

The big picture of corruption: Five lessons from Behavioral Economics

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Abstract

The departure point of this paper is the conjecture that the search for big picture of corruption in the real world calls for new research and policy tools that draw on psychologically more realistic accounts of individual judgment and decision-making. In light with a growing literature that points to the major roles cognitive bias and social norms play in corrupt behaviors, we focus on presenting and discussing five main lessons from behavioral economics that enrich the anti-corruption debate.

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Keywords

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Introduction

Understanding corruption is not an easy task at all. Part of the difficulty has to do with the fact that it is a multifaceted phenomenon whose foundations include moral preferences, cultural, historical factors, and economic incentives resulting from public as well as private governance structures with limited transparency and accountability.

To complicate matters, corrupt behaviors come in various forms and sometimes do not fit very well with the most conventional definition of corruption as “abuse of public office for private gain” (Transparency International, 2021). The following types of corruption fit well the portrait of corruption as “misuse of power to obtain illegal gains” (Andersson & Heywood, 2009). Bribery is about making a payment to a public official or politician in return of a political or economic benefit. A kickback occurs anytime a private sector agent or organization pays the bribe after a privilege is obtained or when a public official takes advantage of her power to force a third party to pay a bribe. Embezzlement happens when a public sector employee appropriates resources or property rights to attain her own goals. Nepotism refers to instances when a politician or public official use their public office to give contracts, jobs, and other benefits to their family and friends. Nevertheless, we acknowledge that the above definition of corruption might fail to accommodate individual as well as social mechanisms on which corrupt behaviors are rooted make corruption institutionalized and systemic (Marquette & Peifer, 2015).

In this article, our contention is that the standard economic approach to corruption provides useful theoretical foundations, that is to say analytical roots, to support anticorruption policies. The latter are built on deterrence mechanisms such as transparency and accountability, which inform wrongdoers about the expected net gains of public as well as private integrity (Becker, 1968; Groenendijk, 1997; Glaeser, 1999; Garoupa, 2014; Ackerman & Palifka, 2016). Yet the sole focus of neoclassical economics on rational calculation underlying corruption and its transactional nature is unable to cope with the many challenges involved in understanding and fighting corrupt practices.

Our departure point is the view that insights from behavioral economics yield theoretical and empirical developments, which enable researchers and policymakers to see the big picture of corruption. We uphold the idea that the rational choice approach, in terms of cost-benefit analysis or principal-agent model, does not offer a comprehensive explanation of how heuristics, cognitive biases and reciprocity produce corrupt deals and even make them persistent and systemic over time. A broader understanding of this phenomenon is necessary to improve the quality of our debate over anticorruption policies, bringing us close together with recent World Bank’s efforts in this area. A recent report emphasizes it has been important to bring behavioral social science to development work, but the implications for anticorruption are just beginning to be explored (World Bank, 2019, p. 14).

The remainder of this paper presents and discusses five lessons offered by behavioral economics that can nourish a

richer debate over anticorruption policies. In the final section, it wraps the overall argument up, briefly addresses some troubling issues of behaviorally informed anti-corruption policies and concludes.

Lesson 1. Corruption is a complex and pervasive phenomenon

Corrupt behaviors come in various forms of dishonest behaviors and often highlight illicit acts of commission and omission. Just like market coordination and other complex phenomena, we cannot explain corruption in terms of a fixed number of variables and aggregate statistical relations (Hayek, 1967).

The perception of corruption has been steadily rising and spreading for decades. Unfortunately, most countries have failed to tackle corruption effectively (Transparency International, 2021, p. 6). The COVID-19 pandemic has increased the visibility of the ubiquity of corruption. Governments are urged to adopt measures to respond quickly to health, humanitarian, political and economic conditions that fuel opportunities for corrupt deals. Unfortunately, scandals involving payments of kickback and bribery, fraudulent purchase of personal protective equipment, overpriced and faulty ventilators among other medical equipment or infrastructure, have increased exponentially in many countries (Hussmann, 2020). All this sheds extra light on why corruption matters: it can make a big difference between life and death and undermine the potential for human development and economic prosperity (Muramatsu & Bianchi, 2021). As Delia Ferreira Rubio wisely puts it, “COVID-19 is not just a health and economic crisis. It is a corruption crisis. And one that we are currently failing to manage” (Transparency International, 2021, p. 8).

