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CORRUPTION AS A SELF-REINFORCING “TRAP”: IMPLICATIONS FOR REFORM STRATEGY

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ABSTRACT

Corruption is widely believed to be a self-reinforcing phenomenon, in the sense that the incentive to engage in corrupt acts increases as corruption becomes more widespread in the relevant community. Leading scholars have argued that corruption’s self-reinforcing property implies that incremental anticorruption reforms cannot be effective, and that the only way to escape a high-corruption equilibrium “trap” is through a so-called “big bang” or “big push.” This widespread view is mistaken. After surveying the reasons corruption might be self-reinforcing (or in some cases self-limiting), this paper demonstrates that corruption’s self-reinforcing property does not imply the necessity of a “big bang” approach to reform, and indeed may strengthen the case for pursuing sustained, cumulative incremental anticorruption reforms.

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In many settings, an individual's decision whether to engage in some action is contingent on how many other people engage (or are expected to engage) in similar behavior. Some conduct is *self-reinforcing*, in the sense that an individual's incentive to engage in that conduct is stronger when the conduct is more widespread. Other kinds of behavior are *self-limiting*, in the sense that as the conduct becomes more prevalent, each individual's incentive to engage in that conduct weakens. Economists have developed more precise, rigorous frameworks for exploring the implications of these sorts of contingent behavior (Schelling 1978; Akerlof 1980; Arrow 1973; Diamond & Dybvig 1983; Cooper & John 1988). In the context of crime and crime control, for example, a family of economic models proceeds from the assumption that the incentive to commit a crime depends on the pervasiveness of similar crimes in the relevant community. Such models have been used to explain otherwise puzzling patterns in the incidence and dynamics of criminal behavior, and also—perhaps more importantly—to inform attempts to alter such behavior through policy interventions (Bar-Gill & Harel 2001; Baumann & Freije 2015; Fender 1999; Glaeser et al. 1996, 2003; Kahan 1997; Kleiman 1993; Marceau 1997; Rasmusen 1996; Sah 1991; Schrag & Scotchmer 1997; van der Weele 2012).

In some cases, scholars have deployed relatively simple contingent-behavior models to advance aggressive critiques of conventional reform strategies and to advocate for alternative approaches. We see this especially clearly in the context of the global fight against corruption. Corruption—an admittedly fuzzy term that for present purposes includes things like bribery, embezzlement, nepotism, and other abuses of office for private gain (World Bank 1997; International Monetary Fund 2018)—is present in all societies, yet the nature and extent of corruption vary dramatically both across and within countries. Moreover, despite the fact that fighting corruption has been a high priority for many governments and international organizations for decades, modern examples of significant progress in reducing corruption are frustratingly rare (Hough 2017, p. 171; Persson et al. 2012; Rothstein 2018; Taylor 2018).² A number of influential analysts have argued that, putting

² That said, as Hough (2017, p. 172) points out, the paucity of dramatic transformations “need not ... lead us to be all doom and gloom. Progress has been made, both in the developed and the developing world.” Indeed, the literature has paid increasing attention to modern anticorruption success stories, though the degree of success in many of these cases is debatable. See, e.g., Mungiu-Pippidi (2015, pp. 130-160) (discussing Botswana, Chile, Estonia, Georgia, South Korea, Taiwan, and Uruguay); Mungiu-Pippidi & Johnston (2017) (edited volume including chapters on Botswana, Chile, Costa Rica, Estonia, Georgia, Qatar, Rwanda, South Korea, Taiwan, and Uruguay); Quah (1994) (discussing Hong Kong and Singapore); Quah (2017) (discussing Botswana, Hong Kong, New Zealand, Rwanda, and Singapore); Taylor (2018) (discussing Georgia, Japan, and Rwanda). Fisman & Golden (2016, pp. 215-226) also suggest Italy's “Clean Hands” crackdown in the mid-1990s as an example of a successful anticorruption effort, though others dispute how successful this crackdown actually was in the longer term (Della Porta & Vannucci 2012; Taylor 2018). Researchers are also examining more closely how many Western countries, such as the United States, the United Kingdom, France, Germany, Denmark,

aside the details of individual cases, this apparent lack of success is due, at least in part, to a failure to appreciate the extent to which corruption is a form of self-reinforcing behavior.

Those who advance this critique typically make a series of interlocking claims, beginning with the assertion that the incentive to engage in corruption is higher when corruption is (or is expected to be) more widespread. The next step in the argument is to assert that corruption's self-reinforcing nature implies that the same society will typically have more than one stable equilibrium corruption level: both a "high-corruption equilibrium," in which the ubiquity of corruption strengthens incentives for individuals to behave corruptly, thus ensuring that corruption remains widespread (a "vicious cycle"), and also a "low-corruption equilibrium," in which corruption's rarity makes engaging in corrupt acts sufficiently unattractive that corruption remains rare (a "virtuous cycle"). The bold claim that many analysts derive from this characterization of the phenomenon is that for societies in the high-corruption equilibrium, partial or incremental reforms will not be effective, and might even be counterproductive. What is needed instead, the argument concludes, is a "big bang" (or "big push"): a comprehensive reform package that attacks corruption on many fronts simultaneously, thoroughly, and quickly, so that the society pushes past the so-called "tipping point" and shifts from the high-corruption equilibrium to the low-corruption equilibrium.

This is not a fringe view. Many of the leading figures in anticorruption and development studies have advanced some version of the argument that corruption's self-reinforcing nature implies multiple equilibria, which in turn implies the need for a "big bang" rather than a piecemeal approach. The influential development economist Paul Collier (2006, p. 195), for example, has claimed that in order to escape from a high-corruption equilibrium trap, "a country needs a major effort—a 'big push'. In the absence of a big push, marginal, incremental efforts get overwhelmed by the locally stabilizing forces of the trap." (See also Collier 2000.) Along similar lines, Susan Rose-Ackerman—perhaps the single most important figure in the economic analysis of corruption—has written (1999, pp. 55-56) that if "the net rewards of corruption increase as the incidence of corruption increases," then the society "may get caught in a trap where high corruption levels beget high corruption levels," such that a low-corruption equilibrium is "unreachable in small steps from the status

Sweden, and others, managed to dramatically improve the integrity of their governments over the course of the 19th and early 20th centuries (Glaeser & Goldin 2006; Mungiu-Pippidi 2015, pp. 57-82; Rose-Ackerman & Palifka 2016, pp. 213-214, 423-425; Cuellar et al. 2018; Teorell & Rothstein 2015; Rothstein & Teorell 2015).

quo”; escaping this “high corruption trap,” she continues, “may require a large increase in law enforcement resources to tip the system to a low corruption equilibrium.”³ Paulo Mauro, a senior IMF official who helped pioneer the study of corruption’s economic consequences, likewise concludes (2004, p. 4) that “as is often the case with models involving ... multiple equilibria, ... gradual reforms are less likely to work than more ambitious, comprehensive reforms.” Perhaps the most extensive development of the argument that endemic corruption, as a self-reinforcing phenomenon, demands a “big bang” response is Bo Rothstein’s influential 2011 article, the abstract of which succinctly explained (p. 228) that in systemically corrupt countries, “following the incremental approach is dysfunctional. ... [W]hat is needed to establish [a] new equilibrium ... is a ‘big bang’ type of change.”⁴ That view is echoed by Ray Fisman and Miriam Golden’s (2017) excellent introductory handbook on corruption, which frames corruption as a multiple-equilibrium phenomenon and asserts, based on this characterization of the problem, that although “the big bang [approach is] an uncomfortable path for a reform-minded government to tread ..., the choice is largely between rapid change versus no change at all” (pp. 243-245). Numerous other scholars have advanced the same basic diagnosis and prescription (e.g., Aidt 2003; Akerlof 2016; Bardhan 2006; Gatti et al. 2003; Kingston 2008; Sparrow 2008, p. 234).

A preliminary difficulty with this line of argument is the ambiguity of the concept of a “big bang” and of its opposite (variously described as incremental, piecemeal, or gradual reform, terms that are sometimes differentiated and sometimes conflated). It’s not clear that all the scholars who advocate a big bang have exactly the same thing in mind. But for present purposes, we can put that difficulty to one side and assume, based on a fair reading of the literature, that the big bang approach is characterized by a change in the institutional environment that is sufficiently large, comprehensive, and rapid to induce most of the targets of the reform to substantially alter their behavior within a relatively compressed time period. So let us bracket the definitional difficulties and focus on the influ-

³ Importantly, in the same book Professor Rose-Ackerman acknowledges that there are “two paths to durable [anticorruption] reform,” one of which—a “‘big bang’ approach in which massive changes are introduced all at once,” may be possible only in “times of great crisis,” and the other of which, “an incremental strategy in which the steps are carefully designed to build support over time,” may work better in the absence of crisis if the reforms are sequenced correctly (pp. 222-223). (See also Rose-Ackerman & Palifka 2016, pp. 213-214, 444-445.) Elsewhere, though, Professor Rose-Ackerman has argued (2010, pp. 48-49) that in the presence of “vicious spirals where the corruption of some breeds the corruption of others until almost all are corrupt ...[,] corruption cannot be limited through piecemeal, incremental reforms[.]” Her position on whether corruption’s self-reinforcing character implies the need for comprehensive as opposed to incremental reform is therefore somewhat unclear.

⁴ Professor Rothstein has substantially modified his position in his more recent work (Rothstein 2018, pp. 43-44), but the view he articulated in his 2011 contribution is still widely held by others.

ential claim that corruption’s self-reinforcing property implies multiple corruption equilibria (a vicious cycle and a virtuous cycle), and that this in turn implies the superiority, perhaps the necessity, of a “big bang” approach to anticorruption reform.

That claim is incorrect.

