.
⁵ 2022 State of the Union Address by President von der Leyen – transcript, 14 September 2022.
Novel analytic techniques such as wellbeing valuation were used to monetise the potential gains of reducing corruption risk in terms of stronger rule of law, heightened public trust in institutions and raising fewer 'red flags' in public procurement.\(^7\)

Table 1 – Key insights from the baseline analysis – three aspects of corruption

<table>
<thead>
<tr>
<th>Aspect of corruption</th>
<th>Key insights</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rule of law</td>
<td>- Poorer rule of law is associated with lower economic output (gross domestic product – GDP) after controlling for other factors.</td>
<td>Section 2.1 and EPRS, 2020*</td>
</tr>
<tr>
<td></td>
<td>- Greater monitoring and enforcement of democracy, rule of law and fundamental right could generate a potential increase of 1.4 % in the EU’s GDP.</td>
<td></td>
</tr>
<tr>
<td>Trust in public institutions</td>
<td>- Experiences of corruption are associated with lower trust in people and national institutions.</td>
<td>Section 2.2 and Annex – RAND Europe.</td>
</tr>
<tr>
<td></td>
<td>- Living in a region with a relatively high risk of experiencing corruption can impose costs to the order of €1 139 per person.</td>
<td></td>
</tr>
<tr>
<td>Public procurement</td>
<td>- Red flags (e.g. single bidding) are associated with higher contract prices. For EU fund contracts, each red flag increases the contract price by 6 %. The effect is greater after the start of the COVID-19 pandemic.</td>
<td>Section 2.3 and Annex – RAND Europe.</td>
</tr>
<tr>
<td></td>
<td>- The total cost of corruption risk in public procurement contracts involving EU funds in the EU27 between 2016 and 2021 is estimated to be €4.3 billion.</td>
<td></td>
</tr>
</tbody>
</table>

Source: W. Van Ballegooij and C. Navarra, An EU mechanism on democracy, the rule of law and fundamental rights – a European Added Value Assessment, EPRS, September 2020.

What are the key findings?

The study defines three broad and complementary policy options that draw from positions taken by the European Parliament on how to tackle corruption:

- **Policy option 1:** Advance the EU’s legislative framework on corruption;
- **Policy option 2:** Greater enforcement of existing legislation and reinforcement of the mandate of relevant agencies; and
- **Policy option 3:** Promote quality in and control of public procurement.

Table 2 presents an overview of the policy options and their potential gains in quantitative and qualitative terms over a time horizon of about 10 years.\(^8\) Overall, and if all policy options are implemented jointly, the EU could potentially gain an estimated €58.5 billion in GDP per year. About 76% of these gains can be attributed to improved rule of law while the remainder can be explained by the enhanced trust in public institutions. The policy options could generate other

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\(^7\) Wellbeing valuation methodologies have been adopted by some governments for policy assessments. See for example, Wellbeing Guidance for Appraisal: Supplementary Green Book Guidance, Social Impacts Task Force, United Kingdom: HM Treasury, 2021.

\(^8\) The analysis assumes a time horizon of 10 years in which the policies could be adopted and generate impacts.
important gains such as fairer competition, greater transparency, heightened public trust in institutions, and a reinforcement of democracy and human rights.

Table 2 – Assessment of EU policy options to tackle corruption

<table>
<thead>
<tr>
<th>Possible EU action</th>
<th>Policy option 1: Advance the legislative framework on corruption</th>
<th>Policy option 2: Greater enforcement of existing laws and key actors’ mandate</th>
<th>Policy option 3: Promote quality in and control of public procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Possible EU action</strong></td>
<td>Introduce an EU anti-corruption directive based on Article 83 TFEU</td>
<td>Enhance implementation of the Rule of Law Conditionality Mechanism</td>
<td>Mandatory use of open and standardised procurement data</td>
</tr>
<tr>
<td></td>
<td>Update the EU Magnitsky Act to include corruption as a punishable offence</td>
<td>Increase resources and information sharing between Europol, the European Anti-Fraud Office, the European Public Prosecutor’s Office and the European Court of Auditors</td>
<td>Promote interoperability of EU public procurement control systems with national and regional databases</td>
</tr>
<tr>
<td></td>
<td>Promote protection of journalists</td>
<td></td>
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<tr>
<td></td>
<td>Monitor and regulate surveillance spyware software (e.g. Pegasus)</td>
<td></td>
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</tr>
<tr>
<td><strong>Quantifiable potential gains</strong></td>
<td>€52.3 billion per year.</td>
<td>€6.0 billion per year.</td>
<td>€248 million per year.</td>
</tr>
<tr>
<td><strong>Other potential gains</strong></td>
<td>Freedom of expression and information</td>
<td>Greater effectiveness and efficiency in investigating reports of corruption</td>
<td>Increased transparency in the use of public money</td>
</tr>
<tr>
<td></td>
<td>Fairer competition</td>
<td>Lower risk of criminal activity</td>
<td>Fairer competition</td>
</tr>
<tr>
<td></td>
<td>Reinforced democracy</td>
<td></td>
<td>More efficient use of (EU) funds</td>
</tr>
<tr>
<td></td>
<td>Better public administration</td>
<td></td>
<td>Better public administration</td>
</tr>
<tr>
<td></td>
<td>Lower risks of tax avoidance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: EPRS.
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1. Introduction

1.1. Corruption in the EU

Corruption – defined broadly as ‘abuse of entrusted power for private gain’ – can take many forms, including paying bribes or exercising power to gain privileged access to public services, goods or contracts, thereby adversely affect the delivery of services and the correct functioning of institutions. By privileging certain individuals and groups, corruption can promote inequality and market distortions while discouraging innovation and investment. Overall, corruption can risk the erosion of trust in institutions, the rule of law and threaten social cohesion and GDP growth.

Due to its hidden nature, precise data on the nature and prevalence of corruption in the EU is not well-known. Yet, data and research suggest that corruption is commonplace in the EU and generates negative impacts for individuals and society.

In the absence of precise data on corruption, organisations and institutions have developed indirect or proxy measures. Such measures would be expected to predict actual levels of corruption – e.g. a higher perception of corruption would suggest a higher prevalence of actual corruption. Such interpretations, however, should be made with caution. Perceptions of corruption may be driven by media reports (or the lack thereof) of specific occurrences or anti-corruption measures taken by the government, rather than the actual level of corruption.

Available proxy measures of corruption include: the Corruption Perception Index, the Global Corruption Barometer, the Control of Corruption Indicator, the European Quality of Government Index, the Index of Public Integrity, the Global Corruption Index, the OECD’s Public Integrity Indicators and the Bayesian Corruption Index.

A 2022 Eurobarometer survey found that a majority of respondents (68%) believe that corruption is rife in their country; 40% consider that the risks of corruption have increased over time. Only about 30% of respondents consider that policy responses to tackle corruption are effective. Citizens appear to be especially concerned about government corruption and government’s impunity for wrongdoing, including the use of personal connections to obtain better access to public services. About half of companies surveyed considered it unlikely that instances of corruption would be identified and reported.

There is some evidence to suggest that the COVID-19 pandemic has heightened the risk of corruption in the health sector and public procurement. The Group of States against Corruption (GRECO), the Council of Europe’s anti-corruption monitoring body, released guidelines in the first months of the pandemic to promote the application of transparency, oversight and accountability when distributing public funds aimed at mitigating the impacts of the COVID-19 pandemic.
including from the EU’s recovery fund. With regards to the health sector, one study found that almost a third of EU residents used personal connections to receive medical attention. The COVID-19 pandemic has amplified the risk of fraud at EU level through the necessary simplification of procedures to award contracts and distribute funds in an accelerated timeframe. As highlighted by the European Parliament, ‘crisis creates opportunities for numerous violations of integrity and could intensify fraud and corruption, as well as non-fraudulent irregularities, particularly in public procurement, stimulus packages and public organisations’. The OECD has called attention to these risks and the need for a coordinated policy response across countries.

1.2. EU policy developments

The EU’s existing legislative framework to tackle corruption is most developed in the protection of financial interests. Under Article 83(1) of the Treaty on the Functioning of the EU (TFEU), corruption is recognised as a serious crime with a cross-border dimension. With this legal basis, the EU adopted a directive in 2017, to tackle fraud and other offences that affect the EU’s financial interests, via criminal law. The directive (known as the PIF Directive) seeks to harmonise definitions, sanctions and limitation rules across the EU to support prosecution. In 2017, the mandate for the European Public Prosecutor’s Office (EPPO) was established to support the investigation and prosecution of crimes against the EU’s financial interests, including corruption. In 2019, the EU adopted a Directive on the Protection of Persons who Report Breaches of Union Law (whistleblowers), with the aim of supporting the reporting of offences, including corruption. Following publication of an annual Rule of Law report since 2020, the European Commission introduced the European Rule of Law Mechanism in 2021. In the context of the EU’s anti-

Surveillance spyware and corruption

In March 2022, the European Parliament established a Committee of Inquiry to investigate the application of EU law in relation to the use of spyware surveillance software (e.g. Pegasus). The special committee’s draft report was presented on 8 November 2022. The report notes: ‘EU Member State governments have been using spyware on their citizens for political purposes and to cover up corruption and criminal activity. Some went even further and embedded spyware in a system deliberately designed for authoritarian rule’.

Source: Draft Report, Committee of Inquiry to investigate the use of Pegasus and equivalent surveillance spyware, 8 November 2022.

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16 European Parliament resolution of 15 December 2021 on the evaluation of preventive measures for avoiding corruption, irregular spending and misuse of EU and national funds in case of emergency funds and crisis-related spending areas (2020/2222(INI)).
17 Policy measures to avoid corruption and bribery in the COVID-19 response and recovery, OECD, 26 May 2020.
20 European Commission, Council Regulation (EU) 2017/1939 of 12 October 2017 implementing enhanced cooperation on the establishment of the European Public Prosecutor’s Office (‘the EPPO’). The regulation is supported by 22 Member States: AT, BE, BG, CY, CZ, DE, EE, EL, FI, FR, HR, IT, LV, LT, LU, MT, NL, PT, RO, SK, SI.
22 See for example, the 2022 Rule of Law report: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 2022 Rule of Law Report: The rule of law situation in the European Union, European Commission, COM /2022/500 final.
money-laundering legislation, the European Court of Justice ruled that information concerning the beneficial ownership of companies does not have to be made available to the public. The European Parliament has called on Member States to ‘resolutely fight systemic corruption’ and to regularly monitor the use of public funds.

The European Union can do more to tackle corruption risks. The Commission’s 2023 work programme indicates that there will be proposals to update the anti-corruption legislative framework and set a sanctions framework to address corruption.

1.3. Objectives of this study

The objectives of this study are to quantitatively estimate the potential gains of EU action to tackle corruption risks with regards to three aspects:

- Corruption risk impacts on the rule of law;
- Corruption risk impacts on public trust in institutions and wellbeing; and
- Corruption risk impacts in the area of public procurement.

The study updates a 2016 assessment of the costs of corruption, following a request from the European Parliament’s Committee on Civil Liberties, Justice and Home Affairs (LIBE). The assessment considered several scenarios. One scenario considered the losses in countries that have a level of corruption risk that is higher than the EU average. Based on this scenario, the economic costs of corruption risk were estimated to reach €179 to €256 billion per year. In a 2014 study, the European Commission estimated that corruption cost the EU economy about €120 billion per year. The European Commission’s estimation focused on direct costs, namely lost tax revenue and investments, while the Parliament’s estimation included indirect costs within its scope. Previous quantitative estimations of the costs of corruption in the EU focused exclusively on economic impacts – they did not consider the impacts on the rule of law, nor on public trust in institutions, which are considered within the scope of the present study. The present study focuses on the potential gains of EU action to tackle corruption risks, which could materialise in about 10 years.

23 European Court of Justice ruling C-37/20, 22 November 2022.
24 European Parliament resolution of 28 March 2019 on the situation of the rule of law and the fight against corruption in the EU, specifically in Malta and Slovakia (2018/2965(RSP)).
25 This position is reflected in a number of resolution adopted since 2019, some of which are highlighted in Section 3.
26 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Commission work programme 2023 – A Union standing firm and united, COM(2022) 548 final.
28 Ibid.
2. The costs of corruption risks in the EU: A baseline analysis

This section presents a quantitative analysis of corruption risks in the EU in relation to three aspects, each of which is presented below. The findings provide a baseline for the assessment of the policy options in Section 3.

2.1. Aspect 1: Rule of law

Corruption can undermine the rule of law and corrode the foundations of democracy. The relevance of corruption to the rule of law is reflected in the European Commission's Rule of Law reports, which cover four pillars: (1) the justice system, (2) the anti-corruption framework, (3) media pluralism, and (4) other institutional issues related to checks and balances. In the European Parliament, a monitoring group was established in June 2018 to monitor the rule of law and the fight against corruption within the EU.

In September 2020, the European Parliament presented a legislative initiative to establish an EU mechanism on democracy, the rule of law and fundamental rights. A European Added Value Assessment investigated the potential benefits of the Parliament's proposed EU action, including the potential economic gains for heightened monitoring of democracy, the rule of law and fundamental rights. These gains were quantitatively estimated using a regression analysis of the Rule of Law Index and per-capita GDP, while controlling for other factors. In the absence of an EU-specific dataset or scoreboard, indices such as the Rule of Law Index provide the best tool available to quantitatively investigate the impacts of violations of the rule of law and poor governance. The index includes several factors and sub-factors that are relevant to corruption.

The regression analysis found that a higher overall Rule of Law Index score was correlated with lower economic output after controlling for other factors. According to this analysis, the overall costs of violations to the rule of law in the EU27 was estimated to reach about 9% of the EU's GDP each year.

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31 European Parliament resolution of 28 March 2019 on the situation of the rule of law and the fight against corruption in the EU, specifically in Malta and Slovakia (2018/2965(RSP)).
35 While the EU Justice Scoreboard provides an important tool for assessing justice systems in Europe, it is limited in scope and relies on institutional data.
36 Other indices considered in the EPRS study were the Freedom House Freedom in the World Index and the World Bank’ Worldwide Governance Indicators.
37 The eight primary factors of the World Justice Project' Rule of Law index are: (1) Constraints on Government Powers, (2) Absence of Corruption, (3) Open Government, (4) Fundamental Rights, (5) Order and Security, (6) Regulatory Enforcement, (7) Civil Justice, and (8) Criminal Justice. Each factor is weighted equally to construct the index. Sub-factors within each factor are also weighted equally.
38 This figure represents the difference between the current scores of Member States in relation to the maximum scores possible with the Rule of Law Index. The finding rests on the assumption that the correlation between the index and GDP can be at least partially interpreted as a causal relation. For more information, please refer to: W. Van Ballegooij and C. Navarra, An EU mechanism on democracy, the rule of law and fundamental rights - a European Added Value Assessment, European Parliamentary Research Service, September 2020.
2.2. Aspect 2: Trust in people and public institutions

Research suggests that corruption is negatively associated with individual wellbeing, because it may affect an individual’s in trust in other people and institutions. The causal relationship, however, is not evident. Some research suggests that corruption leads to lower public trust while other research suggests that lower public trust leads to a higher incidence of corruption practices.

This study presents a novel, quantitative analysis that investigates the relationship between corruption and life satisfaction, and explores the mediating role of trust in institutions. The analysis, which is presented in more detail in Annex, applies a wellbeing valuation methodology, to monetise the lost trust in public institutions due to corruption. The methodology estimates the equivalent amount of income people would be willing to forgo to avoid exposure to corruption. Wellbeing valuation approaches are increasingly being used in appraisals of policies. For example, wellbeing valuation approaches are currently recommended for policy appraisals in the United Kingdom.

The analysis draws on two data sources – the European Quality of Government Index and the European Social Survey. The European Quality of Government Index, which is based on survey data gathered from over 129,000 respondents in all Member States (EU27), includes an index of experiences with corruption. The data show a higher level of reporting of corruption experiences in some countries than others as well as significant variation within countries. The data from the European Quality of Government Index are linked at the regional level with the European Social Survey, which offers measures of life satisfaction and trust in people and public institutions. The region-level analysis leverages variation within and between countries in the key indicators of interest.

The analysis finds that experiences of corruption are associated with lower trust in institutions, which damages the wellbeing of individuals. A person living in a region with the highest relative prevalence of experienced corruption has 23% lower trust in people than a person living in a region with the lowest relative prevalence of experienced corruption. In monetary terms, the analysis finds that the cost of living in a region with an average level of corruption was an estimated €1,139 per person, per year, on average in the EU.