Given that corruption hurts the potential for human development and puts democracy and the rule of law under threat, it is time to rethink the anti-corruption agenda. This acknowledgement shifts our attention to a body of research claiming that some efforts to refrain corruption are not effective because of their psychologically unrealistic theoretical foundations (Marquette & Peiffer, 2017; OECD, 2018).

Lesson 2. Traditional economics is insufficient to yield a thorough understanding of corruption

Although development economists had already tackled some troubling issues of corruption in the 1950s and 1960s, the anticorruption agenda gained momentum in the 1990s, when James Wolfensohn, former head of the World Bank, compared corruption to a cancer, due to its virulence and increasing spread (Hough, 2013). International efforts to measure and curb corruption advanced with the Corruption Perception Index (CPI), created by help of Transparency International,

which inspired other similar initiatives, such as the Global Corruption Barometer, Bribe Payers Index and World Governance Index.

The economic research on corruption is inspired by Gary Becker’s 1968 rational approach to crime. It assumes that utility maximizing agents will embark on a pattern of criminal behaviour depends on the incentive structure of their environment. Putting somewhat differently, criminal behaviour is explained in terms of conscious judgments about expected costs and benefits associated with the decision task (Garoupa, 2014). If this is so, there will be no crime if expected marginal costs are greater than or equal to gains.

The above account fits well with the view of corruption as a crime of calculation rather than passion (Klitgaard, 1988). Quite similarly to the Beckerian approach, economists, interested in institutional incentives underlying opportunistic behavior, provide explanations of corruption that draw on the principal-agent model (Shleifer & Vishny, 1993; Groenendijk, 1997). According to such perspective, corruption has a transactional nature and reveals a deviation from contractual norms defined between the Principal and the Agent.

The Principal (who can be, for example, a state governor and even the electorate) delegates her decision power to the so-called Agent (for instance, a bureaucrat or elected politician), who has the function of representing the Principal’s interests. The risks of corruption arise from two factors: conflicting interests among those who establish contractual relations, and asymmetric information. Both provide incentives for the Agent’s use of her concentrated power to achieve personal or her clients’ goals to the detriment of the overall society (Groenendijk, 1997).

Just like Becker’s perspective, applications of the principal-agent model to explain corruption are premised on the economic principle that individuals opt for courses of action that accompany marginal gains at least as large as their marginal costs. This type of explanation of human behavior assumes that people are unboundedly rational and only driven by their self-interests.

As a result, anti-corruption efforts involve policies to change the institutional environment in a way that raises the opportunity costs of corruption. In light with the conventional economic approach, fighting corruption requires strong controls, increased levels of monitoring, severe punishment devices and credible enforcement mechanisms, targeted at individuals with high discretionary decision-making power at the public as well private spheres (Rose-Ackerman & Palifka, 2016). Moreover, anticorruption calls for initiatives that better align the principal’s and the agent’s interests, such as improvement in information channels, accountability and other checks and balances devices.

We are aware that the above ideas have contributed to discussions about how public governance is connected to the fight against corruption (Rose-Ackerman & Palifka, 2016). Nevertheless, the conventional economic explanation of corruption is insufficient to provide a richer understanding of why

and how corruption evolves and becomes systemic (Marquette & Peiffer, 2017). Under particular circumstances, increasing controls of public servants also accompany higher monitoring and additional transaction costs. Excessive controls and some transparency policies can backfire and even hurt people's intrinsic motivations for behaving in an ethical manner. The very task of disclosing potential conflicts of interest can be followed by unintended consequences, such as moral licensing and rationalization mechanisms to justify deviations from social norms (for details, see Muramatsu & Bianchi, 2021).