First of all, while the fact that corruption can be self-reinforcing is a vital insight, this observation does not necessarily imply multiple equilibria; even if corruption is self-reinforcing, there may well be a single equilibrium corruption level. Second, the assertion that corruption is a “stable equilibrium” does not tell us anything about how responsive the corruption level will be to a given set of institutional, policy, or legal reforms—large or small. A stable equilibrium is “stable” in the sense that a random perturbation won’t lead to a long-term change. But adopting a reform, or package of reforms, isn’t a random or temporary perturbation: it’s a change in the environment—a change, in other words, to the parameters of the model—which will produce a new equilibrium. Moreover, if corruption is indeed self-reinforcing, this does not imply that the equilibrium corruption level will tend to be less responsive, let alone unresponsive, to incremental reforms. In fact, the opposite is true: if corruption is self-reinforcing, then the equilibrium level of corruption would be *more*, not less, responsive to policy interventions. Finally, even when self-reinforcing corruption does generate multiple equilibria, this does not, without more, imply that a big push is superior to incremental reform, let alone that a big push is the only way to make progress against entrenched corruption. At most, the models imply that in the presence of multiple equilibria, a temporary crackdown on corruption *can* produce lasting change, but *only if* the crackdown either is sufficiently large to eliminate the high-corruption equilibrium, or else somehow enables enough members of the society to coordinate a collective shift in their behavior. These models most assuredly do *not* imply that a gradual, incremental reform strategy cannot work if a society is “stuck” in the high-corruption equilibrium. In fact, the possibility of multiple equilibria may supply a justification for maintaining an incremental reform process over an extended period: Even if no individual reform seems to pay substantial dividends in the short term, the gradual accumulation of incremental reforms may eventually succeed in pushing society past the tipping point, cumulatively producing a major impact.

The main objective of this paper is to critique the widespread and influential notion that because corruption is self-reinforcing, the only viable reform strategy is a big bang that shifts the system

from a high-corruption equilibrium to a low-corruption equilibrium. Before proceeding to the theoretical analysis, Part I catalogues the main reasons why the prevalence of corruption may strengthen individual incentives to behave corruptly, and also notes some reasons why the prevalence of corruption may, in other circumstances, weaken individual incentives to engage in corruption. This discussion, while not essential to the paper's main arguments, helps motivate the analysis and also collects in one place the diverse reasons that scholars have identified for why corruption may be self-reinforcing (or possibly self-limiting). Part II presents a simple conceptual framework for thinking about corruption as an equilibrium, and about how policy interventions might alter the equilibrium corruption level. Part III focuses on the multiple-equilibrium case that has attracted so much interest, first elaborating on the additional conditions that must hold in order for a society to exhibit multiple stable equilibrium corruption levels, and then considering the implications of multiple equilibria for anticorruption strategy. A brief conclusion summarizes the major arguments and offers some further reflections.

I. Corruption as contingent behavior: a catalogue of mechanisms

Scholars have offered a variety of arguments for why corruption might be self-reinforcing. A few scholars have also noted, though usually only in passing, reasons why certain forms of corruption might be self-limiting under some circumstances.⁵ To motivate the theoretical discussion, this section catalogues the main reasons that the incentive to engage in corruption may be contingent on the extent of corruption in the relevant community.⁶

A. Self-Reinforcing Corruption

The dominant view in the literature is that corruption is self-reinforcing: any given individual's incentive to engage in corrupt acts is stronger when corruption is ubiquitous than when it is rare.⁷

⁵ The same conduct could be self-reinforcing over a range but self-limiting over some other range. For simplicity, the discussion here considers self-reinforcing and self-limiting dynamics separately.

⁶ This paper uses a conventional economic framework in which individual agents choose their optimal strategies, given the strategies of other players. Some analyses have employed an alternative "evolutionary" approach in which agents' strategies are fixed, and agents' probability of survival to the next period depends on their performance in the current period; these models incorporate corruption's self-reinforcing or self-limiting characteristic as part of agents' strategy profiles (e.g., Accinelli & Sanchez Carrera 2012; Bicchieri & Rovelli 1995; Wirl 1998). These evolutionary models are substantially more mathematically complicated, but do not appear to offer much in the way of useful additional real-world insights, and so will not be discussed further.

⁷ Although the arguments for why corruption tends to be self-reinforcing are mainly based on theory, qualitative observations, or aggregate-level correlations, some survey research has found that an individual's willingness to engage in

This does not mean everyone will make the same choice. Some people behave honestly even when the incentives to cheat are strong, while others are so greedy or risk-loving that they behave corruptly even when almost everyone else would be deterred. Rather, the idea is that as corruption becomes more prevalent it becomes more attractive—and thus even more prevalent. The existing scholarship has identified at least seven reasons (or categories of reasons) why corruption is likely to be self-reinforcing in this sense.

1. **Concentration of enforcement resources.** The logic of deterrence holds that an individual's incentive to engage in an illegal act, such as bribery or embezzlement, is inversely correlated with the expected sanction, which, in turn, is a function of the probability of getting caught and the likely severity of the punishment if caught (Becker 1968). But if monitoring and enforcement resources are constrained, then as wrongdoing becomes more widespread, the probability of detection and punishment—and hence deterrence—tends to diminish, because limited monitoring and enforcement resources are spread more thinly over a larger number of malfeasants. One can frame the basic mechanism in terms of a simple math problem: The number of malfeasants is (partially) determined by the probability of detection and punishment; that probability can be expressed as a fraction, in which the numerator is the number of malfeasants the government has the capacity to detect and punish, and the denominator is the total number of malfeasants. If the numerator increases less-than-proportionally to the denominator, then all else equal, corruption will be self-reinforcing (Andvig 1991; Bar-Gill & Harel 2001; Bardhan 2006; Kleiman 1993; Schrag & Scotchmer 1997). (Of course, enforcement resources aren't necessarily fixed; perhaps if corruption becomes more widespread, the government would devote more effort to anticorruption. Yet often the increase in enforcement capacity won't be enough to maintain the same level of deterrence.)

2. **Integrity of the justice system.** Some wrongful activity—including many forms of corruption—generate illicit wealth and influence that can be deployed to subvert the institutions of justice. When these efforts at subversion are successful, corrupt individuals and organizations are more secure. They may therefore act more brazenly, and more actors may participate in criminal networks—which strengthens and enriches these networks, making it easier to compromise the institutions of justice. Put simply, the proceeds from unlawful activities purchase impunity, and this impunity facilitates the unlawful activities that generate those illicit proceeds. By contrast, when the

corruption does seem to depend on her perception of corruption's prevalence in her community (Corbacho et al. 2016; Gatti et al. 2003).

institutions of justice work sufficiently well, potential wrongdoers have more to fear; this may limit the scope of their illicit enterprises, in turn limiting the extent to which they can corrupt or otherwise undermine the institutions of justice. So here again, the prevalence of wrongful conduct weakens deterrence, which in turn makes the wrongful conduct more attractive and therefore more prevalent (Karklins 2005, p. 151; Rose-Ackerman & Palifka 2016, p. 305; Seider et al. 2002; Dal Bo et al 2006; Nichols 2006; Becker & Stigler 1974; Benson 1988).

3. **Trust and complicity.** As corruption rates rise, potentially corrupt actors can be more confident in the complicity of partners, colleagues, and supervisors, which makes corruption more attractive—and hence self-reinforcing. Many corrupt acts require a level of trust among parties. When corruption is more common, individuals may be more disposed to propose a corrupt transaction, or to invest the costs of searching for a partner amenable to such a transaction, because the chances of finding a willing partner are higher, and the risks of being turned in are lower. When the corruption rate in the population is lower, both the risks of proposing a corrupt deal and the expected search costs associated with finding a willing partner are larger (Fisman & Golden 2016, p. 7; Andvig 1991; Andvig & Moene 1990; Bardhan 2006; Gambetta 2006; Nabin & Bose 2008; Sah 2007). Moreover, individuals contemplating corrupt acts need to worry about the trustworthiness and complicity not only of their potential partners, but also of colleagues or other witnesses who might turn them in, or at least cooperate with an investigation. Any individual actor—say, a government bureaucrat—is likely to be more confident that neither her colleagues nor her superiors will report her corruption to the authorities if these other individuals are also on the take, which supplies another reason why the incentive to engage in corruption may become stronger when corruption is more widespread (Cadot 1987; Lui 1986; Verbrugge 2006).

4. **Shame.** While the threat of external sanctions is vital for deterring wrongful activity, our internal moral sense—which can trigger unpleasant feelings of shame or guilt when we do things we know we shouldn't do—is a key regulator of our conduct. While there are perhaps some people whose sense of right and wrong is so deeply rooted that it is unaffected by what anyone else does, most people's moral sense is substantially influenced by the behavior of others. Indeed, perhaps the most common rationalization for rule-breaking is that "everybody else does it." The prevalence of bad behavior, including various forms of corruption, can diminish the feeling of shame associated with that misconduct, which makes the misconduct more prevalent, further diminishing the shame associated with it. Consider a doctor in a public hospital who could demand that patients

make “informal payments” (that is, pay bribes) for medical services that are supposed to be free. If a doctor believes that such requests are virtually unheard of in her hospital, then even if there were no chance she would get caught, she might well refrain from making such demands out of a sense that it would be morally wrong to exploit sick and vulnerable people this way. By contrast, if the doctor knows that it’s standard practice among most other doctors in her hospital to request under-the-table “gifts” from patients, then she might easily rationalize the payment as a reasonable, if technically illegal, gratuity to supplement her official salary. Or think about the same setting from a patient’s perspective: A patient who wants faster or better treatment (say, by jumping the queue to be seen first in the emergency room) might consider paying a bribe, but if such behavior is extremely rare, her moral sense may dissuade her from doing so even if she knows she wouldn’t be caught. If, however, she believes that many patients pay bribes to get favorable treatment, she may feel that paying a bribe is justified. So, when the prevalence of bribery is low, the “shame costs” of requesting or offering bribes are high, which helps keep the frequency of bribery low; when bribes are common, the “shame costs” associated with bribery are low, which sustains higher rates of bribery (Karklins 2005, pp. 152-153; Andvig 1991; Arellano-Gault 2016; Persson et al. 2012; Varoufakis 2006; Weibull & Villa 2005).