40 See Annex, Section 2.4.2.
43 The index is based on a series of questions supporting the corruption experience sub-pillar. These questions include: ‘In the last 12 months, have you or anyone in your family been asked by a public official to give an informal gift or bribe in: (a) Schools or other education services? (b) Health or medical services? (c) Police authorities? (d) Any other government-run agency?’ For more information please see the European Quality of Government survey codebook.
45 The research (see Annex, Section 3.2.2) finds that at least one third of the association between experienced corruption and subjective wellbeing can be explained by trust in people and institutions.
46 See Annex, Section 3.2.2.
2.3. Aspect 3: Public procurement

Public procurement is one of the government activities most vulnerable to corruption.47 Risks of corruption are possible at all five stages of the procurement process: pre-selection activities, tendering process, bid evaluation, post-selection activities, and record keeping and auditing.48 In the EU, the purchase of services, works and supplies accounts for 14% of GDP (around €2 trillion) every year.49 The COVID-19 pandemic exacerbated risks for corruption in public procurement in the EU.50

This study includes an analysis of corruption in public procurement using data from 2016 to 2021.51 The data were obtained from Opentender, which provides information on public procurement contracts and the risks of corruption. A Corruption Risk Index (CRI) was constructed based on a set of ‘red flags’. For example, single bidder contracts, which are contracts awarded to a bidder when there was only one bidder, were marked with a red flag. Contracts that were not publicly advertised or published in the Official Journal were also marked with a red flag. **Contracts marked with a red flag have a higher risk of corrupt practices.**

Research finds that **missing information in public procurement notices is associated with single bidder contracts, and consequently the risk of corruption.**52 Moreover procurement in emergencies has been shown to have a higher incidence of incomplete information at the contracting stage (such as unitary prices or date of contract signature).53 Examples of relevant information entries in public procurement notices include the selection method, the duration of the contract, the winner’s name, subcontracting arrangements and the contract value.

Following the 2016 study, the costs of corruption risk in EU public procurement were estimated in terms of the relative value of procurement contracts (the ratio of actual contract value divided by originally estimated contract value).54 In essence, this ratio gives a rough estimate of price savings a contract achieved compared with the initial estimate.


51 Please refer to the Annex for more information. The approach follows the approach taken by EPRS in 2016 with more recently available data. European Added Value Unit, *The Cost of Non-Europe in the area of Organised Crime and Corruption: Annex II – Corruption*, March 2016. Using data from an earlier period; the corruption risk in EU public procurement was estimated to be around €5.3 billion per year.


54 Contract values are estimated by the procuring entity before the launch of the tender, and should in general be included in the call for tenders as per Article 5 of Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on Public Procurement and Repealing Directive 2004/18/EC. This analysis focuses on the contracts for which both the estimated contract value and the current contract value are available.
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The analysis finds that a higher CRI is associated with higher contract prices. A one-unit increase in the CRI is found to raise prices (or reduce cost savings), by about 34% on average and contracts with one additional red flag are predicted to increase prices by 4.9%. The magnitude of this relationship is even higher for EU fund contracts: a one-unit increase in the CRI is estimated to raise prices of contracts involving EU funds by about 39% on average, and contracts with one additional red flag are predicted to increase prices by 6%.

The empirical finding suggests that the presence of EU funds in a contract also yields higher prices. The total cost of corruption risk in public procurement in the EU27 between 2016 and 2021 across all sectors is found to be €29.6 billion. The total cost of corruption risk in public procurement contracts involving EU funds in the EU27 between 2016 and 2021 is estimated to be €4.3 billion. The effect of the corruption risk on relative contract prices is found to be significantly higher for contracts that were awarded after the start of the pandemic compared with those awarded before March 2020.

Corruption impacts differ for men and women and therefore gender perspective represents a key component in developing actions to prevent and combat corruption. The European Parliament has called for promotion of gender mainstreaming and diversity in anti-corruption measures and the evaluation of the gender aspects of corruption and its potentially differentiated impacts.

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55 Please refer to the Annex for more information.
3. Potential gains from further EU action to tackle corruption risks

More EU action that could help to address the costs of corruption risks is highlighted in Section 2. The baseline costs could be addressed through better information reporting, investigation and prosecution of corruption. As a result, the level of corruption could be expected to fall over time. Figure 1 highlights the consequences and positive impacts that could be generated for individuals and society. Such actions would be in alignment with Sustainable Development Goal 16, which is to substantially reduce corruption and bribery in all forms to build effective, accountable and inclusive institutions.

The European Parliament has repeatedly called for the EU to step up its efforts to tackle corruption. Based on the positions taken by the European Parliament, this study defines three broad policy options and quantifies their potential gains for individuals and society. The policy options are:

- Advance the EU’s legislative framework on corruption;
- Greater enforcement of existing legislation and reinforcement of the mandate of relevant agencies; and
- Promote quality in and control of public procurement.

The quantitative assessment finds that targeted further EU action to tackle corruption risk in these three areas could generate up to €58.5 billion per year by 2032. Other gains could also be
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possible, such as reinforced democracy, rule of law and fundamental rights and greater social cohesion (see Figure 1).

Other measures, beyond the three broad policy options defined in this study, could help to tackle corruption. Research has highlighted the potential benefits of promoting financial transparency via a global financial registry, to meet policy objectives in the areas of anti-money laundering and sanctions compliance. Another study investigated the European Added Value of a parliamentary proposal for a more fair and simple approach to corporate income taxation to lower its vulnerability to abuse, evasion and fraud. Finally, an EPRS study from 2021 concluded that the use of digital tools could play a key role in improving transparency and public accountability of EU funds. The study proposes measures to help identify the ultimate beneficiaries of EU funds through an EU-wide database and unique identifiers, as well as through the use of an integrated information technology (IT) data mining tool.

3.1. Policy option 1: Advance the legislative framework on corruption

This policy option would advance the EU’s legislative framework to tackle corruption within the EU’s borders as well as in the external dimension. These measures would build on the current framework, which focuses on financial fraud, and would pay more attention to other forms of corruption that can also erode trust in institutions and democracy. The European Parliament has called for stronger legislative measures to tackle corruption. Possible EU action could include the following:

- Introduce an EU anti-corruption directive using the legal basis of Article 83 TFEU;
- Update the EU Magnitsky Act to include corruption as a punishable offence;
- Include corruption under the EU global human rights sanctions regime;
- Revise the EU Financial Regulation to strengthen anti-oligarch practices;
- Regulate or ban citizenship and residence by investment schemes;

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60 The specific measures should take the 22 November 2022 ruling of the European Court of Justice C-37/20 into consideration.
63 European Parliament resolution of 8 July 2021 on the EU Global Human Rights Sanctions Regime (EU Magnitsky Act) (2021/2563(RSP)).
64 Ibid.
65 Motion for a European Parliament Resolution on MFF 2021-2027: fight against oligarch structures, protection of EU funds from fraud and conflict of interest (2020/2126(INI)).
Promote protection of journalists against strategic lawsuits hampering public participation;\(^{67}\)

Introduce due diligence obligations for EU companies to prevent corruption and its adverse impacts on human rights, the environment and good governance;\(^{68}\)

Monitor and regulate surveillance software, such as Pegasus;\(^{69}\) and

Broaden and clarify scope of corrupt offences (e.g. trafficking in influence and abuse of power).\(^{70}\)

These legislative measures could be complemented by other measures to promote the availability and quality of data and information on corrupt practices. Such data could promote public scrutiny and transparency. Data and indicators on corruption could be made available either online or through an interactive tool such as Integrity Watch EU\(^{71}\) or the Commission’s Rule of Law Report. Alternatively, a corruption scoreboard similar to the EU Justice Scoreboard could be developed.

### 3.1.1. Assessment

Policy option 1 could generate macroeconomic economic impacts by reinforcing democracy and the rule of law. The quantitative assessment of the policy option thus draws on the assessment investigating the impacts of rule of law on economic output (see Section 2.1). Assuming that the Parliament’s proposal could boost the rule of law – and consequently economic output – the assessment then considered several possible scenarios. The most conservative scenario could generate a 1.4% increase in the EU’s GDP.\(^{72}\)

The overall gains in GDP due to stronger rule of law was investigated and restricted to the elements relating directly to corruption. The breakdown followed the definition of the World Justice Project’s Rule of Law Index.\(^{73}\) Table 3 presents the factors and sub-factors that relate to corruption risk. Overall, the potential gains with respect to the rule of law are expected to be some €38.4 billion.

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\(^{67}\) European Parliament resolution of 11 November 2021 on strengthening democracy and media freedom and pluralism in the EU: the undue use of actions under civil and criminal law to silence journalists, NGOs and civil society (2021/2036(INI)).

\(^{68}\) European Parliament resolution of 10 March 2021 with recommendations to the Commission on corporate due diligence and corporate accountability (2020/2129(INL)).

\(^{69}\) In its draft report, the European Parliament’s PEGA committee points to the need for ‘common EU standards regulating the use of spyware by government bodies’ that could draw on the example developed by the Venice Commission.

\(^{70}\) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Communication work programme 2023 – A Union standing firm and united, COM(2022) 548 final.

\(^{71}\) Integrity Watch EU, Transparency International.

\(^{72}\) Member States were organised into four clusters based on their overall rule of law score. The scenario assumed that the rule of law score in countries below the cluster average would increase to the average value. For more information, please see: W. Van Ballegooij and C. Navarra, An EU mechanism on democracy, the rule of law and fundamental rights – a European Added Value Assessment, European Parliamentary Research Service, September 2020.

\(^{73}\) The eight factors of the World Justice Project’s Rule of Law index are: Constraints on Government Powers, Absence of Corruption, Open Government, Fundamental Rights, Order and Security, Regulatory Enforcement, Civil Justice, and Criminal Justice. Each factor is weighted equally to construct the index. Sub-factors within each factor are also weighted equally.
Table 3 – Potential gains of Policy option 1 with regards to the rule of law

<table>
<thead>
<tr>
<th>Rule of Law Index - elements related to corruption risk</th>
<th>Estimated potential gains per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 2 – Absence of corruption</td>
<td></td>
</tr>
<tr>
<td>2.1 Government officials in the executive branch do not use public office for private gain</td>
<td></td>
</tr>
<tr>
<td>2.2 Government officials in the judicial branch do not use public office for public gain</td>
<td></td>
</tr>
<tr>
<td>2.3 Government officials in the political and the military do not use public office for private gain</td>
<td>€29.8 billion</td>
</tr>
<tr>
<td>2.4 Government officials in the legislative branch do not use public office for private gain</td>
<td></td>
</tr>
<tr>
<td>Factor 7 – Civil justice</td>
<td></td>
</tr>
<tr>
<td>7.3 Civil justice is free of corruption</td>
<td>€4.3 billion</td>
</tr>
<tr>
<td>Factor 8 – Criminal justice</td>
<td></td>
</tr>
<tr>
<td>8.5 Criminal system is free of corruption</td>
<td>€4.3 billion</td>
</tr>
<tr>
<td>Potential gains per year:</td>
<td>€38.4 billion</td>
</tr>
</tbody>
</table>

Source: EPRS
Note: For more information please see Section 2.1.

Policy option 1 could also offer benefits to individuals by promoting their trust in institutions and thus improving their life satisfaction. As shown in Section 2.2, individual experiences with corruption could lead to a lower life satisfaction and these impacts could be monetised. The analysis found that about 27% of the EU’s population lives in regions with a high level of corruption. Assuming that the policy option could reduce these losses by 10% (by reducing the prevalence of corrupt practices in these regions), this could generate about €13.9 billion per year.74 While lower than the potential gains with respect to the rule of law, the policy option’s impacts on public trust are also substantial. The policy option could also support fundamental rights including the freedom of expression and information and the rights to an effective remedy and to a fair trial. Table 4 summarises the assessment of the policy option.

More information about the quantitative assessment of the policy option can be found in Annex, Section 4.1.2.
Table 4 – Assessment of policy option 1 – Advance the EU’s legislative framework

<table>
<thead>
<tr>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantifiable potential gains</td>
</tr>
<tr>
<td>€52.3 billion (rule of law and public trust in institutions)</td>
</tr>
<tr>
<td>Other potential gains</td>
</tr>
<tr>
<td>Freedom of expression and information</td>
</tr>
<tr>
<td>Right to an effective remedy and to a fair trial</td>
</tr>
<tr>
<td>Strengthened international credibility</td>
</tr>
<tr>
<td>Fairer competition</td>
</tr>
<tr>
<td>Reinforced democracy and human rights</td>
</tr>
<tr>
<td>Better public administration</td>
</tr>
<tr>
<td>Lower risks of tax avoidance</td>
</tr>
</tbody>
</table>

Source: Compiled by the authors.

3.2. Policy option 2: Greater enforcement of existing legislation and reinforcement of the mandate of relevant agencies

3.2.1. Possible EU action

This policy option would focus on the enforcement of existing legislation and on reinforcing the mandate of relevant agencies. Key EU legislation includes the 2017 directive to tackle fraud and other offences that affect the EU’s financial interests via criminal law (the PIF Directive). The PIF Directive seeks to harmonise definitions, sanctions and limitation rules across the EU to support prosecution. In 2019, the EU adopted a directive on whistleblower protection with the aim of supporting the reporting of offences including corruption. As of December 2022, however, only 10 Member States have transposed the law into national legislation.

In recent years, the European Commission has introduced the annual rule of law reports and the rule of law conditionality mechanism. The European Parliament has voiced concerns about its implementation and in particular the ‘growing misuse of the Union’s budget as a means to deteriorate the rule of law in some Member States’. Further EU action could be taken to strengthen monitoring efforts and application of the conditionality mechanism, as well as to expand its application to apply to breaches of the law apart from the budget, as citizens called for during the Conference on the Future of Europe.

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77 EU Whistleblowing Monitor, last updated 5 December 2022.
80 Conference on the Future of Europe – European Citizens’ Panel 2: European democracy/Values and rights, rule of law, security – Recommendations, 2021. Recommendation 10: ‘We recommend that the conditionality regulation (2020/2092, adopted on 16 December 2020) is amended so that it applies to all breaches of the rule of law rather than only to breaches affecting the EU budget’.
In 2017, the mandate for the European Public Prosecutor’s Office (EPPO) was established to support the investigation and prosecution of crimes against the EU’s financial interests, such as fraud. A study found that the EPPO could play an important role in reducing fraud and VAT fraud in particular. In its first seven months of operation since June 2021, the EPPO opened 576 investigations for damages estimated at €5.4 billion. The European Parliament has called for increased resources and enhanced information sharing between relevant EU bodies, particularly Europol, the European Anti-Fraud Office (OLAF), the EPPO and the European Court of Auditors. Tools such as the European Arrest Warrant and the Evidence Warrant could also be invoked, as well as the Law Enforcement Directive (2016/680). The European Parliament has also called for increased resources for Europol and Eurojust to investigate cases related to corruption, such as the murder of Daphne Caruana Galizia. Lastly, the policy option could also reinforce Europol’s remit to monitor emerging forms of cross-border cybercrime related to corruption risks such as surveillance spyware. In June 2022, Europol was granted new powers to allow it to take initiative in proposing an investigation in an autonomous manner even if the crime was only identified in one Member State. This policy option could also include a strengthening of a human rights-based anti-corruption approach in EU external action instruments such as the Neighbourhood, Development and International Cooperation Instrument (NDICI), the Instrument for Pre-Accession Assistance (IPA) and EU trust funds.

3.2.2. Assessment

Policy option 2 could generate macroeconomic impacts by increasing the legitimacy of EU laws and institutions in place to tackle corruption, and promote democracy and the rule of law. The quantitative assessment of the policy option draws on the assessment investigating the impacts of rule of law on economic output (see Section 2.1). The overall gains in GDP due to stronger rule of law was investigated and restricted to a sub-factor of regulatory enforcement concerning the application and enforcement of government regulations ‘without improper influence’. The breakdown followed the definition of the World Justice Project’s Rule of Law Index. Overall, the potential gains of the policy option were estimated to be €6.0 billion per year. Table 5 summarises the assessment of the policy option.

---

81 European Commission, Council Regulation (EU) 2017/1939 of 12 October 2017 implementing enhanced cooperation on the establishment of the European Public Prosecutor’s Office (‘the EPPO’). The regulation is currently supported by 22 Member States: AT, BE, BG, CY, CZ, DE, EE, EL, FI, FR, HR, IT, LV, LT, LU, MT, NL, PT, RO, SK, SI.
84 European Parliament resolution of 15 December 2021 on the evaluation of preventive measures for avoiding corruption, irregular spending and misuse of EU and national funds in case of emergency funds and crisis-related spending areas (2020/2222(INI)).
85 European Parliament resolution of 28 March 2019 on the situation of the rule of law and the fight against corruption in the EU, specifically in Malta and Slovakia (2018/2965(RSP)).
86 Regulation (EU) 2022/991 of the European Parliament and of the Council of 8 June 2022 amending Regulation (EU) 2016/794, as regards Europol’s cooperation with private parties, the processing of personal data by Europol in support of criminal investigations, and Europol’s role in research and innovation.
Table 5 – Assessment of policy option 2 – Greater enforcement

<table>
<thead>
<tr>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantifiable potential gains</td>
</tr>
<tr>
<td>€6.0 billion (rule of law)</td>
</tr>
<tr>
<td>Other potential gains</td>
</tr>
<tr>
<td>Greater effectiveness and efficiency in the prosecution of corruption</td>
</tr>
<tr>
<td>Lower risk of criminal activity</td>
</tr>
<tr>
<td>Greater effectiveness and efficiency in investigating reports of corruption</td>
</tr>
</tbody>
</table>

Source: Compiled by the authors.