This is partly so because the rational approach to corruption fails to identify causally relevant mechanisms underlying the individual as well as social dynamics of corruption. The unrealistic theoretical foundations of the economic approach might constrain the development of anticorruption measures that promote integrity and impersonal public administration (OECD, 2018). That being the case we need new theoretical and empirical tools that give researchers and policy makers the chance to better understand corrupt behavior that happens in the real world of agents with bounded rationality, bounded willpower and bounded self-interest. A broader explanation of corruption and its challenges depends on a clearer account of how individual thinking and social preferences work together in the production of behavior.

Lesson 3. Corruption also evolves due to bounded rationality and fast thinking

A behavioral economics account of corruption holds that, although the decision to violate ethical rules may involve calculus and deliberation, this feature alone does not define it. Boundedly rational social agents are affected by reciprocity norms, conventions, and perceived emotion-laden contexts (Thaler, 2019). This also applies to individuals engaged in corrupt practices and networks. When a traffic officer has to decide whether or not to accept a bribe, her behavior is often triggered by System 1. In this fast, automatic and involuntary mode of thinking, agents are not necessarily in tune with their best available options and interests. Rather, they react to intuitions, take mental shortcuts, follow social norms, and adopt suboptimal ways of processing information and handling emotions.

The recognition of the importance of automaticity in human decisions is a central tenet of behavioral economics. Research in the field points out that choices activated by System 1 are dependent on how agents perceive their context, and thus heavily influenced by mental frames. Kern and Chugh (2009) amassed experimental evidence showing that in identical situations agents behave differently when faced with a potential gain or with a potential loss. In the loss-frame condition they exhibit a stronger tendency to make risky decisions, such as lying about their business or hiring a consultant who can give them inside information. These are what the authors call the “perils of loss framing”, a condition in which people react automatically to incentives.

Likewise, automatic mindsets may lead people to overestimate their ability to identify the ethical aspects of their choices. The public official who hires a friend's daughter to fulfill a certain position, out of other more qualified candidates, may not consciously realize that his choice implies nepotism. By relying on quick, non-deliberative decision processes, people are affected by ethical blind spots that prevent them from perceiving that they are acting against their own ethical and professional standards (Feldman, 2018).

Individuals tend to process information in ways that are tuned to their preexisting beliefs (Shalvi, Gino, Barkan & Ayal, 2015). Psychological processes that come into play allow “good” people to justify their malpractices and thus preserve a positive self-image (Feldman, 2017, p. 88).

Feldman, Gauthier and Schuler (2013) discuss a study trial that investigated a particular medication, Celecoxib, designed to help patients cope with the painful symptoms of arthritis. The researchers reported the results of this trial selectively, stating that patients using Celecoxib for one semester had fewer gastrointestinal complications than patients using other drugs. However, this was not true after one year, when Celecoxib did not offer any comparative advantage. Besides, the report did not distinguish minor side effects of the medication from serious ones, resulting in hospitalization. This violated a second clause of the research protocol.

As said before, people do not necessarily engage in a fully deliberative process before performing an unethical action. However, the fact that many corrupt decisions are driven by the fast, automatic mode of thinking does not imply that System 2 (slow, deliberate, effortful, rational) is entirely out of the picture. Boundedly rational agents often resort to System 2 to find *post-hoc* justifications for their decisions. The pharmaceutical industry might justify its violation of clinical trial rules by emphasizing the urgency to put on the market a drug that can really help patients; the public official may explain his decision to hire his friend's daughter by arguing that she is a single mother of three small children; a briber may justify her actions but saying that everybody else in her condition does the same.