5. **Stigma.** While the preceding mechanism focused on how the prevalence of corruption can diminish internal feelings of shame or guilt, it’s also possible that the prevalence of corruption can affect the stigma associated with corruption—that is, how much engaging in corruption could hurt one’s reputation with friends, family, colleagues, business associates, or fellow citizens. When an individual is revealed or suspected to have acted wrongfully, these various audiences can react in a variety of ways, ranging from a metaphorical sigh-and-shrug to unmitigated outrage. The intensity of the negative reaction may depend on the extent to which the conduct at issue deviates from “normal” or “expected” behavior. Corruption may be self-reinforcing if the social or political stigma associated with being perceived as corrupt is inversely correlated with corruption’s prevalence (Akerlof 2016; Andvig 1991; Belafoutas 2011; Bardhan 2006; Collier 2000; Dawid & Feichtinger 1996; Dey 1989; Kingston 2008; Litina & Palivos 2016; Rasmusen 1996).⁸ One straightfor-

⁸ Tirole (1996) advances a variant on this idea (albeit one with a fairly narrow scope of application in the public corruption context): Sometimes a *group* develops a reputation for corruption or honesty, and this collective reputation will affect the transactions other parties are willing to conduct with individual group members. Under certain assumptions, an individual from a group with a collective reputation for honesty has an incentive to behave honestly, but an individual from a group with a collective reputation for corruption may have an incentive to behave corruptly, because potential partners

ward illustration of the idea concerns political scandals. Suppose the media reports credible evidence that an elected legislator has been misappropriating government resources for personal use. If the average voter thinks most politicians do things like this all the time, then even voters who find the conduct objectionable might be reluctant to withdraw support from a politician they like in other respects—both because the conduct doesn't seem so bad if it's common, and because the voters might reasonably anticipate that a new legislator would do the same thing. If legislators anticipate that voters won't punish them for misusing state resources, electoral accountability won't provide much of a deterrent; weaker deterrence, in turn, encourages more behavior of this sort, making it seem more "normal." By contrast, if voters view this conduct as a grotesque deviation from usual norms, then a politician might rationally fear that if she breaks the rules and gets caught, voters will punish her at the ballot box; this ensures that this sort of abuse remains rare, and therefore continues to seem abnormal (Forteza 2015; Klasnja et al. 2018). A complementary observation is that those who find corrupt behavior objectionable may be more likely to take action against it—denouncing it, protesting, or what have you—if they believe others will do likewise, and individuals are more likely to hold such beliefs when corrupt behavior is seen as more abnormal (Fisman & Golden 2016, p. 6; Persson et al. 2012). A similar dynamic can take place even if there's no formal punishment mechanism like an election. If it's extremely uncommon for a doctor in a public hospital to demand under-the-table payments from patients, a doctor who makes such demands might face more severe social sanctions from colleagues who suspect what she is doing. But when such payments are common, the associated social opprobrium might dissipate or even disappear. Indeed, it's possible that if corruption within an organization is sufficiently widespread, social sanctions may be imposed on those who *won't* participate—such individuals may be ostracized for being "self-righteous" or "not team players." Thus the prevalence of corruption may reduce the stigma associated with behaving corruptly, and weakening this stigma weakens deterrence—the reciprocal relationship that makes corruption self-reinforcing (Fisman & Golden 2016, p. 6; Persson et al. 2012).

6. **Selection.** The preceding mechanisms all presume that the population of potential malfeasants is fixed. But self-reinforcing corruption can also arise due to the selection of different types of people into, and out of, the relevant community. For example, a corrupt, ineffective bureaucracy tends to attract dishonest, self-interested employees, which keeps the bureaucracy corrupt

will assume she's (probably) corrupt anyway. One consequence is that it's much easier for a group to lose its reputation for honesty than it is to get it back.

and ineffective; a clean, efficient bureaucracy tends to attract honest, public-spirited employees, which perpetuates a culture of integrity and public service. Thus corruption can be self-reinforcing not (only) because individuals change their behavior, but (also) because individuals select into or out of the relevant community or profession (Karklins 2005, p. 153; Banerjee et al. 2015; Bond 2008; Dey 1989; Forteza 2015; Hanna & Wang 2017; Klasnja et al. 2018; Acemoglu 1995; Caselli & Morelli 2004; Jaimovich & Rud 2014; Macchiavello 2008; Marceau 1997; Mishra 2006; Murphy et al. 1993). These tendencies can be even more pronounced when there are barriers to entry into the community that are hard to overcome without engaging in corrupt behavior. For example, in some countries getting a civil service job may require “purchasing” the position by bribing the right people. The practice of buying positions tends to select for more corrupt individuals, because the applicant willing to pay the highest bribe to get the position will likely also be the one most willing to exploit that position for personal monetary gain (Kahana & Liu 2010; Kristiansen & Ramli 2006; Wade 1982). A similar logic may apply to elected politicians: When it’s difficult to win an election without engaging in corrupt activity, the politicians who get elected are more likely to have fewer qualms about corruption and less interest in cleaning up the system (Della Porta & Vannucci 2012, p. 225; Della Porta 2004; Evrenk 2011).

7. **Macro-Level Feedback Effects.** Finally, widespread corruption can have macro-level social or economic impacts that make corrupt behavior more likely. Low levels of corruption, by contrast, may promote an economic or social environment in which corruption is less attractive. For example, perceived corruption at the country level has a strong negative correlation with per capita income—an observation that has provoked an extensive inquiry into whether corruption tends to keep countries poor, or poor countries are less effective in controlling corruption, or both. If the answer is “both,” corruption is self-reinforcing: corruption tends to make countries poorer, while poverty tends to make corruption harder to control (Rose-Ackerman & Palifka 2016, pp. 35-36; Blackburn et al. 2006, 2010, 2011; Brianzoni et al. 2015; Ehrlich & Lui 1999; Haque & Kneller 2009; Harstad & Svensson 2011; Mauro 2004; Ventelou 2002). A related mechanism focuses on government revenue and spending. Corruption may reduce government revenues for a variety of reasons: citizens bribe officials to avoid paying taxes and duties (Rose-Ackerman & Palifka 2016, pp. 75-79); perceptions of government corruption reduce “tax morale,” thereby inducing greater tax avoidance or evasion (Alon & Hageman 2012; Frey & Torgler 2007; Torgler 2004); and corruption may shrink the tax base by impeding business growth and driving firms from the formal econ-

omy into the shadow economy (Goyette 2014; Johnson et al. 2000; Smith & Thomas 2015). Corruption may also drain state resources in other ways, as when government officials overpay contractors in exchange for kickbacks, hire more public sector workers than needed, or simply embezzle state funds (Castro & Rizzo 2014; Dal Bo & Rossi 2007; Mironov & Khuraskaya 2016; Olken 2006; Reinikka & Svensson 2004). At the same time, fighting corruption requires substantial government resources—for things like effective auditing systems, adequately trained law enforcement and judicial personnel, higher civil service salaries, new technology, and so forth. So, when corruption is high, investment in effective anticorruption systems may be lower, which tends to keep corruption high.

Other macro-level mechanisms are also possible. For example, corruption might reduce the competitiveness of the market (say, by enabling privileged insiders to induce officials to maintain market barriers, or simply by raising the costs of market entry), and less competitive markets may be more prone to corruption (Cabelkova 2001; Emerson 2006; Popov 2015). Corruption may exacerbate economic inequality, and economic inequality may foster an environment in which corruption is more feasible and attractive (Uslaner 2008; Alesina & Angeletos 2005; Chong & Gradstein 2007; You & Khagram 2005). Corruption may reduce education and literacy, and less-educated populations may be less able to hold public officials accountable for malfeasance (Della Porta & Vannucci 2012, p. 221; Tran 2010). Some have also suggested that corruption produces cynicism and distrust (of government, fellow citizens, or both), while cynicism and distrust contribute to a social and political environment in which corruption flourishes, perhaps because political engagement and participation are lower (Rose-Ackerman & Palifka 2016, pp. 257-261; Arellano-Gault 2016; Cho & Kirwin 2007; Kingston 2008; Rose-Ackerman 2001; Varoufakis 2006). The goal here is not to assess the accuracy of these or other possible feedback mechanisms, but only to note that the prevalence of corruption may alter the characteristics of a society, through economic or other channels, in ways that strengthen the incentive to engage in corruption, and that when this is so, corruption tends to be self-reinforcing.

B. Self-Limiting Corruption

The literature overwhelmingly treats corruption as a self-reinforcing phenomenon. While this is probably the right characterization in most cases, at least three mechanisms might make certain forms of corruption self-limiting, in the sense that the incentive to engage in corruption weakens as the prevalence of corruption in the relevant community expands.

1. **Saturation and competition.** Suppose there's a fixed "pie" that potential criminals want to misappropriate, such as the resources that can be embezzled from state-owned companies, or the profits to be had from selling illicit goods in black markets. Individuals must choose whether to enter into this "dirty" business or to stay out. Entry carries both risks and rewards. The expected rewards, however, may be inversely correlated with the number of individuals competing for, or dividing up, the illicit gains. There may be only so much that can be siphoned off from a state-owned company before the theft is detected or the company is run into the ground. The profits for sellers in black markets may dissipate as the number of competitors grows larger—as is true in most legal markets. In these cases, the incentive to participate in the corrupt activity is inversely correlated with the overall extent of participation in that activity, meaning that corruption is, all else equal, self-limiting (Fisman & Golden 2016, p. 266 n.4; Andvig 1991; Glaeser et al. 1996; O'Trakoun 2017; Sah 2007).

2. **Vigilance.** As noted earlier, if the resources devoted to detecting and punishing corruption increase less-than-proportionally to increases in corruption, then deterrence weakens as corruption becomes more widespread, making corruption self-reinforcing. It's possible, though, that the probability any given corrupt act is detected may actually be higher when corruption is more widespread. The most plausible reason why this could be the case is that higher corruption rates may trigger heightened vigilance. Consider, as an example, employees who might try to embezzle funds by submitting inflated expense reports with forged receipts. If this sort of misconduct is rare, accounting departments and auditors might not scrutinize expense reports or receipts all that closely, making the fraudulent ones less likely to be detected. The fact that expense reports don't get much scrutiny increases the temptation to submit inaccurate reports. When this sort of fraud is more common, expense reports will be examined more carefully, and false submissions are more likely to be detected and punished. If prevalence correlates with vigilance, and this correlation is strong enough to overwhelm the factors that push in the other direction, then corruption (or other forms of wrongful conduct) would tend to be self-limiting.⁹

⁹ Though not directly on point, Olken's (2009) findings regarding perceived and actual corruption in a sample of Indonesian villages provide evidence consistent with the hypothesis that as corruption becomes more widespread, potential monitors may become more vigilant. First, Olken found "suggestive evidence that lower levels of trust ... lead to higher levels of monitoring [of local officials], lowering actual corruption levels" (p. 962). Second, villagers who believed national-level corruption was a big problem were more likely to participate in monitoring local officials.