3.3. Policy option 3: Promote quality in and control of public procurement

3.3.1. Possible EU action

The EU could take specific actions to promote the quality in and control of public procurement. Such actions could reduce the occurrence of red flags while promoting transparency and competition. As a result, awarded contracts would have a lower relative price. EU funds could be spent more effectively, while reducing the risk of corruption. Research finds that public procurement processes that are based on the concepts of transparency, competition and expertise can help to minimise corruption risk.89

Currently, there is a high level of missing information in EU public procurement systems – an estimated 38% of requested entries is not provided.90 Moreover, action to improve EU public procurement could have positive spill-over effects onto national procurement systems – improvements in transparency in EU public procurement could lead to greater transparency in national public procurement.

Possible specific EU actions, as proposed by the European Parliament,91 could include the following:

- Mandatory use of open and standardised procurement data to reduce the amount of missing information in contract notices;
- Promoting interoperability of EU public procurement control systems with national and regional databases;
- Use of data-mining and risk-scoring tools to identify red flags;
- Creation of an integrated, interoperable and harmonised system92 to collect, monitor and analyse data on beneficiaries of EU funds.


90 See Annex, Section 4.1 for more information.

91 European Parliament Resolution of 23 November 2021 with recommendations to the European Commission on digitalisation of the European reporting, monitoring and audit (2021/2054(INL)).

92 The measure should take the 22 November 2022 ruling of the European Court of Justice C37/20 into consideration.
Making relevant information regarding public procurement contracts publicly available, freely and easily accessible in an open and standardised format has the potential to enhance the prevention and detection of potential corruption cases. Transparency in the use of public funds ensures better accountability and implies citizens may have increased trust in public institutions. The European Parliament has underlined the need to make use of open and standardised public procurement data mandatory and to make budgetary control IT systems mandatory and interoperable with national and regional databases. A 2021 EPRS study found that digitalisation of monitoring, reporting and auditing of EU-funded programmes would increase public scrutiny, programmes would increase public scrutiny, accountability and lead to stronger interest on the part of society, as well as greater visibility and transparency of EU-funded projects, resulting in increased competition.

Enhanced controls could play a significant role in limiting corruption risks in the response to the COVID-19 pandemic, in particular with respect to the implementation of the Recovery and Resilience funds and the distribution of public health services. To enhance the protection of EU budget against fraud and irregularities, the Parliament’s 2021 resolution called on the European Commission to include obligations to provide data on ultimate beneficiaries for funds under shared management, as well as under the Recovery and Resilience Facility as part of the Financial Regulation revision. The European Parliament has also called for use of IT tools such as ARACHNE to be stepped up, to ensure efficient checks on conflicts of interest, irregularities or misuse of EU funds.

3.3.2. Assessment

The quantitative assessment of the policy option draws on the analysis presented in Section 2.3. It considers a scenario of reducing missing information in contract notices, which would reduce the likelihood of single bidding and lower the risk of corruption. A research study found that if, on average, five additional items of information were included in contract notices in Europe (out of 10 items considered) this would decrease single bidding by 2.5% to 6%. Decreasing the number

93 Parliament Resolution of 15 December 2021 on the evaluation of preventive measures for avoiding corruption, irregular spending and misuse of EU and national funds in case of emergency funds and crisis-related areas, 2020/2022(INI).
94 Resolution of 23 November 2021 with recommendations to the Commission on digitalisation of the European reporting, monitoring and audit (2021/2054(INI)), European Parliament.
97 Resolution of 23 November 2021 with recommendations to the Commission on digitalisation of the European reporting, monitoring and audit (2021/2054(INI)), European Parliament.
98 For more information on the quantitative assessment for the policy option, see Annex – RAND.
of missing entries by 10 items on average in Europe (out of 10 items considered) would decrease single bidding by 5 % to 12 %.\textsuperscript{99}

The assessment considers a scenario where the number of missing entries is reduced by five items for all public procurements. This enhanced reporting could have reduced the costs of corruption risk in public procurement by between €1.24 billion between 2016 and 2021, or €248 million per year.\textsuperscript{100}

Table 6 – Assessment of policy option 3 – Promote quality in and control of public procurement

<table>
<thead>
<tr>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantifiable potential gains</td>
</tr>
<tr>
<td>€248 million per year</td>
</tr>
<tr>
<td>Other potential gains</td>
</tr>
<tr>
<td>Increased transparency on the use of public money</td>
</tr>
<tr>
<td>Fairer competition</td>
</tr>
<tr>
<td>More efficient use of (EU) funds</td>
</tr>
<tr>
<td>Better public administration</td>
</tr>
</tbody>
</table>

Source: Compiled by the authors.


\textsuperscript{100} The estimates are the average of the lower and upper bound estimated presented in Annex – RAND Europe.
4. Conclusions

Despite the lack of precise data on the nature and prevalence of corruption in the EU, data and research suggest that corruption is commonplace in the EU and generates negative impacts for individuals and society. This study investigates the costs that corruption in the EU imposes on individuals and society, and assesses the potential gains of further EU action. The costs that corruption imposes on individuals is primarily through the loss of trust in other people and institutions. The costs that corruption imposes on society manifests through lower GDP due to violations of the rule of law, and inefficient public spending via public procurement procedures.

The study defines three broad policy options that draw on positions taken by the European Parliament. The policy options are:

- **Policy option 1**: Advance the EU’s legislative framework on corruption;
- **Policy option 2**: Greater enforcement of existing legislation and reinforcement of mandate of relevant agencies;
- **Policy option 3**: Promote quality in and control of public procurement.

The policy options could build on the existing legislative and institutional framework and help to mitigate the prevalence and negative impacts of corruption risks on individuals and society. The policy options could be implemented jointly, and would be in alignment with Sustainable Development Goal 16, which is to substantially reduce corruption and bribery in all forms to build effective, accountable and inclusive institutions.

The policy options could generate a range of benefits for EU society including reinforced democracy, rule of law and fundamental rights and greater social cohesion. In quantitative terms, targeted further EU action to tackle corruption risk, defined by the policy options, could generate up to €58.5 billion per year, by 2032. About 76% of the estimated gains would stem from the enhanced international standing of the EU and its greater attractiveness for business and investment. Another 24% of the estimated gains would stem from enhanced public trust.102

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101 This figure was calculated by dividing the benefits of stronger rule of law in policy options 1 and 2 (€44.4 billion) by the total benefits of all three policy options (€56.5 billion).

102 This figure was calculated by dividing the benefits of enhanced public trust in policy option 1 (€13.9 billion) by the total benefits of all three policy options (€56.5 billion).
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Stepping up the EU’s efforts to tackle corruption


**Regulation (EU) 2017/1939** of 12 October 2017 implementing enhanced cooperation on the establishment of the European Public Prosecutor’s Office (‘the EPPO').

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Resolution of 23 November 2021 with recommendations to the Commission on digitalisation of the European reporting, monitoring and audit (2021/2054(INL)).

Resolution of 11 November 2021 on strengthening democracy and media freedom and pluralism in the EU: the undue use of actions under civil and criminal law to silence journalists, NGOs and civil society (2021/2036(INI)).

Resolution of 10 June 2021 on the rule of law situation in the European Union and the application of the Conditionality Regulation (EU, Euratom) 2020/2092 (2021/2711(RSP)).

Resolution of 28 March 2019 on the situation of the rule of law and the fight against corruption in the EU, specifically in Malta and Slovakia (2018/2965(RSP)).

Resolution of 10 March 2021 with recommendations to the Commission on corporate due diligence and corporate accountability (2020/2129(INL)).


Ruling C-37/20 of 22 November 2022, European Court of Justice.


Special Eurobarometer 523 on Corruption, European Commission, 2022.


Annex

A quantitative analysis of the costs of corruption in the EU

Research paper

Corruption is a worldwide phenomenon, with negative consequences at the social, economic and political levels. It remains a major challenge for the European Union (EU) and its Member States. However, the hidden and informal nature of corruption makes it difficult to observe or measure.

The aim of this report is to quantify the economic and societal losses due to corruption in the European Union, and to identify potential for action at EU level, to address the challenges identified.

Analysis conducted for this report estimated the total cost of corruption in public procurement in the EU27 between 2016 and 2021 at €29.6 billion. The analysis also shows that EU citizens who have experienced corruption are more likely to have lower life satisfaction, which can be attributed, at least in part, to a lower trust in both people and institutions.

The analysis suggests that EU action to support Member States’ action to reduce corruption could generate considerable financial savings and improvements to societal wellbeing.
Executive summary

Corruption occurs when an individual or organisation entrusted with authority misuses his/her position for personal gain. It is a phenomenon that can and does inflict serious harms to societies around the world and it has negative fallouts at social, political and economic levels, which are deeply interconnected. Indeed, corruption may yield significant economic costs (through lower growth of gross domestic product (GDP), loss of economic efficiency and market distortions), social harm (distributional effects, inequality and social cohesion), environmental costs (level of pollution) or political costs (loss of political, institutional and individual trust damages public institutions and undermines the rule of law) (Chêne 2014; European Commission 2017d; OECD 2015; UNODC 2019a). Corruption is an endemic phenomenon that takes multiple shapes and forms across all facets of society. The hidden and informal nature of corruption makes it difficult (or even impossible) to observe and measure, and it remains a major challenge to address for countries worldwide. Several indicators and methodologies have been developed by institutions and organisations to quantify the costs resulting from corruption.

Corruption is also present in the EU and affects all Member States, even though it varies in nature, reach and magnitude. Over the past few years, the EU has taken several actions to tackle corruption. In 2017, the EU adopted a directive to tackle fraud and related offences that affect the EU’s financial interests via criminal law. In the same year, a regulation to establish the European Public Prosecutor’s Office (EPPO) was introduced to enhance cooperation among a set of EU Member States to support the investigation and prosecution of crimes against the EU’s financial interests including corruption. In 2019, the EU adopted a directive on whistle-blower protection intended to encourage the reporting of offences, including corruption (European Union 2019). Despite these advances, The European Commission plans further EU actions to combat the negative impacts of corruption.

The purpose of this report is to quantify the economic and societal losses due to corruption in the European Union, and to identify potential for action at EU level that might add value and address the challenges identified. This study does not investigate the overall costs of corruption in the European Union, but instead focuses on the costs of corruption in specific areas: public procurement, wellbeing and trust. Moreover, this study does not investigate gaps and barriers in the existing regulatory framework that hinder the effectiveness of measures to combat corruption in the EU. This report addresses the following research questions:

1. What are some of the current costs associated with corruption in Europe?
2. What are the costs associated with corruption risk in public procurement?
3. What are the costs associated with a loss of wellbeing and trust among European citizens?
4. What policy options are available to tackle corruption at EU level and what would be the monetised value of scenarios in which corruption was reduced as a result of introducing these policy options?

The results suggest that the cumulative cost of corruption risk in public procurement in the EU27 between 2016 and 2021 is €29.6 billion. The estimates range from a minimum of €3.7 billion in 2016 to a maximum of €6.5 billion in 2021. The total cost of corruption risk in public procurement contracts involving EU funds is estimated to reach €4.3 billion over the years 2016-2021.

To address the third research question, this study applies a novel approach to estimate the individual wellbeing costs associated with corruption among EU citizens. The wellbeing valuation approach, which has been introduced into economic appraisal valuations, is used increasingly in the economics literature and by governments worldwide and represents a complement to traditional valuation techniques. Using the wellbeing valuation approach, the association between exposure to corruption and subjective wellbeing is empirically assessed across
EU Member States and valued in monetary terms. The results confirm that the prevalence of experienced corruption is negatively associated with life satisfaction, whereas such association does not hold for the prevalence of perceived corruption. Citizens who reside in a region with an average prevalence of experienced corruption tend to have a lower life satisfaction than those in a region with a relatively low level of experienced corruption. The extra equivalent household income required to compensate for this difference in life satisfaction is estimated at €1 139 per person, per year, on average in the EU. The values vary substantially across countries depending on the equivalised household income and the current prevalence of experienced corruption. The further analysis proves a statistically significant association between the prevalence of experienced corruption and a person’s general trust both in people and in national institutions. Trust in people and institutions appears to be an important mediating factor in the relationship between experienced corruption and life satisfaction.

To address the final research question, the study quantifies the potential cost savings in two EU-level scenarios that assume the effective implementation of a set of policy options targeted at reducing corruption. The first scenario is one in which, through the mandatory use of open and standardised public procurement data, the amount of missing information in contract and award notices is reduced, and this in turn reduces corruption risk. Using estimates from the existing literature, the analysis conducted for this study suggests that such a scenario could have resulted in potential savings of up to €3.7 billion between 2016 and 2021 (when looking at all public procurement) and up to €571 million (when looking only at procurement of contracts involving EU funds) during the same time period. Minimising the risk of corruption in public procurement is of particular importance in the current context, with the COVID-19 Recovery and Resilience Facility being implemented by the EU this year.

The second scenario is one in which, through a number of policy measures that aim at tackling experienced corruption, both directly and through transparency, there is a reduction in the level of experienced corruption among EU citizens. Our analysis shows that if each Member State had the overall level of experienced corruption equal to the region with the lowest reported level of corruption of that country, an average of €590 per person, per year, could be gained in the level of his or her wellbeing in the EU between 2016 and 2021.
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1. Introduction

1.1. Background

Corruption is a phenomenon which can and does inflict serious harms to societies around the world (European Union 2016; OECD n.d.). In today's globalised world, corruption has become a borderless crime (Interpol n.d.).

Corruption results in substantial losses for society, stemming from market distortions, improper management of public money and lapses in good governance, thereby affecting economic performance and quality of life. In addition, it can undermine political and social stability, and further exacerbate inequality and poverty. It poses a significant challenge to social justice and the rule of law, which in turn may undermine population's trust in democracy and democratic institutions and processes (Mortera-Martinez 2021; Transparency International 2022a). In the past decade, international institutions and governing agencies have introduced anti-corruption regulations. The UN Sustainable Development Goals (SDGs), and more precisely SDG 16, highlight the fact that corruption remains a major obstacle to sustainability and sustainable development (The Global Goals n.d.). Strengthening anti-corruption institutions, processes and systems; and strengthening the collective actions of governments, civil society and the private sector, are priorities in fighting corruption.

The EU has taken several actions to tackle corruption in the past couple of years. For instance, in 2017, the EU adopted a directive to tackle fraud and related offences that affect the EU's financial interests via criminal law (European Commission 2017c). In the same year, a regulation to establish the EPPO was introduced to enhance co-operation among a set of EU Member States to support the investigation and prosecution of crimes against the EU’s financial interests, including corruption (European Commission 2017a). In 2019, the EU adopted a directive on whistle-blower protection which encourages employees to report the offences, including corruption (European Union 2019). Moreover, policymakers are increasingly interested in the link between corruption and organised crime in the EU (Europol 2021; Hulme, Disley and Blondes 2021). Addressing this link was identified by the EU's Security Union Strategy as one of the relevant strategic objectives to be taken forward in 2020–2025. In addition, corruption is monitored systematically under the Rule of Law Mechanism, the European Semester and recovery and resilience plans.

The Covid-19 pandemic has amplified the risk of fraud at EU level through the simplification of procedures to award contracts and distribute funds. As highlighted by the European Parliament, ‘crisis creates opportunities for numerous violations of integrity and could intensify fraud and corruption, as well as non-fraudulent irregularities, particularly in public procurement, stimulus packages and public organisations.'

Hence, despite some advances in the past years, there is a need for further EU action to combat corruption and its negative impacts on the societies and economies of the EU.

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1 Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions on the EU Security Union Strategy, COM(2020) 605 final, European Commission, July 2020.

2 European Parliament resolution of 15 December 2021 on the evaluation of preventive measures for avoiding corruption, irregular spending and misuse of EU and national funds in case of emergency funds and crisis-related spending areas (2020/2222(INI))
This report addresses the following research questions:

1. What is the nature and extent of corruption in the EU? (See Section 2.)
2. What are the costs associated with corruption risk in public procurement? (See Section 3.1.)
3. What are the costs associated with a loss of wellbeing and trust among European citizens? (See Section 3.2.)
4. What policy options are available to tackle corruption at EU level and what would be the monetised value of introducing these policy options? (See Section 4.)

1.2. Methodology

The research conducted for the purpose of this report consists of three distinct steps. First, existing data sources in the area of corruption have been reviewed and other sources that could provide additional indicators have been investigated.

The second part of the analysis provides a quantitative estimation of the costs of corruption in the EU. In order to do so, two different quantitative approaches are developed to update and add value to the existing estimates of the cost of corruption in the EU: an analysis of the cost of corruption associated with public procurement; and an analysis of associations between perceived and experienced corruption, trust and subjective wellbeing. The data and methods used for the quantitative analyses are presented in the sub-sections below.

The third step of the analysis is an assessment of the potential cost savings for two scenarios in which policy options lead to a reduction in corruption in public procurement and a reduction in experienced corruption among EU citizens.