The fact that individuals are inclined to act as if their high professional competence was a necessary as well as a sufficient condition for avoiding suboptimal judgments and decisions only complicates things. An excessive self-confidence may distort people's self-image and make them believe that they are more virtuous than they really are. For instance, a famous oncologist, well-known for his precise clinical choices and strong commitment to patients' well-being, might ignore the fact that his prescriptions are influenced by the pharmaceutical company that sponsors his conferences and research team.

Therefore, quite related to the confirmation bias is a tendency to have a positive and distorted self-image, since this enables people to overlook their moral lapses (Nohria, 2015). People overestimate themselves as students, drivers, investors, moral beings. This cognitive bias is affected by situational

factors such as time pressure and conflicts of interest, and leads “good” people to invoke an external reason to justify their misbehavior.

Dishonest practices that signalize ethical blind spots can be produced by conflicts of interest, which are central to many unethical behaviors, both in public and corporate sectors (Feldman & Halali, 2017). In order to investigate the impact of subtle conflicts of interest, the two authors ran an experiment in which participants were paid to evaluate a certain research center. Participants in the experimental condition faced a conflict of interest between what they were expected to do, which was to write an objective report, and their personal interest in writing a favorable report, since this second option would probably increase their chances of being hired to write an additional report, with complimentary payment. This possibility was not open to the control group, other things equal.

The results show that the experimental group, whose participants were stimulated to use their automatic, intuitive mindset, incurred more frequently in laudatory reports than participants in the control group, who had no financial interest involved, and who relied on their conscious, deliberate mindset. Feldman and Halali (2017) thus confirmed their hypothesis that automatic reactions can conflict with people’s professional or public integrity, without them acknowledging it.

Lesson 4. Corruption involves reciprocal cooperation and can turn systemic

Humans are cooperative beings. Besides strong self-regarding drives, their motivation includes other-regarding or social motives. Reciprocity, which implies cooperation, became part of our genes; it is culturally transmitted and contributes to our evolutionary fitness (Bowles & Gintis, 2011). *Homo reciprocans* tends to cooperate with cooperators (positive reciprocity) and to cheat cheaters (negative reciprocity), a tendency that brings about positive outcomes, both at the individual and group level.

Yet the moral settings and implications of this *quid pro quo* pattern are complex. Although reciprocity is usually seen as pro-social, this well-known human trait has many faces. There is now a robust experimental evidence that brings to light the fact that corruption, an undesired social state, is fueled by reciprocity (Fehr & Gächter, 2000; Lambsdorff, 2012; Muramatsu, Bianchi & Orlandi, forthcoming). The abuse of entrusted power for personal gain is detrimental to societal well-being. The civil servant who demands a bribe for a service that should be free, the driver who offers money to the traffic guard in order to avoid getting a ticket, are both building the scene where reciprocity may lead to corruption.

Moreover, corrupt networks can turn systemic and nourish a dismal form of reciprocity. Experiments on corruption typically forge situations where participants, playing the role of public officials, face monetary stimuli to act dishonestly. Socially shared norms of behavior embedded in mutual expect-

tations may lead agents to see a bribe as a kind gesture and follow through with the corrupt deal.

Two well-built experiments, selected out of other possible ones, exemplify the collaborative roots of corruption. In a research carried out by Weisel and Shalvi (2015) participants were randomly matched to form dyads of players A and B, and asked to throw dice and register their outcomes. They had incentives to misreport their performance, since the higher the number that Players A obtained in each of the 20 consecutive turns, the higher would be their payoff. The rules of the game further required the occurrence of doubles, that is, instances when B reported having obtained the same die face as A.

Both parties lied about their performance: the occurrence of doubles reported by B and the numbers that were registered by A significantly outnumbered the results that would be expected from a probability calculus.

When the authors intentionally misaligned the incentives of players A and B, the amount of corruption decreased, but did not disappear. One particular outcome is worth mentioning, which is the fact that players B reported doubles even in circumstances where their incentive to lie was removed, as their payoff was fixed. These results led the authors to stress that cooperation has a dark side, and that in certain circumstances it should be monitored, rather than systematically cheered (Weisel & Shalvi, 2015, p. 10655).