3. **Macro-Level Feedback Effects (Redux).** While corruption may be self-reinforcing due to its macro-level effects on the economy or society, it's also possible that under some circumstances widespread corruption produces social or economic conditions that make corruption relatively less attractive, while widespread adherence to integrity norms tends to produce social or economic conditions in which the incentives to engage in corruption are stronger. For example, a school of thought popular in the 1960s and 1970s (though now fallen out of favor) suggested that corruption is an important facilitator of modernization—allowing both economic development and the social integration of groups that had been excluded from the traditional elite—and that as societies modernized, they would develop in ways that made corruption less attractive (Huntington 1968, pp. 59-71; Leff 1964; Nye 1967). Other channels are also at least hypothetically possible. For example, if corruption produces more widespread distrust (of the government, or of other people), then it may be harder to get away with corrupt acts—essentially a generalized version of the “vigilance” argument sketched above. Given the state of the empirical evidence, it is harder to construct plausible macro-level feedback channels that would make corruption self-limiting rather than self-reinforcing, but the possibility is at least theoretically viable.

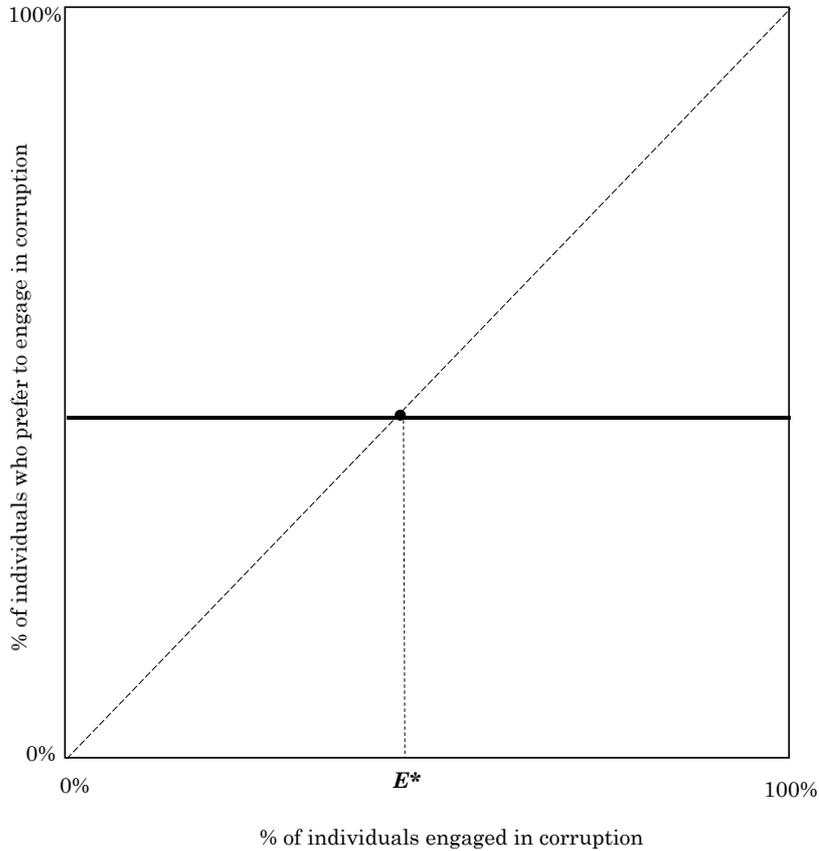
II. Contingent Behavior and Equilibrium Corruption

Part I elaborated various substantive reasons why corruption might be self-reinforcing, or perhaps in some cases self-limiting. All these arguments are contestable, and the purpose of this paper is not to assess their accuracy. Rather, the remainder of the analysis considers the implications of thinking about corruption (or other forms of wrongful conduct) as self-reinforcing behavior. The framework focuses on the *equilibrium* level of corruption in a given community. In an equilibrium, no individual has an incentive to change her behavior, given what everyone else is doing (or is expected to do). The equilibrium level of corruption is determined by many factors, but the focus here is on how the prevalence of corruption affects individual incentives to behave corruptly. In equilibrium, the number of people who *do* engage in corruption must equal the number of people who *want* to engage in corruption given the (expected) behavior of others. But if corruption is self-reinforcing or self-limiting, then the number of individuals who have an incentive to act corruptly is itself a function of the number of individuals who are corrupt, and this must be taken into account when deriving the equilibrium and considering how it might respond to changes in the legal, institutional, or policy environment.

We can illustrate the basic principles graphically. Begin with Figure 1, a baseline case in which corruption is neither self-reinforcing nor self-limiting. The horizontal axis measures the prevalence of corruption—the fraction of individuals in the relevant community who engage in corrupt acts.¹⁰ The vertical axis measures the fraction of individuals who prefer acting corruptly over acting honestly. The bold horizontal line characterizes the fraction of individuals who have a sufficiently strong *incentive* to engage in corruption, expressed as a function of the *prevalence* of corruption. I'll refer to this curve, and its equivalent in subsequent graphs, as the “prevalence-incentive curve,” or P-I curve for short. For the system to be in equilibrium, the fraction of individuals who engage in corruption must equal the fraction of individuals who have the incentive to engage in corruption, which means that any equilibrium must lie on the dashed 45-degree line, which I'll refer to as the “equilibrium line.” The equilibrium is therefore the point where the P-I curve intersects the equilibrium line; this intersection point determines the equilibrium corruption level, denoted E^* in Figure 1.

¹⁰ What really matters is each individual's *belief or expectation* about the prevalence of corruption. It is possible that beliefs might be inaccurate, and might vary across individuals, but to keep things simple we will assume each individual's beliefs about corruption's prevalence are accurate.

FIGURE 1: EQUILIBRIUM CORRUPTION (BASELINE CASE)

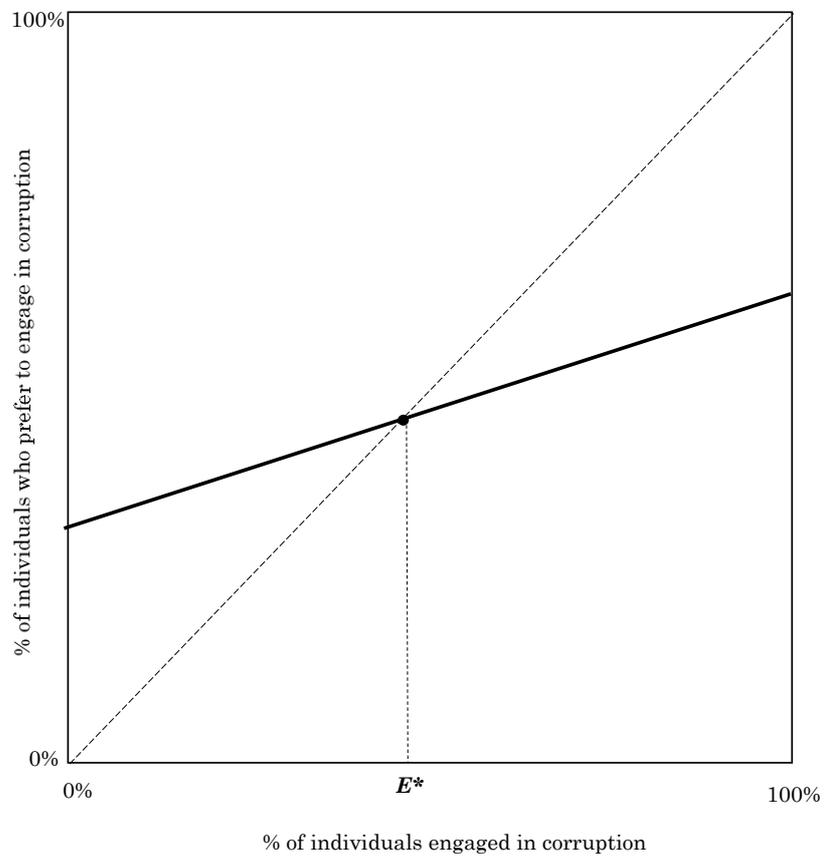


The fact that the P-I curve in Figure 1 is horizontal means that no individual's incentive to engage in corruption is affected by the prevalence of corruption in the community. No matter what anybody else does, the number of individuals who prefer corruption over integrity remains the same. What determines the height of the P-I curve? Everything that affects an individual's incentive to behave corruptly: the expected gains from corruption, the probability of detection, the severity of expected punishment, moral values, trust, education, and numerous other factors. If the incentives to engage in corruption strengthen—say, if accountability systems weaken or morals deteriorate—the P-I curve would shift up and E^* would increase; if some change makes corruption less attractive—say, if effective new anticorruption laws are adopted, or moral education improves—the P-I

curve would shift down and E^* would decrease. But if the P-I curve is horizontal, each individual's decision whether to engage in corruption is entirely independent of what anyone else does.

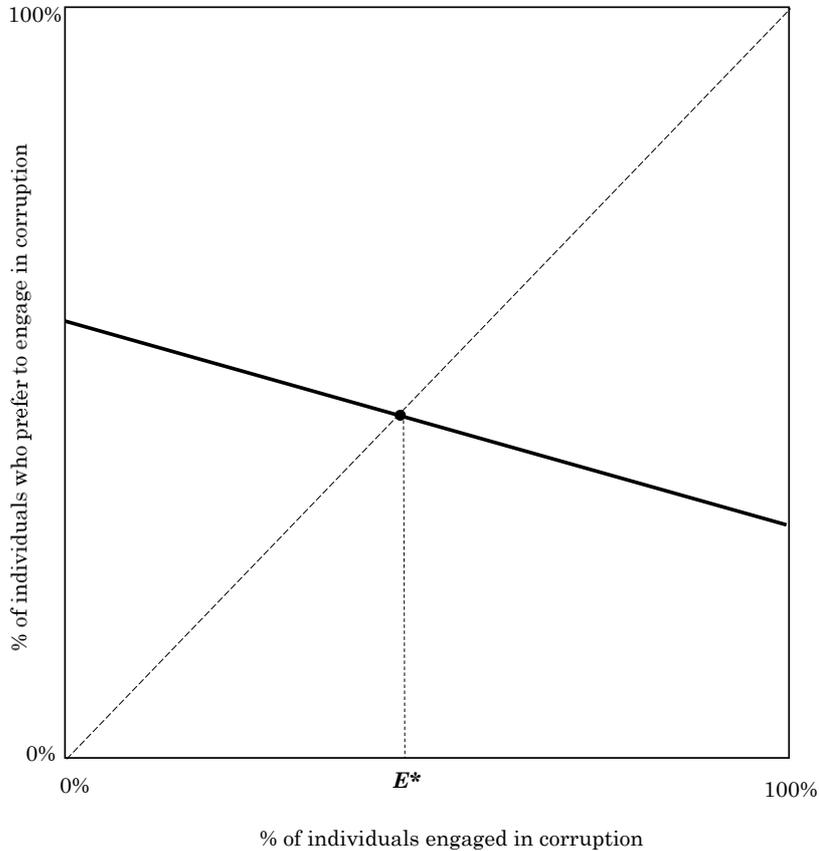
Now suppose corruption is self-reinforcing. In this case, the P-I curve will slope upward, because self-reinforcing corruption means, by definition, that the number of individuals who have an *incentive* to behave corruptly is an increasing function of the number of individuals who *do* behave corruptly. Figure 2 provides a simple illustration. The equilibrium corruption level is still determined by the point where the P-I curve intersects the equilibrium line. The slope of the P-I curve captures the responsiveness of individual incentives to others' behavior, with a steeper slope indicating that individual incentives to engage in corruption are more strongly influenced by what others do.