The analysis presented in this report offers two novel contributions to the existing research literature and general knowledge in this area:

- Recent data is used to update existing estimates on the cost of corruption risk in EU public procurement, with a specific focus on estimating the costs of corruption risk in the procurement of contracts where EU funds have been used.
- New, innovative cost estimates for the individual wellbeing costs associated with corruption among EU citizens are provided using an established methodological framework that has not yet been applied in the area of corruption.
1.2.1. Data sources

The analyses in this report are based on several publicly available datasets, which are summarised in Table 1, and presented in more detail in this section.

Table 1: Data sources

<table>
<thead>
<tr>
<th>Dataset</th>
<th>Purpose</th>
<th>Survey question (when applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opentender</td>
<td>Data related to public procurement</td>
<td>N/A</td>
</tr>
<tr>
<td>European Social Survey (ESS)</td>
<td>1. Data on subjective wellbeing</td>
<td>1. ‘All things considered, how satisfied are you with your life as a whole nowadays?’</td>
</tr>
<tr>
<td></td>
<td>2. Data on trust in people and institutions</td>
<td>2. ‘Would you say that most people can be trusted, or that you can’t be too careful?’</td>
</tr>
<tr>
<td></td>
<td>3. Additional data to control for</td>
<td>‘How much do you personally trust each of the (following) institutions: national parliament, the police, politicians, the legal system, political parties, European Parliament, United Nations?’</td>
</tr>
</tbody>
</table>
| European Quality of Government Index (EQI) | Data on experienced and perceived corruption within public services | Use of the two corruption sub-pillars that are directly available in the dataset. Sub-pillar on corruption perceptions based on the following statements:  
  • ‘Corruption is prevalent in my area’s local public school system’  
  • ‘Corruption is prevalent in the public health care system in my area’  
  • ‘Corruption is prevalent in the police force in my area’  
  • ‘People in my area must use some form of corruption just to get some basic public services’  
  • ‘Corruption in my area is used to get access to special unfair privileges and wealth’  
  Sub-pillar on corruption experiences based on the following questions:  
  • ‘In the last 12 months, have you or anyone in your family been asked by a public official to give an informal gift or bribe in: (a) Schools or other education services? (b) Health or medical services? (c) Police authorities? (d) Any other government-run agency?’  
  • ‘In the last 12 months, have you or anyone in your family given an informal gift or paid a bribe to: (a) Schools or other education services? (b) Health or medical services? (c) Police authorities? (d) Any other government-run agency?’ |
| Eurostat                        | Equivalised net income by country                                        | N/A                                                             |

Source: Authors’ elaboration.

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3 The research team is grateful to Bence Toth and Mihály Fazekas from Opentender for their help in clarifying some of the data aspects.
First, in order to update figures related to public procurement, the most recent data that stems from the legacy of the Digiwhist (The Digital Whistleblower) project were collected. More precisely, the data portal Opentender provides data on public tenders across the EU with indicators related to potential corruption risks. Opentender is built on data collection and processing software that gathers procurement data from about 20 various sources, and thousands of web pages in the case of no open data availability. Data is available for the years 2009–2022 for all countries in the EU-27 plus Norway, Switzerland, North Macedonia and the UK. Only data and announcements that appear in the Tenders Electronic Daily (TED), the online version of the ‘Supplement to the Official Journal of the EU’ dedicated to European public procurement, are analysed in this report for comparison purposes across Member States (Fazekas and Kocsis 2017). TED contains variables appearing in both calls for tenders and contract award notices. The analysis is undertaken at the contract level and results are then aggregated at the country level. Only awarded contracts are kept in this analysis. For the purpose of this project, data for the latest five years available – 2016–2021 – were analysed for the EU-27 countries only.

Second, the assessment of the association between corruption and trust is based on the following data sources:

- **European Social Survey (ESS):** A large-scale repeated cross-sectional survey of individuals in about 29 European countries, which covers the years 2002 to 2018.
- **European Quality of Government Index (EQI):** Individual level survey data focusing on perceptions and experiences with (public sector) corruption, among other subjects. Data is collected since 2010 every three years (University of Gothenburg n.d.).

The ESS includes information on a variety of measures such as an individual’s physical and mental health, lifestyle, personal attitudes and life satisfaction. The ESS is a large-scale, repeated, cross-sectional survey of individuals in about 29 European countries and covers the years 2002 to 2018. The ESS also provides information on respondents’ regional location, for instance measured by the European Nomenclature d’Unités Territoriales Statistiques (NUTS) classification. Furthermore, the ESS records the exact date of an individual’s survey response. The ESS is designed to be a representative sample of the residents of a country, independent of language or citizenship. The ESS has been used in the past to analyse the impact of corruption events (Ares and Hernández 2017). As mentioned in Table 1, the ESS includes information on subjective wellbeing, recorded on a scale from 0 to 10, as well as a number of questions on whether a person has trust in other people as well as public national and European institutions such as politicians, the national or European Parliament.

Three different trust variables are regenerated using the data from Table 1. The first one is trust in people in more general which is assessed on a Likert scale from 0 (‘cannot be too careful’) to 10 (‘most people can be trusted’). The variable is recoded to be bounded between 0 and 1 by dividing the responses by the maximum possible score. Second, a variable was developed measuring trust in national institutions (e.g. national parliament, the police force, the political system and political parties, the legal system) which are measured on a Likert scale from 0

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4 For more detail see: [https://opentender.eu/start](https://opentender.eu/start)
5 Other sources include national web portals, open data sources and archives.
6 The authors aimed to focus on the most recent years. Because the Member States had until April 2016 to transpose the EU directives that were adopted in 2014 to simplify the public procurement procedures, data from 2016 was considered to be more homogenous and comparable. Moreover, at the time of the analysis, only data for the first two months of 2022 was available, hence the decision to exclude them in order to not bias the results.
7 For more detail see: [https://www.europeansocialsurvey.org/](https://www.europeansocialsurvey.org/)
8 At the time of the analysis, the latest data available was Round 9 (2018). Round 10 (2020) became available after completing the analysis.
(‘no trust at all’) to 10 (‘complete trust’), whereas all five questions are summed up to create an indicator bounded between 0 and 1 by dividing with the maximum score. The third variable is a trust indicator that measures trust in supranational institutions such as the European Parliament or the United Nations. Responses are assessed on the same scale as the other five questions on trust in institutions and an indicator bounded between 0 and 1 created in the same fashion. For all trust indicators, higher values represent a higher level of trust.

Finally, since experienced corruption is expressed in relative terms compared to household income, data on equivalised net income by country is used from Eurostat.

1.2.2. Quantifying the costs associated with corruption risk in public procurement

First, the analysis of corruption in public procurement is based on data provided by Opentender, which provides information on public procurement contracts and the risks of corruption.

All the prices (and hence the costs) are in euros and have been adjusted to reflect 2021 prices in order to account for inflation.

A summary of the different steps involved in this analysis can be found in Table 2. Further details on the methodology are provided in the remainder of this sub-section.

Table 2: Steps of the public procurement analysis

<table>
<thead>
<tr>
<th>Step</th>
<th>Output</th>
<th>Inputs to the subsequent steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Create corruption risk indicator (CRI).</td>
<td>CRI</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Run econometric specification to assess the impact of corruption risk on relative contract prices.</td>
<td>Extend the association between the CRI and relative prices of public procurement prices.</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Run econometric specification including an interaction term between the CRI and the EU funds variable.</td>
<td>Estimate to assess whether the impact of corruption risks in public procurement on contract relative prices differs between contracts with EU funds and contracts without.</td>
<td>No</td>
</tr>
<tr>
<td>4. Multiply the relative price parameter (Step 2) by the average CRI value (Step 1) in any given Member State, times the total contract value.</td>
<td>Estimate of the total cost of corruption risk in public procurement.</td>
<td>N/A – Final step of analysis.</td>
</tr>
<tr>
<td>5. Run econometric specification to test for Covid-19 impact.</td>
<td>Estimate to assess whether the impact of corruption risks in public procurement on contract relative prices differs between contracts awarded after the start of the pandemic and those awarded before.</td>
<td>No</td>
</tr>
<tr>
<td>6. Reduce sample to contracts with EU funds.</td>
<td>New data sample.</td>
<td>Yes</td>
</tr>
<tr>
<td>7. Run econometric specification (same as in Step 2) on new data defined in Step 6.</td>
<td>Extend the association between the CRI and relative prices of public procurement prices for contracts involving EU funds only.</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Step 1

This step follows the approach taken in European Added Value Unit (2016), and is complemented by the development of the methodology by Fazekas and Kocsis (2017) and Abdou et al. (2022) to quantify the costs of corruption in public procurement for all EU Member States and a large sub-set of procurement sectors. Based on their measure of corruption risk in public procurement (CRI), the integrity indicators available in the ‘Opentender’ dataset as public procurement ‘red flags’ are used to create a similar composite measure. Thus, the explanatory power of these red flags on the corruption risk is assessed through the estimations. The potential ‘red flags’ considered in this study are:

- *single bidder contracts* – whether the contract was awarded in a contract where only one bidder was participating;
- *call for tender publication* – whether a call for tender or prior information notice was published in the Official Journal;
- *procedure type* – whether the procedure type is non-open and related to a higher probability of corruption risks;
- *advertisement period* – whether the length of advertisement period is related to corruption risks;
- *decision period* – whether the decision period length or missing decision period length is related positively to corruption risks;
- *tax haven* – whether the winner company is registered in a tax haven country.

Each of these red flags was represented in the dataset as a categorical score, depending on the magnitude of the risk of corruption associated to it. The score takes the value of 0, 50 or 100 to reflect a low–medium–high risk of corruption.9 The CRI is a weighted measure of the red flags described above recoded to be expressed as a score between 0 and 1, where a higher figure implies higher risk of corruption. It is important to stress that the CRI measures corruption risk and not direct corrupt practices in the procurement of a contract. The indicators aforementioned are expected to be correlated with corrupt exchanges rather than perfectly matched to them. They indicate more warning signals of potential corrupt behaviour taking place. At the same time, a low value of the CRI does not automatically imply that corruption did not occur.

Step 2

Following the approach taken by Hafner et al. (2016), Fazekas and Kocsis (2017) and Abdou et al. (2022), the outcome used to estimate the costs of corruption risk in EU public procurement is the relative contract value (the ratio of actual contract value divided by originally estimated contract value).10 In essence, this ratio gives a rough estimate of price savings a contract achieved compared

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9 Some of the red flags only take the value of 0 or 100.
10 Contract values are estimated by the procuring entity before the launch of the tender, and should in general be included in the call for tenders as per Article 5 of Directive 2014/24/EU of the European Parliament and of the Council
with the initial estimate. In the remainder of the analysis, following the approach of Fazekas and Kocsis (2017) and Abdou et al. (2022), relative contract prices are restricted to only the ones inferior to 1. A value greater than 1 means that the winning bid was priced above the reference price of the contract, which would likely bias the results.\footnote{Awarding a contract above the reference price remains a special case, requiring special circumstances and approvals. Such contracts could also likely be erroneous records.}

The costs of corruption in public procurement at the EU and Member State level are assessed by running the econometric specification shown in Equation 1.

\textbf{Equation 1: Econometric specification showing costs of corruption in public procurement at the EU and Member State level}

\[ r_{\text{price}_{itrc}} = \alpha + \beta CRI_{itrc} + \sigma EUF_{itrc} + \gamma X_{itrc} + \delta_s + \theta_r + \vartheta_c + \mu_t + \epsilon_{itrc} \]

In this equation, \( r_{\text{price}} \) is the relative price of a contract \( i \) in Common Procurement Vocabulary (CPV) sector \( c \), in region \( r \), country \( c \) and year \( t \). \( CRI \) represents the Corruption Risk Index created previously. \( EUF \) is an indicator variable taking the value 1 if the contract included EU funds and 0 otherwise. \( X \) represents a set of control variables including the type of the contracting body (national central government, EU institution), the sector of the contracting body (general public services, health) and the awarded contract value. These control variables account for potential explanations to the corruption risk. \( \delta_s \) represents CPV\textsuperscript{12} fixed effects, \( \theta_r \) represents region fixed effects, \( \vartheta_c \) represents country fixed effects, and \( \mu_t \) represents time fixed effects (year). Including these fixed effects ensures that similar public procurement markets are compared, which generally can be divided across different regions and CPV sectors within Member States. \( \epsilon_{itrc} \) denotes a random error term.

\textbf{Step 3}

In order to understand whether the impact of corruption risks in public procurement on contract relative prices differs between contracts with EU funds and contracts without, a second specification which includes an interaction term between the CRI and the EU funds binary variable is run.

\textbf{Step 4}

The costs of corruption risk in EU public procurement are estimated for the five-year period in total on the basis of the main specification. The cost represents the total cost of corruption risk in public procurement in the EU-27 between 2016 and 2021. The overall total cost is computed by multiplying the relative price parameter by the average CRI value in any given Member State, times the total contract value over the five years.

\textbf{Step 5}

The trends between 2016 and 2021 are then analysed with respect to Covid-19. In order to do so, the same econometric specification mentioned above is used and includes an interaction term between the CRI and a Covid-19 indicator variable to investigate whether the impact of corruption risk on relative prices is different between the period since the start of the Covid-19 pandemic and before. The Covid-19 indicator variable is a binary variable equal to 1 for contracts awarded on or after 11 March 2020,\footnote{The World Health Organization characterised the outbreak as a pandemic on 11 March 2020.} and 0 for the ones awarded before.
Steps 6–8

Finally, the risks and costs of corruption in public procurement involving EU funds only are then analysed, in order to investigate the extent to which EU funds are involved in corruption risks, if at all, using the same method as previously explained.

While this analysis allows existing estimates on the cost of corruption risk in EU public procurement to be extended to include the significant impact of contracts where EU funds have been used, the analysis of public procurement contracts in the EU faces some caveats that need to be mentioned.

- The descriptive evidence on the CRI in the EU-27 should be interpreted with caution, given that these depend on the value and numbers of contracts per Member State and more globally of the overall economic environment.
- Moreover, the CRI is based on single bidding but uncompetitive markets through single bidders do not always relate to corrupt practices but rather may be due to structural aspects of the specific market in some cases.
- In addition, the costs related to EU funds need to be understood as an upper estimate because the Opentender database does not specify what proportion of the full contract was funded by EU funds.
- Finally, the different integrity indicators used as red flags have been recoded in the raw data compared with the 2016 report and are now defined using a cardinal order that reflects a low–medium–high risk of corruption instead of a low–high one previously. While this allows for more precise estimates, it makes direct comparisons with the estimates found in the 2016 report complicated, especially when measuring CRI values.

1.2.3. Valuing the cost of corruption by applying the wellbeing valuation method and the potential mediating role of trust

Existing evidence shows that corruption is negatively associated with individual life satisfaction, because it may affect an individual's trust in institutions or other people (Ciziceno and Travaglini 2019). Christine Lagarde, President of the European Central Bank and former Chair and Managing Director of the International Monetary Fund (IMF) stated that 'corruption both feeds on and is fed by the broader crisis of trust, which sustains a vicious cycle that undermines economic health and social cohesion' (Cane 2018).

The aim of this analysis is to assess empirically the association between exposure to corruption and subjective wellbeing across EU Member States and to value this association in monetary terms. Furthermore, the analysis assesses whether trust is indeed an important mediating factor between corruption and life satisfaction as the existing literature suggests. The analysis applies the wellbeing valuation approach, which calculates the value of corruption by estimating its association with life satisfaction for individuals who are exposed to corruption within their region of living. A monetary value is calculated by estimating the equivalent amount of income people would be willing to forgo to avoid exposure to corruption, which is similar to the concept of willingness to pay (Fujiwara and Dolan 2016). The wellbeing valuation approach has advantages over existing valuation methods as it derives the values without having to ask individuals hypothetical questions on how much they would be willing to pay (e.g. stated preferences) and without relying on specific market data (e.g. revealed preferences). Recently, the wellbeing valuation approach has been introduced into economic appraisal valuations, is used increasingly in the economics literature and governments worldwide, and represents a complement to traditional valuation techniques (Social Impacts Task

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15 An overview of the different valuation methods and their comparison to the wellbeing valuation approach is provided in Annex A.
Force 2021). For example, the UK’s latest public appraisal guidelines have upgraded wellbeing effects to a central role in the valuation of the benefits and costs across policy development (Ibid).

How the wellbeing valuation approach is implemented empirically

The underlying empirical approach and the steps taken can be described in simple terms as follows:

- **Step 1** – estimate the association between exposure to corruption and/or trust to both income and individual subjective wellbeing;
- **Step 2** – estimate the necessary income (or so-called ‘compensating variation’) which would be needed in order to counteract or compensate for the reduced subjective wellbeing resulting from exposure to corruption.