Another seminal experimental research was conducted by Drugov, Hamman and Serra (2014). The authors built a lab experiment where participants were assigned four different roles: “public officials”, “private citizens”, “other members of society” and “intermediaries”. The latter were found to have the expertise and the resources to carry out the dirty work and facilitate corrupt deals. Since illegal activities impose the need for secrecy and are usually devoid of formal written contracts, they have higher transaction costs, thus encouraging the services of intermediaries.

Drugov and his coauthors simulated a one-shot interaction between a private citizen, who had to decide whether and how much to offer a public official in exchange for an illegal service (let’s say, a speedier admission to hospital), and a public servant, who had to decide if he would take the bribe and how much should it amount to. In the Intermediary-treatment this third party was able to inform the citizen about the lowest bribe that the official was willing to accept. The outcomes in this treatment were then confronted with a No-intermediary treatment, where this information was open to the citizen.

The results show that the presence of an intermediary significantly increases the proportion of citizens paying a bribe, much more than the elimination of uncertainty. Clients more frequently offered bribes and officials showed a higher willingness to accept them when this was arranged by intermediaries, since this condition lowered the moral costs of bribers and bribees. Both parties were led to see bribery exchange as ordinary business transactions, reducing the moral burden of their transgressions.

Lesson 5. Nudges can help fight corruption

Since the publication of Thaler and Sunstein's 2018 book, nudges have been under the spotlight and become important tools of the public policy toolbox in many countries all over the world. Nudges refer to (public or private) subtle interventions that aim to suggest some courses of action to people in a way that does not hurt their freedom of choice. Quite recently Sunstein claims that "it is more precise to define a nudge as an initiative that affects people's behavior without imposing significant material burdens or offering significant material benefits" (Sunstein, 2020, p. 6).

As said earlier, the behavioral turn to corruption research and policy gained extra appeal when international organizations like the World Bank, Transparency International and OCDE relied on empirical evidence from the behavioral sciences to propose new directions to the anticorruption debate. Some of the behaviorally informed policies reveal nudging initiatives. Given the purpose of this essay we discuss a few examples of nudges that work because they inform people, make some choices easier and draw on the injunctive and descriptive elements of social norms to change people's expectations and behavior (Köbis et al., 2019)¹.

Mazar and Ariely (2006) ran an experiment in which some participants were first asked to write down the Ten Commandments they remembered whereas others were told to write the names of the books they read during their high school years. Next all subjects of the experiment had to resolve another task – a math test that provided students with incentives to cheat. The results suggest that the first group of participants behaved more honestly than those who were asked to remember the title of books they read in the past. According to Ariely (2012), these experimental findings are in tune with the view that moral reminders are somehow educative and nudge people towards honest patterns of behavior.

Similarly, Yuval Feldman (2018) claim that reminders might enable people to commit to ethical behavior. For instance, asking businessmen or public officials to sign a document attesting their awareness of conflicts of interest and details of the organization's ethical code might foster integrity and careful decision-making. Some regulatory nudges that allow for disclosure of relevant information about public procurement can also lead private and public agents to opt for courses of action that are part of society's best interests. In addition, some e-government proposals that use information and communication technology can nudge public servants to commit to their goals of improving the quality of public

management. A third type of nudges would be changes in public choice architecture that increase individual's as well as society's perception of the high costs of corrupt deals (OECD, 2018).

There are nudges that can communicate what people expect from others and the power of social norms. As said before, some reciprocity systems can make corruption survive and become an endemic problem. Yet, getting information of the social dynamics of corrupt deals might also help policy makers to find effective ways of fighting corruption and fostering socially acceptable outcomes This might be done in various ways.