FIGURE 2: SELF-REINFORCING CORRUPTION



What if corruption is self-limiting, rather than self-reinforcing? Then the P-I curve would slope downward, as in Figure 3.

FIGURE 3: SELF-LIMITING CORRUPTION



Importantly, while the slope of the P-I curve captures the degree to which corruption is self-reinforcing (as in Figure 2) or self-limiting (as in Figure 3), the other factors that affect incentives to behave corruptly (such as political institutions, law enforcement, moral norms, and other social and economic conditions) would influence the height of the P-I curve, much as they would in the base-line case illustrated by Figure 1.

The P-I curves in Figures 2 and 3 are drawn as straight lines, but this is just for simplicity; there's no reason to expect that in real-world cases the P-I curve would be linear. (A non-linear P-I curve could, but need not, intersect the equilibrium line more than once, which would imply multiple equilibria, a possibility explored in Part III.) There are, however, two other important features of these P-I curves that are grounded in substantive assumptions that must be explained and justified. First, the P-I curves are continuous. A continuous P-I curve is only an approximation, but it is a

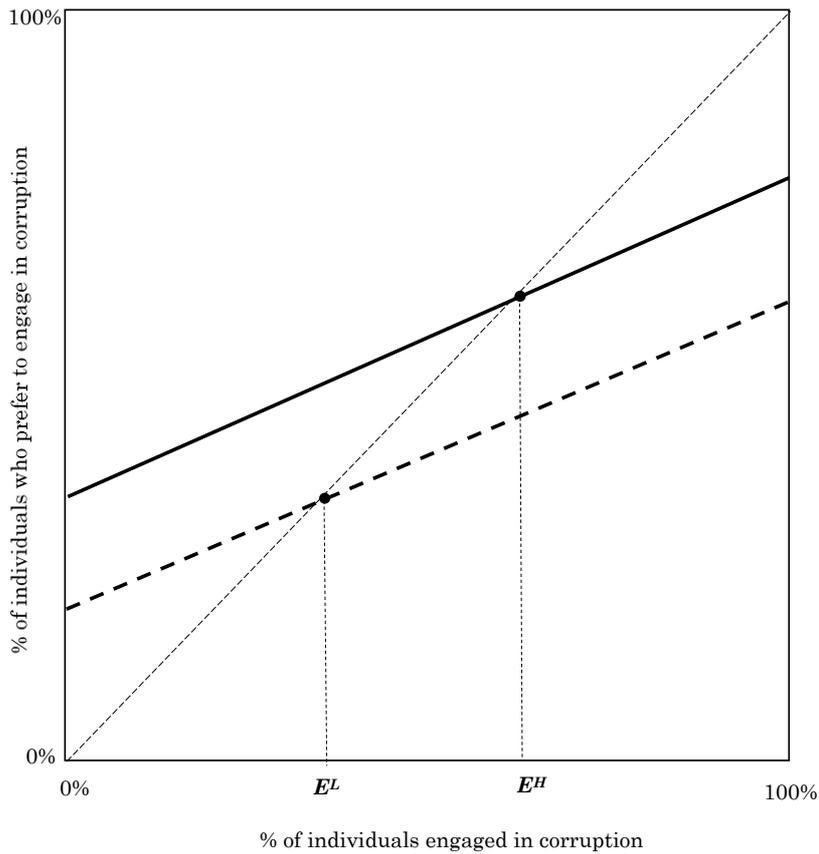
reasonable one if the individuals in the relevant community are numerous and heterogeneous, and if, when they are ranked in order of their propensity for corruption, the differences in the corruption propensities of nearest-ranked neighbors are not very big. If these conditions are satisfied—which, given human diversity, seems highly plausible, at least in large groups—then a continuous function is an appropriate simplification. (Indeed, this is the same set of assumptions invoked to justify the conventional use of a continuous market demand curve (Marshall 2013, pp. 82-85).) Second, the P-I curves never touch the top or bottom boundaries of the figures—that is, the percentage of individuals who prefer corruption over honesty is always strictly greater than 0% and strictly less than 100%. This assumption is based on the empirical observation that in virtually all real-world cases of interest—and certainly in communities of any size (such as whole governments or countries)—there are always some people who behave honestly and some who behave corruptly. Even if one could imagine hypothetical cases where the incentives to behave corruptly or honestly were so strong that all individuals behaved identically, this possibility has little empirical relevance.¹¹

We can now proceed to consider how to assess the impact of a policy intervention such as an anti-corruption reform program. It's at this point that many existing analyses make a basic conceptual mistake, treating a policy intervention as a "shock" or "perturbation" that moves the frequency of corruption away from the equilibrium level but doesn't affect the P-I curve. Conceived that way, the policy intervention won't have any sustained impact: it may initially lower corruption, but at this new, lower corruption level the number of people who have the incentive to engage in corruption is larger than the number of people who are currently engaged in corruption; the system is thus out of equilibrium, implying that corruption will increase until it returns to its original equilibrium level. But that's the wrong way to think about the impact of a policy intervention or institutional reform. A change in the conditions that influence incentives to engage in corruption would *shift the whole P-I curve*, meaning that the equilibrium would shift too. Figure 4 provides an illustration. In this figure, the solid bold line depicts the initial (pre-reform) P-I curve, which generates equilibrium corruption level E^H . Suppose the government adopts an effective new anticorruption measure that raises the expected costs of behaving corruptly. This means that at any given corruption prevalence level, the incentive to behave corruptly is lower than it was before—the P-I curve shifts down, giving the

¹¹ A caveat: When corruption is self-reinforcing because the probability of finding a willing partner is increasing in the prevalence of corruption, then there would be an equilibrium in which nobody engages in corruption (i.e., nobody seeks a partner to engage in a corrupt act), because everyone expects to be unsuccessful. However, as an empirical matter this equilibrium is of limited relevance, as all real communities of sufficient size contain at least some corruption.

new (post-reform) P-I curve depicted by the dashed bold line. This produces new, lower equilibrium corruption level E^L .¹²

FIGURE 4: SHIFTING THE P-I CURVE



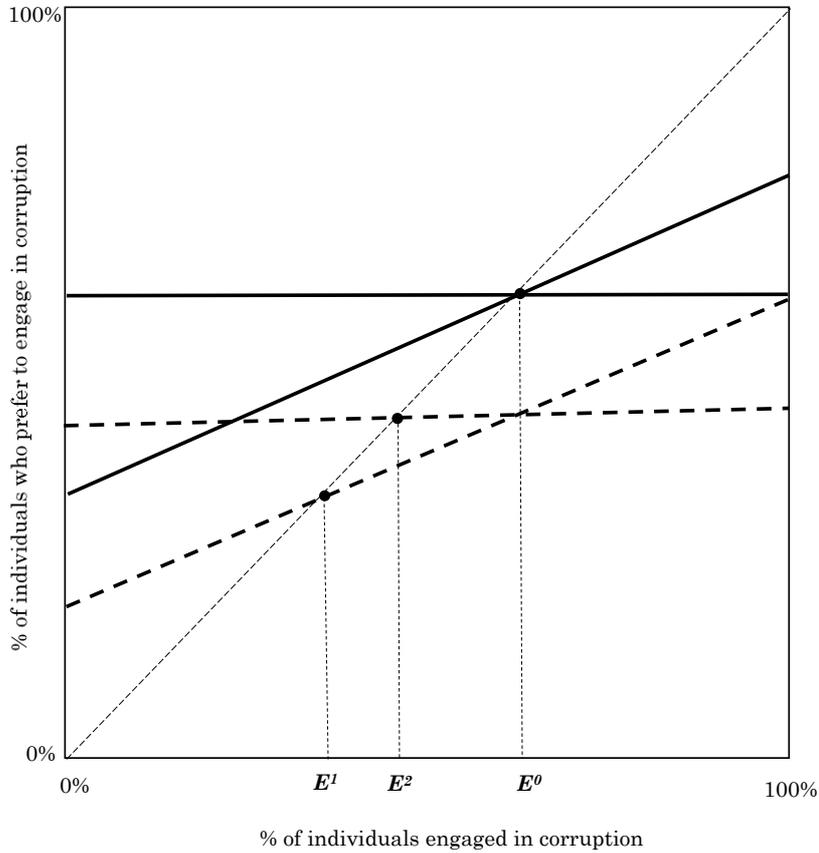
Now, if the new policy is only temporary, then after it is rescinded the P-I curve will presumably shift back to where it started, as will the equilibrium corruption level. It's also possible that a given substantive policy may not have much impact on corruption—that is, the new policy might not

¹² The main text focuses on reforms that shift the P-I curve up or down by a fixed amount. It's possible that an intervention might change the shape of the P-I curve in other ways. For example, a reform that provided individuals with more information about what others were doing might increase the slope of the P-I curve (implying that corruption has become more strongly self-reinforcing); in this case, the new P-I curve could be above the old P-I curve in some places but below it in others. And some interventions that increase or decrease the height of the P-I curve might also change its slope. For example, a reform might decrease the height of the P-I curve by 10% at any given prevalence level. More complicated effects are also possible. But to keep things simple, the discussion will focus on reforms that lower the P-I curve (by making corruption systematically less attractive) or raise the P-I curve (by making corruption systematically more attractive).

move the P-I curve very much, or at all. But neither of these possible explanations for the failure of anticorruption interventions has anything to do with the inexorable logic of corruption-as-equilibrium, or to corruption's self-reinforcing nature.