In more technical terms, the empirical analysis first tests the relationship between subjective wellbeing and corruption, keeping other factors constant that could affect wellbeing. This **first step** is essentially based on estimating the baseline (linear) empirical specification shown in Equation 2:16

Equation 2: Specification of individual subjective wellbeing as a function of exposure to corruption

\[
SWB_{irt} = \beta_0 + \beta_{corr}Corr_{irt} + \beta_2X_{irt} + \delta_r + \epsilon_{irt} \tag{1}
\]

In this equation, the variables are defined as follows:

- \(SWB_{irt}\) denotes the self-reported subjective wellbeing of individual \(i\) living in location \(r\) at time \(t\). It serves as a measure of the individual utility.
- \(Corr_{irt}\) denotes an indicator measuring the exposure to corruption for an individual at time \(t\) in region \(r\). Note that if the level of corruption or a lack of trust is expected to have a negative impact on an individual’s subjective wellbeing, then the estimated values for parameters \(\beta_{corr}\) are expected to be negative.
- \(X_{irt}\) represents a vector of control variables usually applied in measuring determinants of happiness including personal characteristics of individual \(i\), such as education level, gender, age, household income, job situation or marital status. It is important to include control variables that are correlated both with subjective wellbeing and income and/or corruption exposure in order to reduce possible omitted variable bias.
- \(\delta_r\) are time-invariant region-specific effects, controlling for factors that do not change over time within specific regions, such as specific geographical characteristics.

To better understand the mediating factors between corruption and trust, different model specifications of Equation 1 are estimated that either include or exclude trust indicators (e.g. level of trust in public institutions) to check their statistical significance and estimate the parameter \(\beta_{trust}\). Including trust indicators \(Trust_{it}\) enables a better understanding of the mediating role of trust between corruption and life satisfaction. The mediation analysis consists of estimating Equation 1 with just corruption as the explanatory variable and then adding trust indicators as well, and observing to what extent the coefficient \(\beta_{corr}\) changes in magnitude and statistical significance. \(\beta_{corr}\) in the first specification without the trust variable would represent the total effect of corruption on subjective wellbeing, whereas \(\beta_{corr}\) in the model specification with trust would represent the direct effect of corruption. The indirect effect of corruption is calculated as the difference between the total effect and the direct effect. The statistical analyses are conducted in

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16 Using either ordinary least squares (OLS) or since the outcome variable is on a Likert-Scale between 0 and 10 also using non-linear ordered logit. Previous empirical research suggests that the findings are robust against the choice of estimation method. Given that a large set of fixed effects is included in the analysis and maximum likelihood estimation faces challenges with a large set of fixed effects the OLS method is chosen as is standard practice.
Stata 17 and, where necessary, recommended sampling weights are applied for both descriptive statistics and the regression analysis. In the second step, the aim is to value the welfare loss associated with exposure to corruption. To measure the monetary equivalent of a given change in subjective wellbeing, the regression coefficient $\beta_{corr}$ is used to calculate the compensating income variation (CIV), which can be determined as the level of equivalent household income required to equate life satisfaction in the presence of corruption to the level that would exist in the absence of corruption. This is shown in Equation 3.

**Equation 3:** The level of equivalent household income required to equate life satisfaction in the presence of corruption to the level that would exist in the absence of corruption

$$CIV = \frac{-\beta_{corr}}{\beta_M}$$

This can be interpreted as the amount of money that would be required to keep subjective wellbeing constant in the absence of corruption. $\beta_M$ represents the wellbeing effect associated with income, which is typically modelled in log form, $\ln(M)$, in order to account for the diminishing marginal utility of income. In this case, the compensating variation in monetary terms can be calculated as shown in Equation 4.

**Equation 4:** Compensating variation in monetary terms to account for the diminishing marginal utility of income

$$CIV = M \left[ \exp \left( -\frac{\beta_{corr}\Delta corr}{\beta_M} \right) - 1 \right]$$

Where:

- $M$ is equivalised household income; $^{18}$
- $\beta_M$ is the coefficient of log income (1.96 from Fujiwara 2021);
- $\beta_{corr}$ is the coefficient for corruption effect on subjective wellbeing;
- $\Delta corr$ is the change in the level of corruption that is assessed.

Note that following the guidance by Fujiwara (2021), $\beta_M$ that is used comes outside of the study's statistical analysis because in most cases the coefficient for income in a wellbeing equation is not estimated accurately and suffers from downward biases (e.g. omitted variable bias). Using the income coefficient $\beta_M$ of 1.96 ensures that the CIV is not overestimated as lower values of $\beta_M$ would increase the CIV, all else equal (Fujiwara 2021). $\Delta corr$ represents the change in the prevalence of regional corruption that is to be assessed, e.g. in a scenario analysis. For instance, if the current experienced corruption index in region $r$ is 0.5, a full eradication of experienced corruption in that region would represent $\Delta corr = -0.5$.

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17 See the guidance provided by the ESS for more details: [https://www.europeansocialsurvey.org/docs/methodology/ESS_weighting_data_1_1.pdf](https://www.europeansocialsurvey.org/docs/methodology/ESS_weighting_data_1_1.pdf)

18 Note that equivalised household income is the household income adjusted by the household size. For the purpose of this analysis the equivalised net household income data by country from Eurostat is used directly.

19 Fujiwara (2021) estimated an income coefficient ($\beta_M$) of 1.25 with life satisfaction being measured on a 1-7 scale. Because in our analysis, the outcome variable (LS) is based on a Likert-Scale between 0 and 10, we multiplied the original coefficient by 11/7 to be expressed on a 0-10 scale resulting in 1.96.
Combining the ESS individual survey responses with regional data provided by the EQI

To calculate the wellbeing values associated with corruption from Equation 1 and the monetised values from Equation 3, the authors draw on two key data sources: the ESS and the EQI. Data on household income from Eurostat is also used.

First, the ESS provides sample weights to make the analysis representative for the respective populations in each region of a country. Furthermore, the ESS also records a region code for each respondent that corresponds to the NUTS classification of levels I, II and III or region code. The empirical analysis tests whether corruption is associated with trust in public institutions, and whether a decrease in trust in political institutions might be a mediating factor in the relationship between corruption and subjective wellbeing.

The following covariates are used as control variables when estimating Equation 1, $X_{tir}$:

- age;
- gender;
- number of people living in the same household;
- marital status;
- current self-reported health status;
- household income;
- whether disability or mental problem is hampering daily life;
- highest achieved education;
- current employment status;
- five-year retrospective employment status (binary variables whether individual has been unemployed in the past);
- religious belonging or denomination;
- member of ethnic minority group;
- crime victimisation experienced in the last five years;
- social interactions (e.g. regularly meeting friends);
- fear at night in area of living;
- citizenship of country of residence;
- last national election vote (binary variable whether individual voted in the last national election).

Second, to these variables is merged the EQI information at the regional NUTS level that is provided for each of the individual responses in the ESS. The primary aim of the EQI is to build indices of quality of government capturing the extent to which citizens experience and perceive corruption within their public services. The sample comprises citizens aged 18 or older across EU Member States with regional identifiers at the NUTS level. The EQI asks individuals completing the survey whether they believe that corruption is prevalent in their area’s public institutions (e.g. school, police force, health system) or whether they or family members have been asked by a public official from a public institution to give an informal gift or bribe. For the purpose of the analysis, the regionally aggregated version\(^\text{20}\) (NUTS 2) of the perceived (EQI-PCI) and experienced (EQI-ECI) corruption indicators are used and merged at the NUTS level to the individual responses provided in the ESS.\(^\text{21}\)

Note that while the original EQI-PCI and EQI-ECI are coded so that higher values represent lower

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20 For further information on the regional level dataset, see: https://www.qogdata.pol.gu.se/dataarchive/qog_eqi_2017.pdf.

21 However the available region code varies within country across the different waves, which we have to adjust for by aggregating EQI corruption indicators from the NUTS 2 level to the NUTS 1 level.
values of corruption, the study team recoded and rescaled to a continuous variable that is bounded between 0 and 1 so that larger values (closer to 1) represent higher levels of corruption (perceived or experienced). It is important to highlight that because of the regional aggregation of the corruption indicator variables, the coefficients related to the corruption indicators in Equation 1 do not measure direct exposure to corruption at the individual level but the general prevalence of corruption at the regional level (e.g. on whether an individual lives in a region where experienced or perceived corruption is relatively high or low). In order to identify an association between corruption and subjective wellbeing this analysis exploits regional variation in the prevalence of either experienced or perceived corruption.

In essence, to estimate the parameters of Equation 1, the ESS 2018 (Wave 9) data is combined with regional corruption indicators from the EQI based on the year 2017, whereas corruption data is from 2017 and individual responses in ESS are from 2018 and 2019 (depending on when an individual was surveyed). The corruption data in the EQI available is more complete in regional coverage, but the EQI 2021 data could not be operationalised for assessing the association between corruption, trust and life satisfaction. Indeed, the latest ESS Round 10 includes data for only a few countries for the years 2020 onwards and the methodology requires a metric for corruption measured over time, as it considers individual wellbeing a response to life satisfaction\(^{22}\) (i.e. corruption enters Equation 1 with an intrinsic ‘time lag’). Nevertheless, the EQI 2021 data are used to assess the monetary value of the wellbeing loss based on the estimated parameters, which enables the consideration of the latest corruption indicators; it also has a slightly larger coverage by country and region. It is furthermore important to highlight that the ESS 2018 does not include responses from citizens from all Member States and data for some countries and regions is not available in the EQI 2017. Table 3 shows which countries and their regions have been included in the final data sample to estimate the parameters of Equation 1.\(^{23}\)

Table 3: Mapping between ESS 2018 and EQI 2017 at NUTS level to create a data sample to estimate Equation 1

<table>
<thead>
<tr>
<th>Member State</th>
<th>Included in ESS 2018</th>
<th>Included in EQI 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Belgium</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cyprus</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Germany</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Denmark</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Estonia</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Spain</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Finland</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>France</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Greece</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Croatia</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Hungary</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ireland</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

\(^{22}\) Not having the corruption questions asked before the life satisfaction questions would yield reverse causality issues and bias the econometric specification.

\(^{23}\) Including Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Poland, Portugal, Slovakia, Spain and Sweden.
Quantitative analysis of the costs of corruption in the EU

<table>
<thead>
<tr>
<th>Member State</th>
<th>Included in ESS 2018</th>
<th>Included in EQI 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lithuania</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Latvia</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Malta</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Poland</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Portugal</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Romania</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sweden</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Slovenia</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Slovakia</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: Authors’ elaboration of ESS and EQI data.

Calculating the CIV using estimated parameters, prevalence of corruption from the EQI 2021 and household data from Eurostat at the regional level.

Once the parameter $\beta_1$ is defined, the relative share of income an individual is willing to forgo to reduce the prevalence of corruption ($\frac{\text{exp} \left( -\frac{\beta_{\text{corr}} \Delta \text{corr}}{\beta_M} \right) - 1}{\beta_M}$) is computed. For the purpose of this analysis, data on corruption at the regional level is aggregated at the Member State level. Data on household income by country provided by Eurostat is then used for calibrating $M$ in Equation 3. As mentioned in the previous section, the parameter of $\beta_{\text{corr}}$ is estimated on the basis of ESS and EQI data for the years 2018 and 2017 respectively, but applied to EQI 2021 data on the corruption indices to calculate the welfare losses from the most recent and comprehensive data on the prevalence of corruption (experienced and perceived) at the regional NUTS level.

Limitations of the analysis

While the wellbeing analysis on the topic of corruption offers new insights on how corruption may affect the life satisfaction of EU citizens and assigns an associated monetary value to the loss of subjective wellbeing, there are a number of limitations that need to be taken into consideration when interpreting the findings. First, the analysis is based on cross-sectional data for the year 2018, so any coefficients presented have to be interpreted as correlations and not causation. Second, corruption (experienced and perceived) in this analysis is not based on exposure to corruption at the individual level, e.g. the individual completing the ESS is not asked about the experience with paying bribes, as that information is retrieved from the EQI and merged to the ESS at the regional level. Hence, the variable of corruption has to be interpreted as the general regional prevalence of experienced or perceived corruption rather than direct individual exposure or experience. Third, for a number of countries and regions there is missing data in the analysis as some countries have not been surveyed in the ESS 2018 and some regions do not have EQI corruption values in 2017. Hence the analysis provides mean associations for the prevalence of corruption, which then are applied to all Member States uniformly, even for countries where missing data was prevalent.

1.2.4. Policy options and scenarios to estimate the potential cost savings

This part of the analysis estimates the potential cost savings in two scenarios, which imagine that policy measures were effective in reducing corruption in the period between 2016 and 2021.

The policy measures included in these scenarios draw on positions taken by the European Parliament during the 2019-2024 legislature (until April 2022) and could be feasibly related to the econometric modelling framework.
There are a number of caveats and limitations that need to be taken into consideration regarding the estimates produced through the scenarios used in this study:

- It was not within the scope of this study to investigate gaps and barriers in the existing regulatory framework, the legal basis of the policy options, nor the feasibility of implementing the policy options outlined in the scenarios.
- The hidden and informal nature of corruption makes it difficult to observe and measure, and hence a challenging field in which to produce quantitative estimations. There is also limited empirical evidence about the effectiveness of law and policy measures in reducing corruption.
- The second scenario estimates the savings from a reduction in the level of experienced corruption among EU citizens. This requires the use of a counterfactual scenario for subjective wellbeing, therefore most of the limitations mentioned in Section 1.2.3 apply; it is difficult to know if these estimates reflect the true wellbeing loss due to experienced corruption within each of these countries.

1.3. Structure of this report

This report is organised as follows. Section 2 provides an overview of the nature and extent of corruption in the EU (addressing Research Question 1). Definitions and existing indicators of corruption are presented, followed by a review of the existing evidence on the estimated impacts of corruption. Section 3 provides the results of the two different quantitative approaches that have been developed to estimate the cost of corruption in the EU. Section 3.1 focuses on the costs associated with corruption risk in public procurement (Research Question 2), and Section 3.2 focuses on the costs associated with a loss of wellbeing and trust among European citizens (Research Question 3). Finally, Section 4 includes the assessment of cost savings in the area of corruption based on two scenarios of effective policy measures for reducing corruption.
Quantitative analysis of the costs of corruption in the EU

2. Nature and extent of corruption in the EU

2.1. Defining corruption

There is no single definition of corruption as corruption exists in different forms involving different participants. Indeed, corruption is an endemic phenomenon that takes multiple shapes and forms across all facets of society, for example bribery, embezzlement, trading in influence, trading of information, abuse of functions, diversion of public funds and illicit enrichment (UNODC, n.d.).

A key distinction can be made between grand corruption and petty corruption. Grand corruption refers to corrupt interactions between higher levels of administrations, top political party officials, elected politicians and private sector interests, while petty corruption refers to exchanges between lower echelons of the public administration and individual citizens (European Commission 2017d).

Regardless of the level of (decision-making) authority, some reports also distinguish between collusive and extortive corruption. Collusive corruption refers to a situation where both parties involved are motivated to participate and conspire to keep the crime hidden (often the case in procurement-related corruption or other business deals) (OECD 2015). Extortive corruption refers to a situation where the individual or entity that is making the bribe payment feels forced to be involved; and this goes beyond petty corruption (Ibid.). The term bribery, probably the most well-known type of corruption worldwide, covers two types of corruption: ‘active bribery’, whereby a person offers, promises or gives an advantage, and ‘passive bribery’, which is when someone requests, agrees to receive or accepts an advantage (Transparency International UK 2017).

Corruption can also be defined through specific distinct angles (Council of Europe 2015). For instance, according to the Organisation for Economic Co-operation and Development (OECD), there is a distinction to be made between the definition in criminal law and the definition for policy purposes. The OECD, the Council of Europe and the UN conventions do not define ‘corruption’ but establish the offences for a range of corrupt behaviour including the ones mentioned above. On the other hand, international definitions of general corruption for policy purposes are more common, such as the definition of corruption by the World Bank (2022b): ‘abuse of public or private office for personal gain’. Similarly, Transparency International defines corruption as ‘the abuse of entrusted power for private gain’. More detailed definitions of corruption exist, as ‘there are as many different definitions of corruption as there are manifestations of the problem itself’ (OECD 2008).

2.2. Indicators of corruption

The hidden and informal nature of corruption makes it difficult (or even impossible) to observe and measure. Indeed, as stated by the IMF, ‘Corruption is macro-relevant for many countries, but is often hidden, making measurement of it – and its effects – inherently difficult’ (Hlatshwayo et al. 2018). This was also acknowledged by the UNDP: ‘corrupt activities are covert by nature, making identification nearly impossible without reliable administrative data and sophisticated methods of detection and analysis’ (Trapnell 2015). Hence, data on the actual level or extent of corruption is usually not reliable when available. Moreover, direct measurements of corruption are in general not comparable at the transnational level: ‘How confident can we be that one country is more (or less) corrupt than other one based on their results?’ (Ibid.).

Several corruption indices and indexes have been developed by various organisations and institutions, providing measures of perceptions, experience and risks of corruption. These include, but are not limited to the Corruption Perception Index, the Global Corruption Barometer, the

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24 For instance, the OECD Convention establishes the offence of bribery of foreign public officials, while the Council of Europe Convention establishes offences such as trading in influence.
Control of Corruption Indicator, the European Quality of Government Index, the Index of Public Integrity, the Global Corruption Index (GCI), OECD’s Public Integrity Indicators and the Bayesian Corruption Index.