In India a Non-Governmental Organization called 5th Pillar embarked on the initiative of printing a zero-rupee note containing the inscription, "I promise to neither accept nor give a bribe" (World Bank, 2015). Since its creation in 2007, millions of zero-rupee notes have been distributed in bus and train stations and marketplaces to increase people's awareness that bribery is a chronic problem, and that they should not be afraid of condemning corrupt deals. There are examples in 5th Pillar's websites of success stories involving the zero-rupee notes. The foregoing case reveals that individuals are willing to use the zero-rupee note in order to warn bribery-taking public officials that there is a significant group of individuals who condemn corruption (OECD, 2018).

Köbis et al. (2019) conducted a field experiment to investigate whether social nudges can help constrain bribery in a South-African town. The experiment takes corruption as a bribery game that represents the social dilemma often dealt with by countries where corruption tends to be systemic. Each participant of the designed 10-player game took the role of 'citizen' and 'public official'. In the experiment a citizen aims to receive a certificate (for instance, a driving license) that is valued the amount of R35. She can apply for the certificate either by paying the official application fee of R15 or else she can pay a bribe of R10 to avoid the application process. The public official in turn can either earn his wage of R20 and normally process an application or can accept a bribe of R10. In addition, participants are informed that anytime a bribery deal is set, there will be a loss of R2 imposed on all 10 players (the social cost of bribery). Note that the game is such that the bribery transaction is the dominant strategy. The experiment had two conditions. For the participants under the control or baseline condition, the game was played without any social nudge. The remainder of the participants were put under the poster condition that informs individuals that less and less people in the region of South Africa where they live pay bribes. The results were very interesting. The poster lowered people's perception of the frequency of corrupt deals. In addition, 67.52% of participants stated that they believe that others regard bribery as (very) socially inappropriate and 66.24% also took bribery themselves as (very) socially inappropriate. All this suggests that, even in a society with perceived systemic corruption, individuals disapprove of taking and offering a bribe. More interestingly, the experimenters found that the

¹The injunctive element of a social norm refers to what is regarded or believed as (un)acceptable. The descriptive item of a social norm provides information of what is common or frequent. Some studies suggest that the descriptive element of social norms provides a good predictor of corruption (Marquette & Peiffer, 2015). Others stress that we need to consider the injunctive as well as descriptive character of social norms to understand why individuals might disapprove of corruption and at the same time embark on corrupt deals in some countries (Bicchieri & Dimant, 2019).

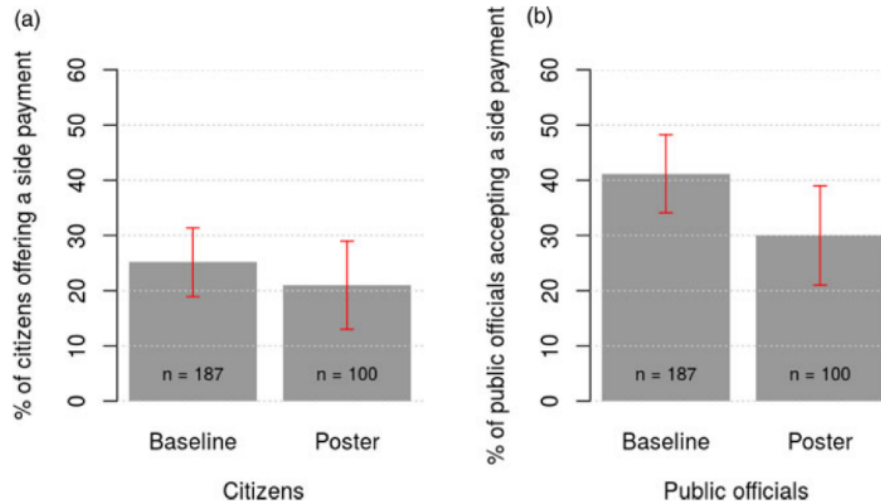


Figure 1. Percentage of subjects (a) offering a bribe when they play the role of citizens and (b) taking a bribe when they are public officials under the control/baseline and treatment/poster conditions. *Source:* Köbis et al., 2019, p. 16.

percentage of participants offering bribes and accepting bribes decreased under the poster condition (Figure 1). For the treatment condition, there was a decrease in unconditional bribery deal of 5.8 percentage points, and an increase in unconditional rejection of bribery of 9.5 percentage points.