In fact, corruption's self-reinforcing character not only doesn't imply that equilibrium corruption levels will be less sensitive to policy interventions, but in fact implies the opposite. When corruption is self-reinforcing, the equilibrium corruption level is *more* responsive to policy interventions (or other changes) than would be the case if incentive to engage in corruption were independent of corruption's overall prevalence. This is illustrated in Figure 5, which depicts two initial P-I curves (the solid bold lines), one horizontal and one upward-sloping, both of which intersect the equilibrium line at the same point, producing initial equilibrium corruption level E^0 . Now imagine that a policy intervention (such as the creation of a more effective anticorruption agency) shifts the P-I curve down; the new (lower) P-I curves are the bold dashed lines in the figure. The decrease in the equilibrium corruption level is larger when corruption is self-reinforcing than when it is not (E^1 is smaller than E^2). Moreover, the steeper the slope of the P-I curve—that is, the more strongly individual incentives are affected by others' conduct—the larger this difference will be. So, corruption's self-reinforcing character not only does not dilute the effectiveness of anticorruption policies, it actually enhances their effectiveness.

FIGURE 5: EQUILIBRIUM SHIFT WITH SELF-REINFORCING V. NON-SELF-REINFORCING CORRUPTION



An example may help clarify the logic underlying this result. Suppose in the initial equilibrium some fraction of public officials extort bribes from citizens; each official's incentive to extort bribes is jointly determined by the effectiveness of anticorruption enforcement mechanisms and the prevalence of bribe-taking by fellow officials (which, let us assume, reduces the stigma or shame associated with bribe-taking). Suppose the government intensifies anticorruption enforcement efforts sufficiently to induce some officials to change their behavior from corruption to honesty. This reduces the number of officials who extort bribes, which raises the stigma or shame costs of bribe-taking, because the behavior has become less common. That, in turn, means that there may be some *other* formerly-corrupt officials—those for whom the increased external enforcement would not, by itself, have been enough to alter their behavior—who will choose to abstain from corruption due to the *joint* impact of improved enforcement *and* the associated reduction in the prevalence of corruption by others. Of course, the effect works in the opposite direction as well: When corruption is

self-reinforcing, changes that strengthen the incentive to behave corruptly may have a more-than-proportional impact on corruption levels, because the change has both a direct effect (which is enough to flip some individuals close to the margin from honesty to corruption) and an indirect effect that operates through the increase in corruption prevalence.

By contrast, if corruption is self-limiting, equilibrium corruption levels will be *less* sensitive to policy interventions or other changes in the environment. Consider, as an illustration, a setting in which smugglers bribe customs agents to import goods illegally. Suppose the government initiates an aggressive crackdown on bribery in the customs service. If each potential smuggler's conduct were unaffected by how many other smugglers are active, this crackdown would presumably drive some number of smugglers out of the market, due to the increased risk of getting caught and increased difficulty of finding a customs agent willing to accept a bribe. But if each smuggler who leaves the market increases the potential profits for those who remain, the total decrease in smuggling may not be as large: There may be some smugglers who would have been deterred by the crackdown if the potential profits remained constant, but who will stay in the market because the reduced competition sufficiently increases each remaining smuggler's expected market share.

A final observation here: The fact that corruption is self-reinforcing does not automatically imply multiple equilibrium corruption levels. This is clear from Figures 2, 4, and 5, all of which depict situations in which corruption is self-reinforcing (the P-I curve slopes upward), but there is only one equilibrium. It is *possible* that under certain conditions self-reinforcing corruption could generate multiple stable equilibria; Part III will explore this possibility. But the fact (if it is indeed a fact) that corruption is self-reinforcing does not by itself produce multiple equilibria.¹³ That is important insofar as some discussions of the “high-corruption equilibrium trap” appear to presume that a low-corruption equilibrium must also always exist, and that it would be possible to transition from the

¹³ A few scholars have attempted to test the hypothesis of multiple corruption equilibria by examining the distribution of countries' scores on corruption perception indexes. Some work in this vein finds that these indexes are multi-modal and stable over time, and interprets this as evidence for multiple equilibria (Herzfeld & Weiss 2007; McAdam & Rummel 2004). But this evidence is problematic. First, the result does not seem robust: an alternative analysis using a different index with a longer time series did not find evidence of a stable bimodal distribution (Seldanyo & De Haan 2011). Moreover, the upshot of the models with multiple equilibria is that the *same* society—or two otherwise identical societies—could have vastly different equilibrium corruption levels, depending on arbitrary historical or other factors. Showing that the distribution of perceived corruption *across* societies is bimodal does not provide evidence for that hypothesis, because other factors—including those that affect the corruption level—might be distributed bimodally. So we still don't have much reliable evidence on whether corruption in the real world is characterized by multiple equilibria, and such evidence may be impossible to obtain as a practical matter.

“bad” equilibrium to the “good” equilibrium through a coordinated shift in expectations and beliefs, even if policies, laws, institutions, and social and economic “fundamentals” otherwise remain unchanged.¹⁴ This need not be the case.

III. The Possibility and Implications of Multiple Equilibria

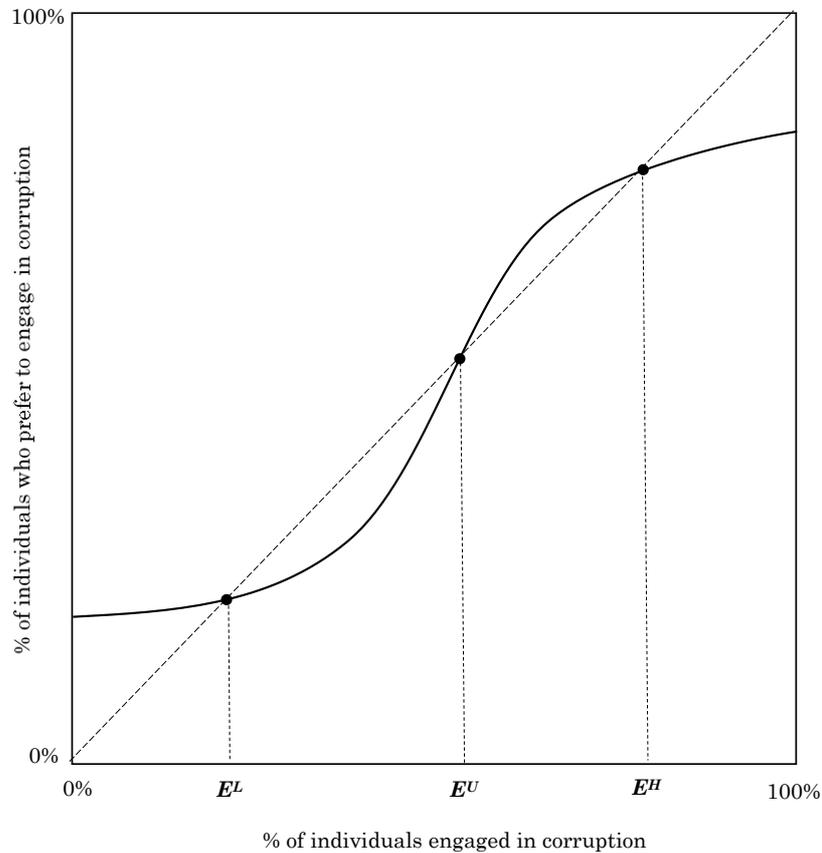
As noted above, the fact that corruption is self-reinforcing does not necessarily imply that the same society can have more than one equilibrium corruption level. But if certain other conditions hold, then the P-I curve can intersect the equilibrium line more than once, and if this occurs, there will indeed be multiple equilibria. Consider, as an example, Figure 6, in which the P-I curve is S-shaped and intersects the equilibrium line three times—at E^L , E^U , and E^H .¹⁵ Two of those equilibria— E^L and E^H —are “stable” in the sense that even if there were small local perturbations in the frequency of corruption, the system would converge back to those equilibrium points. If the prevailing level of corruption were just above E^L or E^H , the number of agents who have an incentive to behave corruptly would be lower than the prevailing level, causing corruption to decline back to the equilibrium point; likewise, if the prevailing corruption level were just below E^L or E^H , corruption would tend to increase back to the equilibrium point. By contrast, the equilibrium at E^U is “unstable” in the sense that a tiny shift in the prevalence of corruption away from E^U would cause the system to shift to a different equilibrium: If the corruption level is slightly above E^U , the number of individuals who prefer corruption exceeds the number who are currently corrupt, causing corruption to rise until it reaches E^H ; for similar reasons, if corruption drops a tiny bit below E^U , individuals will start switching from corruption to honesty until the corruption level drops to E^L .¹⁶ For that reason, this paper, like most of the literature, will focus on the stable equilibria, and will not include the unstable equilibrium in subsequent graphs.

¹⁴ Even the most sophisticated scholars sometimes commit this error. For example, Fisman & Golden (2016) observe, plausibly, that each individual’s incentive to engage in corruption depends “in large part [on] what everyone expects everyone else to do” and conclude from this that “[c]orruption is thus ... a multiple equilibrium problem” (pp. 6-7, emphasis omitted), even though that conclusion does not follow automatically from the premise.

¹⁵ An S-shaped P-I curve may arise if individuals’ propensity for corruption (based on factors other than corruption’s prevalence in the community) has a bell-shaped distribution (Andvig & Moene 1990).

¹⁶ This is an admittedly informal characterization of the convergence process, based on a static model. While this loose approach is standard in most of the literature, some papers have deployed more sophisticated techniques to formally model the convergence path in a dynamic system (e.g., Caulkins et al. 2013, 2014; Rinaldi et al. 1998). So far, though, the research in this vein does not seem to have produced sufficiently clear and useful substantive insights to justify the additional mathematical complexity that these models entail.