2.3. Harms and costs of corruption

The consequences of corruption are serious and widespread, implying negative fallouts at social, political and economic levels, which are deeply interconnected. Indeed, corruption yields significant economic costs (through lower GDP growth, loss of economic efficiency and market distortions), social harm (distributional effects, inequality and social cohesion), environmental costs (level of pollution) or political costs (loss of political and institutional trust damages public institutions and undermines the rule of law) (Chêne 2014; European Commission 2017d; OECD 2015; UNODC 2019a).

This leads to lower levels of human development, which, in turn, may undermine long-term sustainable development (having a direct impact on the UN SDGs), economic growth and equality (Chêne 2014; UNODC 2019a).

Corruption can have negative impacts on the quality of institutions, distorting public decision-making, reducing incentives for innovation and discouraging investments, with negative economic consequences at the macroeconomic level. However, existing research suggests that corruption also affects individuals, with higher levels of perceived corruption associated with lower levels of life satisfaction among citizens (Bjørnskov, Dreher and Fischer 2008; Rothstein 2010). Recent research also predicts that a decrease in trust in institutions is the key mediating factor for the link between corruption and deterioration of life satisfaction (Ciziceno and Travaglino 2019).

2.4. Existing evidence

In the last decade, several studies have attempted to estimate the cost and extent of corruption at different levels. For instance, curbing corruption could yield global gains of US$1 trillion in lost tax revenues, or 1.25% of global GDP (Mauro, Medas and Fournier 2019). Moreover, around a quarter (24%) of global organisations have reported being victims of bribery and corruption (PricewaterhouseCoopers n.d.).

The Covid-19 pandemic is likely to have impacted corruption and its perceptions globally. Indeed, Antonio Guterres, the Secretary General of the UN, observed: 'Corruption (…) is even more damaging in times of crisis – as the world is experiencing now with the Covid-19 pandemic.' To mitigate the risks of corruption related to the pandemic, which are particularly high in the health sector and in governments’ action to tackle its economic impact, the Group of States against Corruption (GRECO), the Council of Europe’s anti-corruption monitoring body, released guidelines in the first months of the pandemic (GRECO 2020). The organisation's anti-corruption body emphasised the importance of applying 'transparency, oversight and accountability' when distributing public expenditure aimed at mitigating the impacts of the Covid-19 pandemic, including from the EU’s recovery fund (Euronews 2021). According to Transparency International, only around 40% of EU citizens considered that the pandemic was handled by their government in a transparent way (Walker 2021). Corruption has also increased during the pandemic for EU citizens accessing health care: almost a third of EU residents have used personal connections to receive medical attention (Kukutschka 2021). Delia Ferreira Rubio, chair of Transparency International, commented, 'During a health crisis, using personal connections to access public services can be as damaging as paying bribes. Lives can be lost when connected people get a Covid-19 vaccine or medical treatment before those with more urgent needs. It is crucial that governments across the EU redouble their efforts to ensure a fair and equitable recovery from the ongoing pandemic’ (Transparency International 2021). These increases in corruption risks in the context of the current Covid-19 pandemic may threaten vital public health goals.
2.4.1. The nature of corruption in public procurement

Before the Covid-19 pandemic, public procurement accounted for 12% of the GDP in OECD countries and almost 30% in developing countries, accounting for more than 30% of total government spending (OECD 2019). In the EU, the purchase of services, works and supplies accounts for 14% of GDP (around €2 trillion) every year (European Commission n.d.).

The EU is facing key policy challenges that crucially require efficient public procurement to be solved (European Commission 2017b). Indeed, the procurement of goods, services and works by public entities and publicly owned companies is needed for them to be able to carry out their duties and responsibilities.

However, it is agreed in the literature that public procurement is one of the government activities most vulnerable to corruption (Abdou et al. 2022; Bosio 2021; Colonnelli and Prem 2022; OECD 2016). The procurement process comprises five stages, and corruption risks occur at all stages: pre-selection activities, tendering process, bid evaluation, post-selection activities, and record keeping and auditing (UNODC 2019b).

Corruption in public procurement has been proven to yield significant costs for EU economies, in monetary terms and its impact on the quality of the work provided (Abdou et al. 2022; European Added Value Unit 2016; Fazekas and Kocsis 2017; Fazekas et al. 2013; Transparency International 2022b). Indeed, yearly, an estimated 10–25% of a public contract’s value is lost to corruption (UNODC 2013), and a majority of people in the EU doubt that government contracts are allocated competitively (Kukutschka 2021).

Moreover, the pandemic that has hit the world for the past two years has also exacerbated risks for corruption in public procurement in the EU (Beuter 2020; Wright and Darby 2020).

2.4.2. Impact of corruption on trust in institutions

In parallel to the rise of corruption, developed societies have faced a significant crisis of trust in government and institutions (institutional trust25). Indeed, in 2021, the Edelman Trust Index found that only 56% of EU citizens had trust in institutions, and business was the only trusted institution among non-governmental organisations (NGOs), governments and the media (Edelman 2021). The relationship between trust and corruption has been addressed extensively in the literature, mainly through the study of non-causal links using survey data. Some authors argue that corruption drives down levels of confidence in public institutions (e.g. Dinersen 2012; Rothstein and Eek, 2009; and Herreros and Criado, 2008), while others suggest that corrupt practices are increased by lower public confidence (e.g. Bjørnskov, 2010; Graeff and Svendsen 2013; and Kubbe 2013).

However, when considering trust in institutions, there is a need to distinguish between national, international and supranational institutions. For instance, according to the 2021 Eurobarometer data, trust in the EU has reached its highest level since 2008 with almost half (49%) of Europeans trusting the EU, whereas only 36% of Europeans trust their national government and 35% trust their parliament (European Commission 2021).

As implied in the previous section, trust in institutions is highly context dependent. Patterns of trust vary across different social, institutional, political or cultural contexts (Boda et al. 2018). Eurofound has investigated trends in trust in institutions between 2001 and 2016, focusing on patterns of change since the beginning of the century and paying particular attention to the relationship between confidence in national institutions and the EU. Their results suggest that the decline of

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25 It is important to distinguish between two forms of trust: interpersonal trust, which means trust in other members of the society, and institutional trust, which means trust in political institutions, such as the government or political parties.
trust over the period has not been uniform across Member States, and that some have experienced a more volatile trust in national institutions; on the other hand, the level of trust in the EU institutions has been steadily higher than the one in national governments (Ibid.).
3. Assessment of corruption risks in the EU and induced costs on society

This chapter provides the results of the analysis of the cost of corruption in the European Union in two new ways. First, data for the cost of corruption risk in EU public procurement is updated. Second, it establishes the monetary value of wellbeing cost associated with corruption and the lack of trust among EU citizens.

3.1. Public procurement analysis

3.1.1. Descriptive analysis – corruption risks across Europe

The corruption risk in public procurement as measured by the CRI at the EU level varies significantly between 2016 and 2021 (Figure 1). Interestingly, while the risk of corruption in public procurement decreased between 2016 and 2018, there has been a significant rise in the CRI values between 2019 and 2021 (of 10%, with 9% between 2020 and 2021). The trend is similar for contracts involving EU funds. The increase in the CRI between 2019 and 2021 has been of 12% (7% between 2020 and 2021) (Figure 2).

Source: Authors’ elaboration of Opentender data.

3.1.2. In-depth analysis

In this section, an update for the costs of corruption risk in EU public procurement is presented. All the prices have been deflected to reflect 2021 prices.

Global analysis

Table 4 reports the results from the association between the CRI and relative prices of public procurement prices as defined in steps 2 and 3 in Section 1.2.2. Perhaps unsurprisingly, a higher CRI is associated with higher contract prices and this association is statistically significant. A one-unit increase in the CRI is found to raise prices (or reduce cost savings) on average by about 34% (Column 1), and contracts with one additional red flag are predicted to increase prices by 4.9%.
The empirical finding suggests that the presence of EU funds in a contract also yields higher prices. Column 2 includes an interaction effect between the CRI and the EU funds indicators, and the results show a significant estimate. This means that the effect of corruption risk on relative contract prices is statistically significantly different for contracts involving EU funds and contracts without EU funds.

Table 4: Corruption risk in public procurement and relative contract prices, full sample

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>1 Relative contract price</th>
<th>2 Relative contract price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRI</td>
<td>0.3418 (0.027)**</td>
<td>0.3355 (0.028)**</td>
</tr>
<tr>
<td>EU funds</td>
<td>0.0221 (0.010)**</td>
<td>0.0124 (0.008)</td>
</tr>
<tr>
<td>CRI * EU funds</td>
<td>0.0660 (0.029)**</td>
<td>0.0660 (0.029)**</td>
</tr>
<tr>
<td>Observations</td>
<td>516,160</td>
<td>516,160</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.1154</td>
<td>0.1155</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.10. Regression model presented here include other controls variables such as the type and sector of contracting body, the contract value and CPV, region, country and year fixed effects. The 95% confidence interval for the CRI parameter estimate is [0.286, 0.398].

Source: Authors' elaboration of Opentender data.

Using the estimate from this regression, the total value of the contracts per year and the CRI value per year and per country, the total cost of corruption risk in public procurement in the EU-27 between 2016 and 2021 across all sectors is found to be €29.6 billion (CI 95%: 24.9–33.3). Table 5 presents the costs for the EU-27 disaggregated by year, from Step 4 of the analysis. The results disaggregated by country can be found in Annex B, Table B.1.

There are noticeable differences among countries. It is important to stress that there is an interplay of factors explaining these results. For instance, some countries have a high overall value of contracts (and a high overall number of contracts), but also a relative high corruption risk across their public procurement contracts over the years respectively to the EU-27 average. Other countries, in comparison, have lower CRI values but a really high overall value of the contracts for one of the years, leading to high costs of corruption risk.

Table 5: Total cost related to corruption risk in EU public procurement, 2016–2021, full sample

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cost</td>
<td>€3 659 million</td>
<td>€3 707 million</td>
<td>€4 939 million</td>
<td>€5 125 million</td>
<td>€5 656 million</td>
<td>€6 517 million</td>
<td>€29 603 million</td>
</tr>
</tbody>
</table>

Source: Authors' computation.

The total costs per year follow logically the same trend as the CRI, with a sharp increase since 2019. The costs of the risk of corruption in public procurement in the EU-27 increased by 27% between 2019 and 2021, with a 11% rise in the first year and a 15% increase in the second one.

As previously mentioned, Covid-19 is likely to have had an impact on corruption in public procurement in the EU. Using the interaction between the CRI and the Covid-19 binary variable defined in Step 5 of Section 1.2.2 on relative contract prices, the effect of the corruption risk on relative contract prices is found to be significantly higher for contracts that were awarded after the
start of the pandemic compared with the ones awarded before March 2020, all else equal, as shown in Table 6.

Table 6: Corruption risk in public procurement, Covid-19 and relative contract prices, full sample

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Relative contract price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRI*Covid</td>
<td>0.0385 (0.006)***</td>
</tr>
<tr>
<td>CRI</td>
<td>0.3336 (0.003)***</td>
</tr>
<tr>
<td>Covid</td>
<td>-0.0024 (0.001)*</td>
</tr>
<tr>
<td>Observations</td>
<td>450,181</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.1112</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10. Regression models presented here include other controls variables such as the type and sector of contracting body, the contract value and CPV, region, country and year fixed effects.

Source: Authors’ elaboration of Opentender data.

EU funds analysis

The same analysis was performed on the sub-sample of contracts involving EU funds, motivated by the coefficient of the interaction from the regression in Table 7, as per steps 6 and 7 of Section 1.2.2. This analysis makes it possible to understand the magnitude of the costs of corruption risk in public procurement for the contractors who received EU funds, and the extent to which this contributes to the overall cost of corruption. Similarly to the analysis on the global sample, the results suggest that a higher CRI is associated with higher contract prices and this association is statistically significant. The magnitude of this relationship is even higher for EU fund contracts than in the global analysis: a one-unit increase in the CRI is estimated to raise prices of contracts involving EU funds on average by about 39%, and contracts with one additional red flag are predicted to increase prices by 6%.

Table 7: Corruption risk in public procurement and relative contract prices, EU funds sample

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Relative contract price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRI</td>
<td>0.3922 (0.037)***</td>
</tr>
<tr>
<td>Observations</td>
<td>47,885</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.1455</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10. Regression model presented here include other controls variables such as the type and sector of contracting body, the contract value and CPV, region, country and year fixed effects. The 95% confidence interval for the CRI parameter estimate is [0.320, 0.464].

Source: Authors’ elaboration of Opentender data.

Using this empirical estimation, the total cost of corruption risk in public procurement contracts involving EU funds in the EU-27 between 2016 and 2021 is estimated to be €4.3 billion (CI 95%: 3.5–5.1) (
Table 8). The results disaggregated by country can be found in Annex B, Table B.2.

Table 8: Total cost related to corruption risk in EU public procurement, 2016–2021, EU funds sample

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>€431.4 million</td>
<td>€527.3 million</td>
<td>€725.1 million</td>
<td>€871.0 million</td>
<td>€865.3 million</td>
<td>€920.1 million</td>
<td>€4,340.2 million</td>
</tr>
</tbody>
</table>

Source: Authors' computation.

The results of the analysis of the interaction between the CRI and the Covid-19 binary variable are shown in Table 9. This analysis shows that the effect of the corruption risk on relative contract prices involving EU funds is found to be significantly higher for contracts awarded after the start of the pandemic than for those awarded before March 2020, all else equal. However, the impact of Covid solely doesn’t prove to have had a significant impact on relative contract prices involving EU funds.

Table 9: Corruption risk in public procurement, Covid-19 and relative contract prices, EU funds sample

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Relative contract price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRI*Covid</td>
<td>0.0323 (0.015)**</td>
</tr>
<tr>
<td>CRI</td>
<td>0.3821 (0.010)***</td>
</tr>
<tr>
<td>Covid</td>
<td>-0.0051 (0.003)</td>
</tr>
</tbody>
</table>

Observations 47,885
R-squared 0.1442

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10. Regression models presented here include other controls variables such as the type and sector of contracting body, the contract value and CPV, region, country and year fixed effects.

Source: Authors’ elaboration of Opentender data.

3.2. Associations between perceived and experienced corruption, trust and subjective wellbeing

This section presents the findings from the methodological approach outlined in Section 1.2.3, which links data from the EQI with ESS data and examines the empirical relationship between corruption (perceived and experienced) as well as trust and subjective wellbeing.

It starts with descriptive statistics on how perceived and experienced corruption are correlated with different metrics of trust. Subsequently the empirical findings of estimating Equation 2 are reported.

3.2.1. Descriptive statistics: corruption indices (experienced and perceived) across Member States

As highlighted in Section 1.2.3, there are a number of regions and countries for which the indicators were not available in. Note also that the original EQI indicators have been rescaled so higher values represent more corruption and are now bounded between 0 and 1.
Looking at the EQI-ECI, some countries tend to have higher indicator values in both 2017 and 2021. For some others, the average EQI-ECI went down between 2017 and 2021. However, it is difficult to read too much into these trends as 2021 already captures the effects of Covid-19.

Furthermore, there are some interesting observations regarding the difference between experienced and perceived corruption. For instance, while perceived corruption is relatively high among the populations in some Member States in 2021, the level of the EQI-ECI is much lower on average. Hence there might be some discrepancy between the level of corruption that is perceived by individuals versus the actual prevalence of corruption. However, it is important to note that perceived corruption could be driven also by media reporting about corrupt businesses or public individuals, which is not necessarily captured at the level of whether individuals need to pay bribes or favours to receive public goods.

### 3.2.2. In-depth analysis: regression results

**Associations between subjective wellbeing, and the prevalence of corruption**

Table 10 reports the parameter results for estimating two model specifications of Equation 1 using ordinary least squares. These two models investigate the associations between subjective wellbeing and the prevalence of experienced corruption (Column 1) and perceived corruption (Column 2). Column 1 shows that the prevalence of experienced corruption is significantly negatively associated with life satisfaction, whereas the association for the prevalence of perceived corruption is not statistically significantly different from zero (Column 2). The coefficient for experienced corruption (-0.5788) can be interpreted as the average reduction in life satisfaction between a person that lives in a region with a value of 1 for the prevalence of experienced corruption index compared to a person living in a region with a value of 0.26 So for example, a person living in a region with relative high prevalence of experienced corruption has a 10% lower life satisfaction, all else equal, than a person living in a region with relative low prevalence of experienced corruption.27

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>1 Experienced corruption</th>
<th>2 Perceived corruption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Life satisfaction (0–10)</td>
<td></td>
</tr>
<tr>
<td>EQI-ECI</td>
<td>-0.5788</td>
<td>0.4573</td>
</tr>
<tr>
<td></td>
<td>(0.3433)**</td>
<td>(0.4354)</td>
</tr>
<tr>
<td>EQI-PCI</td>
<td>5.7955</td>
<td>5.5715</td>
</tr>
<tr>
<td></td>
<td>(0.5024)**</td>
<td>(0.5216)**</td>
</tr>
<tr>
<td>Constant</td>
<td>24.855</td>
<td>24.855</td>
</tr>
<tr>
<td></td>
<td>0.2589</td>
<td>0.2587</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors in parentheses ***p<0.01, **p<0.05, *p<0.1. Each model specification in Column 1 and Column 2 is adjusted for a large number of variables, including age, gender, household income decile, household composition, employment status, marital status, health status, whether illness, disability or mental problem hampers daily life, whether person voted in last national elections, whether person socially meets with friends, number of people with whom intimate and private matters can be discussed, victim of burglary or assault over the last five years, feeling of safety when walking home at night in local area, religious belonging, member of ethnic minority group, citizenship in country of residence as well as country fixed effects. ESS survey weights are applied for regressions.