Köbis et al. (2019) highlight that nudges are useful and even necessary to broaden the toolbox of anticorruption measures. Yet a long-lasting behavioral change requires much more than social nudging. They suggest further involvement of civil society and information campaigns that promote private as well as public integrity.

Bicchieri and Dimant (2019) go on to highlight that, since social norm-nudges serve to provide information with the aim of changing social expectations and thus individual behavior, they should be carefully designed and implemented. To them, the effectiveness of social nudging depends on whether the interventions avoid uncertainty about social reference networks, build on reliable sources of information, and focus on positive behaviors that endorse public and private integrity (OECD, 2018).

If this is so, nudges are not to be taken as panacea. Rather, they emphasize that there is no one-size fits all anticorruption policy. Nudges can backfire if they are not accompanied with structural reforms that make political and economic institutions inclusive (Acemoglu & Robinson, 2012).

Final remarks

Despite the various efforts that have been made for the last three decades, corruption is still pervasive and remain one of the evils that challenge nations all over the world. Just like a very transmissible virus, corruption spreads out and deteriorates the quality of human life. It threatens the path of

economic prosperity and democracy. In this paper, we share the view that the unrealistic theoretical foundations of conventional economic explanations of corruption partly explain why many recommended policies have failed to deliver what it had promised.

Perhaps it is time to acknowledge that corruption is a typically complex phenomenon and therefore we might never know what features some nations have that make them vulnerable to corruption, either small-scale or systemic. That being so, it might be prudent to rethink the anticorruption debate and avoid explanations of why people engage in exchanges that are solely based on material incentives. New directions in research and policy point to the importance of investigating the contexts in which some types of corruption emerge and evolve over time. They draw attention to the fact that evidence-based policies to curb corruption highlight that one-size-fits all structural reforms based on principles of deterrence, transparency and accountability can backfire. Excessive control of civil servants can bring unintended negative consequences and even hurt their intrinsic motivation for behaving honestly. Rather, some contemporary anticorruption measures recommend a shift from the focus of oversight and deterrence to the promotion of an environment of public and private integrity (OECD, 2018).

Just like big data and data analytics, behavioral experiments do not endow researchers and policy makers with a silver bullet that kills corruption, either. The behavioral turn to corruption studies suggest that anti-corruption initiatives had better start small by focusing on detecting specific problems and types of corruption that emerge in some countries due to various specific reasons, which deserve a careful investigation. To us, a thorough analysis of corruption depends on uncovering how individual judgment and decision-making

mechanisms work together with social norms to bring out some patterns of corrupt exchanges that are taken as morally (un)acceptable.

The abovementioned advances in evidence-based policy highlight that, at the end of the day, the task of curbing corruption makes a case for inter and multidisciplinary research and policy. Although the behavioral economic approach sheds light on mechanisms underlying the individual and social dynamics of corrupt deals, it is important to understand how cultural factors and historical processes of nations influence their manifestations of corruption within and outside their jurisdictions. Fighting corruption requires new forms of conversation and exchange of knowledge with sociology, political science, anthropology, law and neuroscience.

Furthermore, it is important to stress that combating corruption remains a task full of disturbing factors that cannot easily be isolated by experiments. Such complications invite academics, policy makers and members of civil society to go on searching for new strategies to better understand corruption in the real world of agents with bounded rationality, bounded willpower and bounded self-interest.

With this in mind, we close this essay with Paul Heywood's (2018, p. 88) suggestive nudge of sorts: "if corruption is a form of cancer (or some other disease), then corruption oncologists need a more sophisticated understanding of its DNA if they are to develop effective responses."

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