FIGURE 6: SELF-REINFORCING CORRUPTION WITH MULTIPLE EQUILIBRIA



Imagine a society stuck at equilibrium E^H —the “high-corruption equilibrium” or “corruption trap.” What can those interested in changing this society for the better do about the problem? One straightforward answer would be: exactly the same things they could do in the single-equilibrium case. If there are institutional reforms or policy interventions that would lower the P-I curve, and hence the equilibrium corruption level, in the single-equilibrium case (such as that depicted in Figure 4), presumably those same interventions would produce a similar downward shift in the P-I curve in the multiple equilibrium case.¹⁷ Now, perhaps there aren’t any feasible reforms that would lower the P-I curve, or perhaps those with the power to implement such reforms lack the incentive

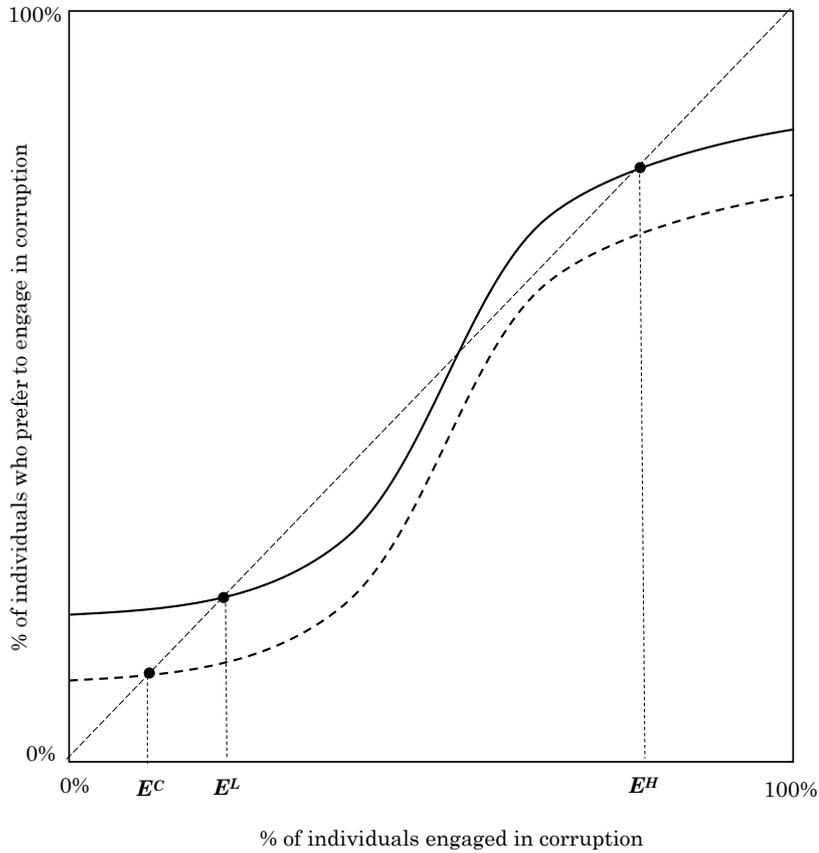
¹⁷ A few big-push advocates (e.g. Aidt 2003) do acknowledge that incremental reforms can have a beneficial effect even if they don’t trigger a rapid shift to a new equilibrium.

to do so. If so, those are big problems—but they’re not problems that have anything to do with the fact that there’s more than one stable equilibrium.

That said, in multiple equilibrium cases like the one depicted in Figure 6, reformers may have at their disposal at least two strategies that would not be feasible in the single-equilibrium case. The first is a temporary crackdown that lowers the P-I curve sufficiently to eliminate the high-corruption equilibrium, forcing a dramatic shift to the low-corruption equilibrium; this can produce a permanent reduction in corruption even after the crackdown ends and the P-I curve reverts to its original position (Rose-Ackerman 1999, p. 56; Andvig 1991; Caulkins 2014; Feichtinger 2000; Lui 1986; Nabin & Bose 2008; Bar-Gill & Harel 2001). Figure 7 illustrates the idea. The solid curve is the P-I curve for the society in the absence of the crackdown. This curve produces two stable equilibrium corruption levels, E^H and E^L . The dashed curve is the P-I curve during the crackdown. This curve intersects the equilibrium line only once, producing equilibrium corruption level E^C . Assume that the society is initially at the high-corruption equilibrium E^H . During the crackdown, this equilibrium disappears, causing the incidence of corruption to decline until it reaches stable equilibrium point E^C . When the crackdown ends, the P-I curve shifts back to where it started, which means that at that moment the fraction of agents engaged in corruption (E^C) is smaller than the fraction who have an incentive to behave corruptly. The incidence of corruption will therefore increase, but—and here is the crucial part—the corruption level will stabilize at E^L rather than returning to E^H .¹⁸ Thus the fact that the original P-I curve produced multiple equilibria allowed the government to achieve a permanent reduction in corruption through a temporary crackdown, something that would not have been possible if there were only one equilibrium. In the latter situation, the temporary crackdown would lower the corruption level during the crackdown period, but once the crackdown ended and the P-I curve reverted to its original position, the equilibrium level of corruption would revert to its starting point as well.

¹⁸ Here again, the discussion of the convergence process is loose and informal. In particular, the discussion assumes that if the system is out of equilibrium, the fraction of individuals who behave corruptly will change continuously, eventually stopping at the *closest* stable equilibrium point. That seems plausible—more plausible than the notion that a large number of individuals would somehow coordinate on a different equilibrium—but it’s nonetheless worth acknowledging that this paper, like the literature it critiques, does not engage in a more rigorous formal investigation of the dynamic convergence process.

FIGURE 7: MULTIPLE EQUILIBRIA WITH A TEMPORARY CRACKDOWN



The second approach that could be effective in the multiple-equilibrium case, even though it would not work in the single-equilibrium case, would be a reform strategy that somehow enabled community members to coordinate on a collective switch to a new equilibrium even without a shift in the P-I curve (Rose-Ackerman 1999, p. 56; Karklins 2005, pp. 157-160; Fisman & Golden 2016, pp. 214-215, 244; Dixit 2018). Consider again Figure 6. Perhaps most community members, including those who participate in corruption, are substantially worse off at the high-corruption equilibrium (E^H) than they would be at the low-corruption equilibrium (E^L). But if the society is currently at the high-corruption equilibrium, no individual would unilaterally alter her behavior, so long as she expects everyone else to keep behaving as before. If, however, the government (or some other reformer) could induce shared expectations among enough individuals that they would all stop engaging in corruption, then these shared expectations could trigger a coordinated shift from E^H to E^L , even without any movement in the P-I curve. Moreover, the policy intervention that succeeds in

coordinating a shift in expectations need not be permanent in order to induce a lasting change in behavior, because once the shift takes place the new equilibrium is self-sustaining. This strategy wouldn't work in the single-equilibrium case, because even if the government somehow convinced enough people that corruption rates would be much lower in the future, and even if this did produce a short-term reduction in corruption, that reduction would only be temporary. After the initial decrease, the percentage of agents with the incentive to engage in corruption would exceed prevailing corruption rates, causing corruption to increase until it stabilizes at the original equilibrium point.

So, in the presence of multiple equilibria, a society stuck in the high-corruption equilibrium does, at least in theory, have available two instruments—both of which can be thought of as types of “big push”—that are not viable in the single-equilibrium case. And the advantage of this sort of big push strategy in a multiple equilibrium setting is that it can be temporary rather than sustained, which may be quite helpful if the window of opportunity for action is narrow, and any anticorruption policy adopted today is likely to be reversed in the near future. If that's the case, then perhaps the only way to achieve lasting change is through dramatic (albeit temporary) interventions that effect a shift from a high-corruption equilibrium to a low-corruption equilibrium.

But scholars have lavished far too much attention on this theoretical possibility. First of all, while there may be some cases where any anticorruption intervention would inevitably be temporary, this won't always be the case. Often, as noted above, whatever interventions could succeed in pushing the P-I curve down in the single equilibrium case would also be available in the multiple-equilibrium case. And the advantage of using those latter forms of intervention is that, presuming they are both effective and sustained, they will produce a lasting, though possibly modest, reduction in corruption. By contrast, if the attempt to achieve a shift to the low-corruption equilibrium through a dramatic but temporary intervention doesn't work, corruption will just revert to its original level. Second, as a practical matter it's virtually impossible to know whether a society afflicted with widespread corruption is in a multiple equilibrium situation. Perhaps a stable low-corruption equilibrium exists and could be sustained without any other institutional changes, if only the government applied the right sort of short-term jolt. But it's also entirely possible that a society stuck in a high-corruption equilibrium is stuck there because, given current conditions and policies, that's the only equilibrium there is. Third, even if we had sufficient grounds for confidence that an alternative,

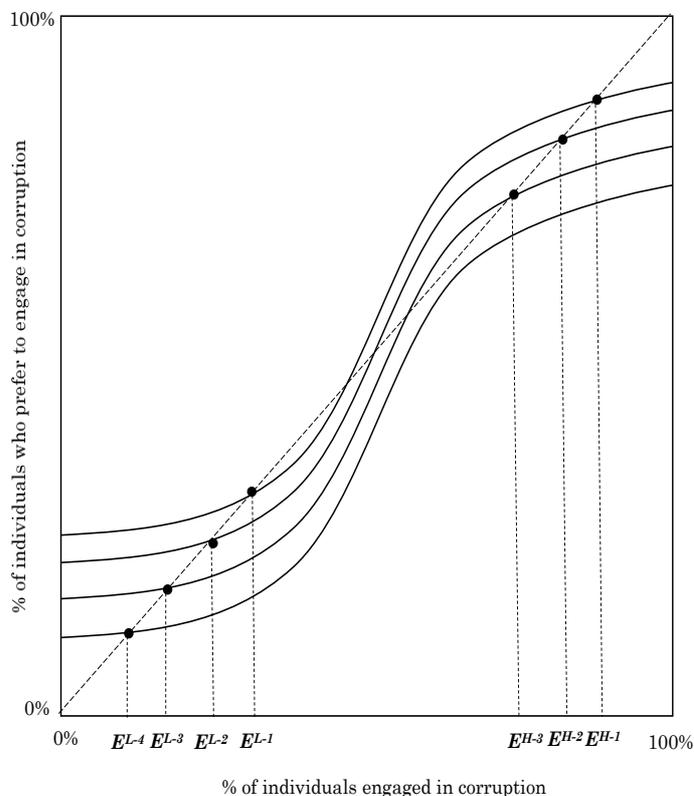
low-corruption equilibrium exists, there's no way of knowing just how large or lasting the temporary crackdown would need to be, or what sort of symbolic communication would create sufficient confidence, to induce a shift to that alternative equilibrium. And as many scholars, including some big push advocates, have acknowledged, if the attempt to induce a shift to a new equilibrium fails, this might prove counterproductive, undermining future reform efforts (e.g. Kingston 2008; Persson et al. 2012). Additionally, although the focus of this paper is on theory rather than empirics, it's worth pointing out that we don't have many good examples of cases where a temporary crackdown—one of sufficient magnitude—got corruption under control without any other legal or institutional reforms that were sustained over the long term (Taylor 2018). Indeed, numerous governments have attempted large but temporary anticorruption pushes without producing the equilibrium shift some theorists have optimistically predicted could result. Hough (2018, pp. 144-145), for example, discusses how Bangladesh's aggressive anticorruption drive in 2007 “did little to change the fundamentals of Bangladesh's particularistic political culture,” while Taylor (2018, p. 65) observes that the “broad ‘big-bang’ anticorruption campaign in Mexico under President Vicente Fox [in the early 2000s] failed to develop into an equilibrium shift before his leadership and his party were discredited by corruption allegations of their own.”