The study team was interested in whether there are potential gender differences in the associations between the prevalence of experienced or perceived corruption and subjective wellbeing. The team

---

26 Note that due to the way the index is scaled, 0 does not necessarily represent no corruption at all, it represents the region with the lowest relative value for the prevalence of experienced corruption.

27 \(-0.5788/5.7955\times100\).
therefore interacted the corruption indicators with a binary indicator variable for being female and present the results in Table 11. Overall, the interaction terms with the EQI-ECI and EQI-PCI are not statistically significantly different from 0, all else equal. Hence, the team did not find evidence for gender difference in these associations. Furthermore, when adjusting for many other factors, the coefficient for being female is also not statistically significant, suggesting no difference in overall life satisfaction between male and female, all else equal.

Table 11: Associations between subjective wellbeing and prevalence of experienced and perceived corruption – gender differences

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>1 Experienced corruption</th>
<th>2 Perceived corruption</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQI-ECI</td>
<td>-0.5978 (0.3526)*</td>
<td></td>
</tr>
<tr>
<td>EQI-ECI x Female</td>
<td>0.0376 (0.1962)</td>
<td></td>
</tr>
<tr>
<td>EQI-PCI</td>
<td>0.4462 (0.4423)</td>
<td>0.0220 (0.2261)</td>
</tr>
<tr>
<td>EQI-PCI x Female</td>
<td>0.0865 (0.0674)</td>
<td>0.0845 (0.1331)</td>
</tr>
<tr>
<td>Female</td>
<td>5.7993 (0.5035)***</td>
<td>5.5763 (0.5236)***</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Each model specification in column 1 and 2 is adjusted for a large number of variables, including age, gender, household income decile, household composition, employment status, marital status, health status, whether illness, disability or mental problem hampers daily life, whether person voted in last national elections, whether person socially meets with friends, number of people with whom intimate and private matters can be discussed, victim of burglary or assault over the last five years, feeling of safety when walking home at night in local area, religious belonging, member of ethnic minority group, citizenship in country of residence as well as country fixed effects. ESS survey weights are applied for regressions.

Regression results: compensating income variation associated with regional prevalence of experienced corruption

The calculation of CIV is based on Equation 3 associated with the coefficient $\beta_{corr}$ presented in Table 10 Column 1: -0.5788. In a counterfactual scenario using the current prevalence of experienced corruption in a given region, EQI-ECI, from the year 2021, $\Delta corr$ is calculated as the difference between the current indicator value and 0. To that end a relative change from current levels to a level of a region with the lowest value of the EQI-ECI is measured and then aggregated at the country level. As discussed earlier, $M$ here is the equivalised household income per country provided from Eurostat. The results from the CIV calculations show that the extra equivalent household income required to leave someone living in a region with the current prevalence of experienced corruption as well off in life satisfaction as someone living in a region with the relatively low level of experienced corruption is €1 139 (CI 90%: 27–2 350) per person, per year, on average in the EU.28 The results from the CIV calculations can be found in Annex D, Table D.1 by country. Depending on the equivalised household income and the current prevalence of experienced corruption, the values vary substantially across regions and countries.

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28 This average is a weighted average using population data by Member State from Eurostat.
Regression results: associations between the prevalence of corruption and trust

To better understand the relationship between trust and the prevalence of corruption, a similar specification as Equation 1 is estimated but applying the three different trust variables (e.g., trust in people, trust in national institutions, trust in supranational institutions) as dependent variables instead of subjective wellbeing.

As reported in Table 12, there is a statistically significant association between the prevalence of experienced corruption in a region and the general trust in people by individuals living in that region. For example, a person living in a region with the highest relative prevalence of experienced corruption (e.g. EQI-ECI value of 1) reports on average a 0.0902 lower value on the trust in people index than a person living in a region with the lowest relative prevalence of experienced corruption (e.g. EQI-ECI value of 0), which corresponds to a 23% lower trust in people. The prevalence of perceived corruption is also negatively associated with trust in people, reporting a coefficient of -0.167, which corresponds to about a 37% lower trust in people for those living in a region with a relative higher prevalence of perceived corruption compared with individuals living in areas with relative low prevalence of perceived corruption.

Table 12: Associations between trust in people, national institutions and supranational institutions and the prevalence of corruption

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>1 Trust in people</th>
<th>2 Trust in national institutions</th>
<th>3 Trust in supranational institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQI-ECI</td>
<td>-0.0902 (0.0447)**</td>
<td>-0.1670 (0.0513)**</td>
<td>-0.0913 (0.0346)**</td>
</tr>
<tr>
<td>EQI-PCI</td>
<td>0.3911 (0.0485)**</td>
<td>0.5137 (0.0524)**</td>
<td>0.5137 (0.0428)**</td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>0.5137 (0.0428)**</td>
<td>0.5106 (0.0458)**</td>
</tr>
<tr>
<td>EQI-PCI</td>
<td></td>
<td>0.5137 (0.0428)**</td>
<td>0.5106 (0.0458)**</td>
</tr>
<tr>
<td>Constant</td>
<td>0.3911 (0.0485)**</td>
<td>0.5137 (0.0524)**</td>
<td>0.5137 (0.0428)**</td>
</tr>
<tr>
<td>Observations</td>
<td>24,871</td>
<td>24,921</td>
<td>24,921</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.1882</td>
<td>0.2139</td>
<td>0.2133</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors in parentheses. **p<0.01, *p<0.05, *p<0.1. Each model specification in columns 1 to 6 is adjusted for a large number of variables, including age, gender, household income decile, household composition, employment status, marital status, health status, whether illness, disability or mental problem hampers daily life, whether person voted in last national elections, whether person meets socially with friends, number of people with whom intimate and private matters can be discussed, victim of burglary or assault over the last five years, feeling of safety when walking home at night in local area, religious belonging, member of ethnic minority group, citizenship in country of residence as well as country fixed effects. ESS survey weights are applied for regressions.

There is a negative association between the prevalence of experienced corruption and the trust in national institutions indicator variable, but association between the prevalence of experienced corruption and trust in supranational institutions (e.g. European Parliament, United Nations) is not statistically significant. The prevalence of perceived corruption is not statistically significantly associated with either trust in national institutions or trust in supranational institutions.

Regression results: associations between subjective wellbeing, the prevalence of corruption and the potential mediating role of trust

Table 13 presents the findings of the mediation analysis, which attempts to understand the potential mediating role that trust can have in the relationship between corruption and life
satisfaction. For example, corruption can have a direct effect on subjective wellbeing, but also an indirect one by reducing trust.

Column 1 of Table 13 replicates the parameter estimate presented in Table 10, with only the regional prevalence of experienced corruption (EQI-ECI) as explanatory variable, adjusted for a large set of other covariates. Columns 2 to 5 include different indicator variables of trust into the model specification, first trust in people, then trust in national institutions, then trust in supranational institutions and all three jointly. The findings presented in Column 2 of Table show that once trust in people is included, it is positively associated with life satisfaction, as one would expect, but the coefficient for EQI-ECI is not statistically significantly different from 0 anymore. The same applies to the model specifications presented in columns 3 to 5: once trust is included in the model, the prevalence of experienced corruption loses its relative importance, suggesting that trust is likely an important mediating factor. This is a similar result as presented in Ciziceno and Travaglino (2019).

Table 13: Associations between subjective wellbeing, the prevalence of experienced corruption trust and the mediating role of trust

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life satisfaction (0–10)</td>
<td>-0.5788</td>
<td>-0.5081</td>
<td>-0.4115</td>
<td>-0.5249</td>
<td>-0.3919</td>
</tr>
<tr>
<td>EQI-ECI (0.3433)*</td>
<td>(0.3446)</td>
<td>(0.3405)</td>
<td>(0.3402)</td>
<td>(0.3421)</td>
<td>(0.3421)</td>
</tr>
<tr>
<td>Trust in people</td>
<td>1.0908***</td>
<td>0.7361***</td>
<td>0.7361***</td>
<td>0.7361***</td>
<td>0.7361***</td>
</tr>
<tr>
<td>Trust in national institutions</td>
<td>1.7704***</td>
<td>1.5376***</td>
<td>1.5376***</td>
<td>1.5376***</td>
<td>1.5376***</td>
</tr>
<tr>
<td>Trust in supranational institutions</td>
<td>0.8550***</td>
<td>0.0111***</td>
<td>0.0111***</td>
<td>0.0111***</td>
<td>0.0111***</td>
</tr>
<tr>
<td>Constant</td>
<td>5.7955***</td>
<td>5.3882***</td>
<td>4.8825***</td>
<td>5.5193***</td>
<td>4.7348***</td>
</tr>
<tr>
<td>(0.5024)***</td>
<td>(0.4956)***</td>
<td>(0.4910)***</td>
<td>(0.4955)***</td>
<td>(0.4906)***</td>
<td>(0.4906)***</td>
</tr>
<tr>
<td>Observations</td>
<td>24,855</td>
<td>24,807</td>
<td>24,855</td>
<td>24,855</td>
<td>24,807</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.2589</td>
<td>0.2700</td>
<td>0.2810</td>
<td>0.2674</td>
<td>0.2853</td>
</tr>
</tbody>
</table>
| Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Each model specification in Column 1 to Column 5 is adjusted for a large number of variables, including age, gender, household income decile, household composition, employment status, marital status, health status, whether illness, disability or mental problem hampers daily life, whether person voted in last national elections, whether person socially meets with friends, number of people with whom intimate and private matters can be discussed, victim of burglary or assault over the last five years, feeling of safety when walking home at night in local area, religious belonging, member of ethnic minority group, citizenship in country of residence as well as country fixed effects. ESS survey weights are applied for regressions.

If the mantra of statistical significance is strictly followed, then the only effect experienced corruption has on subjective wellbeing is through the role of trust in people and institutions. Statistical significance aside, the comparison of how the magnitude of the coefficient for EQI-ECI changes shows that the coefficient in Column 5 of Table 13 is -0.3919, which represents the direct effect, whereas the total effect was -0.5788. This suggests that the indirect effect through trust is -0.1869.³¹ Or in other words, between one-third³² and all of the magnitude of the association between the prevalence of experienced corruption and subjective wellbeing is explained through the mediating role of trust.

---

³¹ This figure was estimated as follows: -0.5788 – (-0.3919)
³² This figure was estimated as follows: -0.1869/0.5788 * 100
Table 14 performs the same mediation analysis but for the prevalence of perceived corruption within the region where an individual lives. As before, there is not a statistically significant association between the prevalence of perceived corruption and life satisfaction (columns 1 to 5).

Table 14: Associations between subjective wellbeing, the prevalence of perceived corruption and the mediating role of trust

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Life satisfaction (0–10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EQI-PCI</td>
<td>0.4573</td>
<td>0.6239</td>
<td>0.4798</td>
<td>0.4603</td>
<td>0.5854</td>
</tr>
<tr>
<td></td>
<td>(0.4354)</td>
<td>(0.4310)</td>
<td>(0.4289)</td>
<td>(0.4348)</td>
<td>(0.4275)</td>
</tr>
<tr>
<td>Trust in people</td>
<td>1.0990</td>
<td></td>
<td>1.7747</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0979)***</td>
<td></td>
<td>(0.1143)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust in national institutions</td>
<td></td>
<td>5.1022</td>
<td></td>
<td>4.6612</td>
<td>0.8570</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.5148)***</td>
<td></td>
<td>(0.5108)***</td>
<td></td>
</tr>
<tr>
<td>Trust in supranational institutions</td>
<td></td>
<td></td>
<td></td>
<td>5.2979</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.5173)***</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>5.5715</td>
<td>5.1022</td>
<td>4.6612</td>
<td>5.2979</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.5216)***</td>
<td></td>
<td>(0.5108)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>24,855</td>
<td>24,807</td>
<td>24,855</td>
<td>24,855</td>
<td>24,807</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.2589</td>
<td>0.2700</td>
<td>0.2810</td>
<td>0.2674</td>
<td>0.2853</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Each model specification in columns 1 to 5 is adjusted for a large number of variables, including age, gender, household income decile, household composition, employment status, marital status, health status, whether illness, disability or mental problem hampers daily life, whether person voted in last national elections, whether person socially meets with friends, number of people with whom intimate and private matters can be discussed, victim of burglary or assault over the last five years, feeling of safety when walking home at night in local area, religious belonging, member of ethnic minority group, citizenship in country of residence as well as country fixed effects. ESS survey weights are applied for regressions.
4. EU-level scenarios to reduce corruption and the potential cost savings

This chapter assesses the potential cost savings which could have resulted in two EU-level scenarios where effective policy measures led to reduced corruption. The policy measures in each of these scenarios reflect the European Parliament requests for action. Moreover, it was not in scope of this study to undertake research to identify other possible policy options, investigate the legal basis for these policy options, or to analyse the costs or feasibility of their implementation. The caveats and limitations of the analysis are presented in Section 1.2.4.

The analysis of potential cost savings via the scenarios serves to illustrate the potential scale of the impacts that could be achieved by, in some cases, relatively simple policy measures.

The scenarios (and corresponding policy measures) presented in this chapter are all relevant to tackling fraud against the Covid-19 Recovery and Resilience Facility funds. This is the EU’s largest ever funding instrument, reaching a total of €672.5 billion in loans and grants intended to support EU economies and societies from February 2020 until December 2026 to recover from the pandemic and build resilience.

Table 15 sets out the scenarios, the analysis approach and the estimated potential cost savings.

Table 15: Summary of the scenarios examined, the analysis approach and the results

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Analysis approach</th>
<th>Estimated potential cost saving in this scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1: Through the mandatory use of open and standardised public procurement data, the amount of missing information in contract notices is reduced, and this in turn reduces corruption risk.</td>
<td>The study team used results from a previous study which provided estimates for the association between the amount of information missing in public procurement notices and the extent of single bidding (an indicator of corruption). Decreasing the information missing in public procurement notices could have reduced the costs of corruption risk in all contracts by up to €3.7 billion between 2016 and 2021, in contracts using EU funds only by up to €571 million over the same time period.</td>
<td></td>
</tr>
<tr>
<td>Scenario 2: A reduction in experienced corruption among EU citizens, resulting from a range of possible policy measures that reduce experienced corruption and build trust.</td>
<td>A counterfactual scenario is computed where, for each Member State, the lowest regional experienced corruption level is applied to the other regions of that country. If each Member State had a level of experienced corruption equal to the currently lowest reported level, an average of €590 per person, per year, would be gained in wellbeing in the EU between 2016 and 2021.</td>
<td></td>
</tr>
</tbody>
</table>

4.1. Scenario 1: Reducing corruption risk by a reduction of missing information in contract notices

4.1.1. Policy measures that could lead to Scenario 1

As detailed in Section 3, public procurement is one of the government activities most vulnerable to corruption and has been proven to yield significant costs for EU economies (Abdou et al. 2022; Fazekas and Kocsis 2017; Fazekas et al. 2013; Hafner et al. 2016).

Improving public procurement procedures – in particular, through increasing transparency and competition – could reduce the risk of corruption (Bosio 2021). According to Saussier and Tirole (2015), it is crucial that public procurement processes are based on the concepts of transparency,
competition and expertise in order to minimise corruption risk. Transparency and openness in procurement processes has been shown to have a positive impact on competition and efficiency, and reduces the risks of unfairness and corruption (UNOPS 2011). Transparency can be achieved through measures such as advertising tender notices, disclosing evaluation criteria in solicitation documents, publishing contract awards and prices paid, and publishing supplier sanction lists (UNOPS 2011). The focus of this scenario is on reducing missing information in contract notices of available contracts in the EU, which would reduce single bidding (an indicator of corruption).

Missing information in procurement notices is a recurrent red flag in the literature on corruption, and has been shown to have an impact on the risk of corruption (Bauhr et al. 2019; Fazekas and Kocsis 2017; Oosthoek 2022). For instance, Malan and Bosch Chen (2021) used the proportion of missing key values in public procurement contract notices as a red flag in order to quantify the impact of organised crime on the EU's finances and found that between 1 % and 2 % of the EU's budget was lost to organised crime in 2020. The Covid-19 pandemic has made reducing missing information in public procurement notices particularly relevant, since procurement in emergencies has been shown to have a higher incidence of incomplete information at the contracting stage (such as unitary prices or date of contract signature (Cocciolo, di Maro and Samaddar 2022).

Even though public procurement notices on TED are received and checked by the EU’s Publications Office before being published, there is a non-negligible amount of missing data (Fazekas and Kocsis 2017) – the extent of missing information in European public procurement data systems has been shown to be 38 % on average in the EU-27 (Fazekas et al. 2022).

Missing information in public procurement has been shown to impact corruption through its impact on single bidding (Charron et al. 2017; Fazekas et al. 2016; Klasnja 2016). Bauhr et al. (2019) found that if, on average, five additional items of information were included in contact notices in Europe (out of 10 items considered) this would decrease single bidding by 2.5–6 percentage points. The items of information considered were: the language information, the selection method, the criteria, the duration, the CPV code, the publication of the call for tender, the winner's name, the NUTS regional code, the subcontracting, the contract value and the presence of EU funds. The impact of missing information on single bidding appears to be different across Member States, with a significant impact for Eastern and Southern Member States and to a smaller extent in Western Member States (Oosthoek 2022).

4.1.2. Potential cost savings in Scenario 1

Our analysis uses Bauhr et al. (2019) estimate that decreasing the number of missing fields in contract notices by five items on average in Europe (out of 10 items considered) would decrease single bidding by 2.5 % to 6 %. In addition, decreasing the number of missing fields by ten items on average in Europe (out of 10 items considered) would decrease single bidding by 5 % to 12 %. More detailed information on how these estimates were produced is provided in Bauhr et al. (2019).

Scenario 1i Impact of reducing missing information in contract by five items – all public procurement: our analysis found that decreasing the number of missing fields by five items on average could have reduced the costs of corruption risk in public procurement by between €730 million and €1.75 billion between 2016 and 2021.

Scenario 1ii Impact of reducing missing information by five items – only public procurement using EU funds: our analysis found that decreasing the number of missing fields by five items on average could have reduced the costs of corruption risk in contracts involving EU funds by between €119 million and €286 million between 2016 and 2021. This represents between 3 % and 7 % of the
total cost of corruption in public procurement contracts involving EU funds in the EU-27 between 2016 and 2021.

**Scenario 1iii Impact of reducing missing information by 10 items – all public procurement**: our analysis found that decreasing the number of missing fields by 10 items on average could have reduced the costs of corruption risk in public procurement by between €1.72 billion and €3.7 billion between 2016 and 2021.

**Scenario 1iv Impact of reducing missing information by 10 items – only public procurement using EU funds**: our analysis found that decreasing the number of missing fields by 10 items on average could have reduced the costs of corruption risk in contracts involving EU funds by between €238 million and €571 million between 2016 and 2021.

**Box 1: Additional policy measures relevant to Scenario 1 – the potential for increased transparency, further data analysis and improving understanding of corruption**

**Better understanding corruption in use of EU Recovery and Resilience Facility funds**

Increased transparency in public procurement contract and award notices may have a particular role to play with regards to the EU Recovery and Resilience Facility funds. There are some concerns emerging in the EU regarding a potential lack of transparency and accountability mechanisms and hence an increase in the risk of corruption in the spending the Recovery and Resilience Facility (Witteeman 2022).

The Open Spending EU Coalition found through analysing Member States’ plans in 2021 that 20 countries were not planning to release information about the recipients of the funds, and six countries did not commit to any transparency in the spending of the funds.³⁴

Gavin Gayman, from the Open Contracting Partnership, observed: ‘Open procurement will take a central role to ensure the spending turns into the quality public services and infrastructure intended’ (Open Contracting Partnership 2021).

While keeping in mind the need to balance accountability and competition on one side, and confidentiality of information on the other, a further potential policy option (not included in our Scenario 1 estimates) could be to require information in TED contract and award notice documents regarding the presence of Recovery and Resilience Facility Funds. Even if this was just a binary variable (were Recovery and Resilience Facility Funds used: yes or no), it would allow transparency about which contracts published on TED include some funds from the Recovery and Resilience Facility for each Member State. The inclusion of this information would open up many new opportunities for data analysis, such as investigating the relationship, if any, between these funds and the risks of corruption.

**Facilitating the better analysis of red flags**

The analysis of corruption risk in public procurement in Section 3.1 follows the approach of Fazekas and Kocsis (2017) to identify the risk of corruption in the EU-27. However, most of the literature on public procurement and its impact on corruption is based on the analysis of red flags (Abdou et al. 2022).³⁵ These corruption indicators have been acknowledged for their potential for international comparisons. A further potential policy option (not included in our Scenario 1 estimates) could be to undertake analysis of red flags indicators in public procurement regularly and consistently, using this approach to conduct international comparisons across Member States. Another policy step which could be taken (again, not included in our Scenario 1 estimate) is to create an open and standardised public procurement database, with IT systems that would be public and interoperable with national databases: ‘More needs to be done to standardise the format of the [public procurement] data and increase access’ (European Parliament 2021a).

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³⁴ These countries were: Austria, Croatia, Denmark, Germany, Poland and Slovakia. See https://www.open-spending.eu/posts/analysis_finds_eu/.

³⁵ See, for instance, Integrity Watch Europe, an online platform gathering data on public procurement in the EU since January 2020 and highlighting potential corruption risks: https://redflags.integritywatch.eu/.
4.2. Scenario 2: A reduction in experienced corruption across the EU

4.2.1. Policy measures that could lead to Scenario 2

The new cost estimates for the individual wellbeing costs associated with corruption among EU citizens in Section 3.2 highlight the importance of addressing the prevalence of experienced corruption in particular.

Some possible EU policy measures, which draw from positions of the European Parliament during the 2019-2024 legislature, which could contribute to a scenario in which the experience of corruption is reduced are as follows. As noted earlier, the measures are hypothesised to reduce corruption although at present there is no available robust evidence of their likely effectiveness.

Include corruption under EU Global Human Rights Sanctions Regime and update the EU Magnitsky Act to include corruption as a punishable offence (European Parliament 2021b)

Reflecting the European Parliament requests for action, it is possible that adopting a stand-alone regime on anti-corruption sanctions – either through the EU Global Human Rights Sanction Regime or by amending the EU Magnitsky Act could act as a deterrent to corruption, and thus decrease the levels of corruption experienced by EU citizens, and therefore increase their life satisfaction. In this case, introducing such policy measures could enable the EU to protect the integrity of its domestic institutions and its Member States' societies and economies, as well as to coordinate its foreign policy objectives with countries having adopted similar sanctions.

The EU Foreign Affairs Council adopted an EU Global Human Rights Sanctions Regime in 2020, but corruption is not included as a punishable offence, unlike, for instance, the US Global Magnitsky Act (European Parliament 2021c). However, as stated by M. Arena, Chair of the Subcommittee on Human Rights, 'The regime needs to also target economic and financial enablers of human rights abusers' (European Parliament 2021b).

Including corruption under the EU Global Human Rights Sanctions Regime could give incentives to individuals not to get involved in corrupt behaviours, from grand to petty corruption. However, as recognised by Rose-Ackerman and Palifka (2016), in order to be fully effective, the inclusion of corruption in the EU Global Human Rights Sanctions Regime would need to be tailored to both the immediate incentives surrounding the corrupt act and to the broader institutional context. The authors also recognise that both enforcement and regulation would be needed to maximise the impact on corruption. Impacts beyond corruption may also be expected, for example the promotion of trust in government and public institutions, as well as democracy.

Introduce policy measures to increase transparency in order to increase trust through harnessing data analytics, open data and better indicators of corruption

The econometric analysis found that trust has a mediating role in the relationship between corruption and life satisfaction. Between one-third and all of the association between the prevalence of experienced corruption and subjective wellbeing is explained through the mediating role of trust.

One potential approach to improving trust would be to introduce measures that aim to increase transparency in data on actual corruption. Transparency is defined as 'a situation in which information about a decision-making process is made publicly available and can easily be verified both in terms of the rules and the identities of the decision makers' (UNODC 2020). It lowers the
information barriers and hence allows for monitoring; it increases the probability of detecting corrupt behaviours and reduces their likelihood.

Improve transparency through data analytics and digital technology

Digitalisation, the adoption of new technologies and the development of ICT-based public service delivery have the potential to increase transparency of institutions at all levels of society and could be used to better deter, detect and reveal corruption (Brende and Gomez Pensado 2020; Lagarde 2018; UNODC 2019b). More specifically, digitalisation could support anti-corruption by impacting public scrutiny in several ways: reduce discretion; enable accountability by dematerialising services and limiting human interaction; facilitate advocacy and citizen participation and government–citizen interactions through public discretion and scrutiny; allow for more effective oversight (Adam and Fazekas 2021; Santiso 2021).

However, advanced analytics and artificial intelligence (AI) could also facilitate corruption in some situations, which emphasises the importance of considering socio-technical and socio-political factors to support new technologies that aim to reduce corruption (Adam and Fazekas 2021; Merhi 2022).

Ensure open data is available

A report by the European Parliament argues that data analytics and digital technology can only be useful if the public have access to this data (European Parliament 2020). Measures that focus on increasing transparency in order to mitigate the impact of corruption must be easily available to EU citizens and have a ‘reasonable chance’ of reaching Member States populations (Lindstedt and Naurin 2010). This is the purpose of open data – data made freely available for re-use for any purpose – under the terms of a licence (Data Europa EU n.d.). Higher levels of open data availability have been shown to be associated with lower levels of corruption (Máchová 2017). The ways in which open data can help prevent and tackle corruption include providing information on the way money is spent, which is likely to give strong incentives for governments to demonstrate that they are using public money effectively; and making existing information easier to analyse, process and combine, which should improve public scrutiny (OECD 2017).

Improve quality of data and build new, better indicators to measure corruption across the EU and Member States

The European Parliament has also called for a need for more consistent monitoring of corruption, which could facilitate greater EU action through potentially strengthening cooperation, in particular in relation to spending of the Recovery and Resilience Facility, as mentioned above.

Data and indicators resulting from new ways of measuring corruption could be made available either online through an interactive tool such as Integrity Watch EU, in the Rule of Law Report in a standard way, or by creating a corruption scoreboard such as the 2021 EU Justice Scoreboard. The Rule of Law Report or the Scoreboard could include information on final beneficiaries and the use of the Recovery and Resilience Facility budget per Member States. Such a mechanism could potentially enable both EU institutions and Member States to benchmark and scrutinise each other’s practices (Oosthoek 2022) as well as improve public scrutiny.

4.2.2. Potential cost savings in Scenario 2

The findings of this report suggest that a person living in a region with a relatively high prevalence of experienced corruption has a 10% lower life satisfaction, all else equal, than a person living in a region with a relatively low prevalence of experienced corruption. In monetary terms, the implication is that the extra equivalent household income required to leave someone living in a region with the current prevalence of experienced corruption as well off in life satisfaction as
someone living in a region with a relatively low level of experienced corruption is €1 139 (CI 90 %: 27–2 350) per person, per year, on average in the EU.

In Scenario 2 the study team calculated a counterfactual scenario in order to assess the impact of lower regional experienced corruption levels on life satisfaction in the EU.

Taking this approach is in line with a shift in policy analysis approaches which do not focus solely on the financial perspective, but examine the social value and societal benefits that policies can generate. The incorporation of social value in appraisal analysis has gained increasing prominence in OECD countries (OECD 2018).

In this scenario the study team computed a situation where, for each Member State, the lowest regional experienced corruption level is applied to the other regions of that country. By doing so, the idea is to minimise the level of experienced corruption in each country, while accounting for differences across the countries. Indeed, it seems reasonable to assume that anti-corruption policies and rules would have a deterrent effect on countries, incentivising them to decrease corruption to the lowest level possible. Table D.2 in Annex D details the regions by country that were used as a reference for the lowest level of experienced corruption.

To perform this analysis, the same data and parameters as in Section 3.2 are used. New estimates of experienced corruption levels by country are computed, and aggregated at the EU level in order to be able to compute new CIV calculations for the EU.

The new results from the CIV calculations\(^\text{36}\) show that the extra equivalent household income required to leave someone living in a region with the current prevalence of experienced corruption as well off in life satisfaction as someone living in a region with the relatively low level of experienced corruption is €549 (CI 90 %: 27–2 350) per person, per year, on average in the EU\(^\text{37}\).

As a back-of-the-envelope calculation, this implies that if each Member State could reduce their current level of experienced corruption to the level of the region where the prevalence is the lowest, a monetary equivalent of €590 per person, per year, would be gained in wellbeing on average in the EU.

\(^{36}\) See Annex D, Table D.3.

\(^{37}\) This average is calculated as the difference between €1 139 and €549. It is a weighted average using population data by Member State available from Eurostat.
5. Conclusion

The purpose of this report was to investigate the costs of corruption with respect to public procurement, wellbeing and trust in the EU. The report addresses the following research questions:

1. What is the nature and extent of corruption in the EU?
2. What are the costs associated with corruption risk in public procurement?
3. What are the costs associated with a loss of wellbeing and trust among European citizens?
4. What policy options are available to tackle corruption at EU level and what would be the monetised value of introducing these policy options?

Section 2 of this report describes the evidence related to the extent of corruption. This concluding chapter summarises key findings related to costs.

5.1. Costs associated with corruption risk in public procurement

The costs associated with corruption risk in public procurement in the EU were assessed using data on the EU27 Member States between 2016 and 2021. This allowed the study team to extend existing estimates on the cost of corruption risk in EU public procurement to new data with a specific focus on contracts where EU funds have been used.

The findings suggest that corruption risk in public procurement in the EU27 has cost **€29.6 billion between 2016 and 2021** (CI 95%: 24.9-33.3). Hence this significant amount was overpaid by EU Member States and institutions due to corruption. In addition, it appears that the effect of the corruption risk on relative contract prices is significantly higher for contracts that were awarded after the start of the pandemic than for those awarded before March 2020, all else being equal.

When focusing on the public procurement contracts involving EU funds, it appears that the effect of corruption risk on relative contract prices is statistically significantly different between contracts involving EU funds and contracts without EU funds. The total cost of corruption risk in public procurement in the EU linked to contracts involving EU funds is estimated to be **€4.3 billion** (CI 95%: 3.5-5.1) over the period considered.

5.2. Costs associated with a loss of wellbeing and trust among European citizens

This study has provided a quantitative estimation of the costs of corruption in the EU relating to a loss of wellbeing and trust among European citizens.

These new innovative cost estimates for individual wellbeing costs associated with corruption among EU citizens are based on an established methodological framework that has not yet been applied in the area of corruption. The wellbeing valuation approach allows the calculation of the value of corruption by estimating its association with life satisfaction for individuals who are exposed to corruption within their region of living, from which is drawn a monetary value to quantify this effect. For this purpose, the ESS individual survey responses were combined with regional data provided by the EQI.

The main findings are that individuals living in regions with higher levels of experienced corruption, all else being equal, report on average a lower life satisfaction, which is not the case for perceived corruption. The extra equivalent household income required to leave someone living in a region with the current prevalence of experienced corruption as well off in life
satisfaction as someone living in a region with a relatively low level of experienced corruption is €1139 per person, per year, on average in the EU. The authors found a statistically significant association between the prevalence of experienced corruption in a person’s region of living and their general trust in people, but a negative association between the prevalence of perceived corruption and trust in people. Finally, trust appears to be an important mediating factor between experienced corruption and subjective wellbeing: between one-third and all of the magnitude of the association between the prevalence of experienced corruption is explained through the mediating role of trust.

5.3. Monetised value of introducing possible policy options

This study investigated the potential cost savings from two scenarios of anti-corruption measures between 2016 and 2021.

Scenario 1 was a situation in which, through the mandatory use of open and standardised public procurement data, the amount of missing information in contract notices was reduced, and this in turn reduces corruption risk. Scenario 1 sheds light on the potential impact on corruption risks if the wider dissemination of information in contract and award notices were as effective as suggested in the literature. In this scenario, decreasing the number of missing fields in published contract notices by half could have reduced the total costs of corruption risk in public procurement by between €730 million and €1.75 billion between 2016 and 2021. Some 3-7% of the costs related to corruption risk could have been saved in contracts involving EU funds, which is considerable given that the information considered here can be seen as relatively essential and straightforward. In addition, not having any missing fields in the contract and award notices would result in potential savings of €1.72 to €3.7 billion when considering all the contracts over 2016-2021, and of €238-€571 million for the sample on the contracts involving EU funds.

Scenario 2 was a situation in which, as a result of a number of possible policy options, there was a reduction in experienced corruption among EU citizens. A counterfactual scenario was imagined: where a Member State maintained a level of experienced corruption that is the one of the region where the prevalence is the lowest, €590 per person, per year, would be gained in the level of wellbeing on average in the EU.

The policy measures that might lead to these scenarios were identified from a review of positions taken by the European Parliament during the 2019-2024 legislature. While these scenarios could plausibly be brought about by the policy measures described, it was not in the scope of this study to undertake research to identify other possible policy options, investigate the legal basis for these policy options, or analyse the costs or feasibility of their implementation. These estimates should be treated carefully, and their limitations are outlined in other parts of the report. The key function of the estimated potential savings is that they serve to illustrate the potential scale of the impacts that could be achieved by taking policy steps, and provide ideas for how the effectiveness of anti-corruption policies could be calculated in the future.
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Corruption poses a significant threat in the European Union and can contribute towards an erosion of democracy and the rule of law, especially during times of crisis. The European Union can do more to tackle corruption and curb its negative impacts on society. This report presents a quantitative analysis of the potential gains from further EU action to tackle corruption, estimating that it could generate up to €58.5 billion per year. Other gains could also be expected in terms of reinforcing democracy and promoting international credibility and long-term growth.