Moreover, multiple-equilibrium settings like those illustrated in Figure 6 suggest that the payoff from incremental reforms—at least that those that are both sustained and cumulative—may be larger than it first appears. To see this, consider Figure 8, which displays a series of four P-I curves. Imagine that the society begins with the topmost P-I curve, and is located at the high-corruption equilibrium associated with that curve (E^{H-1}). Now imagine that the government implements an anticorruption reform that shifts the P-I curve down a bit, to the second-highest curve in the figure. The equilibrium corruption level decreases, but not by much—from E^{H-1} to E^{H-2} . Sometime later, the government enacts another reform that shifts the P-I curve down a bit more, to the third curve from the top, producing new equilibrium E^{H-3} . Later on, the government adopts yet another reform, shifting the P-I curve down to the bottom of the four curves displayed in the figure. At this point, the high-corruption equilibrium disappears, and corruption declines dramatically to E^{L-4} . In this example, contrary to the suggestion that the low-corruption equilibrium “is unreachable in small steps” (Rose-Ackerman 1999, p. 55), that's exactly what has happened. The payoff from each incremental reform, considered individually, is relatively modest, yet cumulatively they push the P-I

curve below the tipping point, inducing a cascade to a new equilibrium with much lower corruption (e.g. Della Porta & Vannucci 2012, p. 266; Karklins 2005, p. 162; Andvig 1991; Taylor 2018).

Of course, there's no guarantee that this will occur, for the same reasons there's no guarantee that a temporary "big bang" reform package will be big enough to push past the tipping point. Nonetheless, this example offers a reason to be patient when pursuing anticorruption reforms. Even reforms that appear to have only limited effects may, when taken cumulatively, produce a dramatic change. Indeed, this characterization of the reform process may better capture the experience of many of the Western countries that managed to transition away from systemic corruption over the course of the 19th and early 20th centuries. According to Taylor (2018, p. 66), the United States may be "the best known example" of a country where "policy bursts ... collectively add[ed] up to an equilibrium shift," as the gradual "accumulation of unrelated incremental institutional reforms" eventually—after many decades—"precipitated a significant shift in the accountability equilibrium." (See also Hoogenboom 1961, Noonan 1984, Summers 1987, and Glaeser & Goldin 2006). Denmark may be another example (Mungiu-Pippidi 2015, p. 72), and Sweden may be yet another. (Somewhat oddly, although Rothstein (2011) offers 19th century Sweden as a historical illustration of futility of incrementalism and the superiority of the big bang approach, the evidence he adduces in this and other work (Teorell & Rothstein 2015; Rothstein & Teorell 2015) seems to indicate that in Sweden a decades-long process, with the gradual accumulation of reforms over the course of the 19th century, eventually triggered substantial change. (See also Sundell 2016, Taylor 2018.))

FIGURE 8: MULTIPLE EQUILIBRIA WITH INCREMENTAL REFORMS



Before concluding, it's worth pausing to consider why so many sophisticated scholars have mistakenly concluded that corruption's self-reinforcing nature implies the existence of multiple equilibria, and that the existence of multiple equilibria implies that only a big bang strategy can achieve a large permanent reduction in the equilibrium corruption level. I'll tentatively suggest two possibilities. First, as noted in Part II, there's an unfortunate tendency to mischaracterize the effect of a policy intervention or institutional reform as a shift in the corruption level *off* of the equilibrium point, rather than as a shift in the P-I curve that *changes* the equilibrium point. This mistaken framing implies that all policy interventions are necessarily unsustainable unless they somehow "tip" the system into a new equilibrium. But as Part II explained, this is a conceptual error, no different in kind from treating the impact of a new sales tax as a "temporary shock" to the quantity of a good purchased, rather than as a shift in the market demand curve for that good. Second, some scholars appear to

have based their analysis of self-reinforcing corruption on the simplest form of coordination game—a game in which the only stable equilibria involve all players (except those whose behavior is fixed by assumption) choosing the same action (either corruption or honesty). The implicit assumption is either that all (strategic) players are homogeneous with respect to their propensity for corruption, or that corruption’s self-reinforcing tendencies are so overwhelming that the only stable equilibria are those in which everybody is corrupt or nobody is corrupt. The idea that the only stable equilibria involve all players doing the same thing might be reasonable in other settings. Choosing which side of the road to drive on is the classic example, and some scholars use precisely this analogy when arguing that corruption’s self-reinforcing property gives rise to a multiple-equilibrium coordination game (Fisman & Golden 2016, pp. 12-13; Dixit 2018). Yet the assumption that the only equilibria will involve all actors doing the same thing doesn’t seem like a particularly plausible assumption for corruption. Individuals vary a great deal with respect to their propensity for corruption, given differences in moral convictions, risk attitudes, constraints, and other factors. And as noted earlier, few if any communities of any size are characterized by perfect honesty or universal corruption. For these reasons, the simple version of the coordination game is likely to mislead, and it is more appropriate to represent corruption’s allegedly self-reinforcing property with a continuous upward-sloping P-I curve, rather than assuming that in equilibrium all strategic agents behave identically.

Conclusion

There is an ongoing debate among those who study corruption—and in other areas of development policy and crime control—about whether the best approach to reform is an incremental, step-by-step approach, or a more aggressive big bang approach (e.g. Della Porta & Vannucci 2012, pp. 254-263). Many participants in this debate, including some of the most influential voices in the field, have argued that because corruption tends to feed on itself—becoming more attractive as it becomes more widespread—the big bang approach is superior, perhaps essential. Though different scholars develop the argument in somewhat different ways, the idea that corruption’s self-reinforcing character implies the necessity of a big bang strategy typically entails some combination of the following three claims: First, corruption’s self-reinforcing property gives rise to multiple equilibria—a high-corruption equilibrium and a low-corruption equilibrium. Second, because corruption is self-reinforcing, incremental policy reforms will not have any meaningful impact on the corruption level, at least when the equilibrium corruption level is high. Third, the only way to effect a shift

from a high-corruption equilibrium to a low-corruption equilibrium is through a big push that either eliminates the high-corruption equilibrium or enables a sufficient number of people to coordinate on a simultaneous change in expectations and behavior.

All three of these claims are false. First, self-reinforcing corruption does not automatically imply multiple equilibria. Multiple equilibria are possible when corruption is self-reinforcing, but only if other conditions also hold. It is also quite possible for corruption to be (strongly) self-reinforcing, and for a society to have a very high equilibrium level of corruption, without there being a “low-corruption equilibrium” that could be maintained without any lasting changes in the social, political, or institutional environment. Second, the fact that corruption may be self-reinforcing does not mean that the equilibrium corruption level is unresponsive, or even less responsive, to incremental policy interventions. To the contrary, when corruption is self-reinforcing, the equilibrium corruption level is *more* responsive to such policy interventions than would be the case if individuals’ choices were independent of what others did—and this is just as true in the multiple-equilibrium case as it is in the single-equilibrium case. Third, although the presence of multiple equilibria creates the theoretical possibility that a temporary “big bang” could permanently shift the society from the high-corruption equilibrium to the low-corruption equilibrium, nothing about the logic of self-reinforcing corruption or multiple equilibria *requires* this sort of big bang to effect such a shift. If reforms are sustained and cumulative, then an incremental reform process may eventually trigger a rapid transition to a low-corruption equilibrium. Thus, far from counseling against bothering with incremental reforms, the possibility of multiple equilibria may supply a reason for continuing to push ahead with such reforms even when they do not initially appear to produce benefits sufficient to justify their costs.

This does not necessarily imply that an incremental reform approach is superior to a big bang approach. There are many other arguments, in the corruption context and beyond, about the relative benefits of these two strategies, and a number of the pro-“big push” arguments do not depend on claims about the self-reinforcing nature of the social harm at issue. For example, pushing for reform on multiple fronts simultaneously might be a better approach if there are important complementarities across policies, such that the whole reform package is substantially more effective than the sum of its individual parts. Acting quickly and aggressively might also be advantageous if one is concerned that corrupt actors will learn to adjust their conduct and adapt their networks in response to the government’s piecemeal anticorruption policies—somewhat akin to how resistant

strains of bacteria can develop when one doesn't follow through on the full regimen of antibiotics (Fisman & Golden 2016, pp. 243-244). A related concern, noted earlier, is that there may be a narrow window of political opportunity, and the potential targets of anticorruption efforts may exploit delays or half-measures to mobilize politically to block further reform (Graham & Naim 1998). If sustaining a reform program over time is simply not viable, then a reform-minded government may have to choose between doing nothing and trying a form of shock therapy. And perhaps most straightforwardly, more comprehensive reforms may be better for the simple reason that they may reduce corruption by a larger amount than small reforms would. So there's certainly a case to be made, either generally or in particular circumstances, for choosing a big push strategy over an incremental strategy.

At the same time, though, there are also a number of strong arguments in favor of incrementalism. A big push can be costly, harder to manage, and more politically risky—rather than stopping the opposition from having the chance to organize, a big push may provoke a swifter and more furious backlash (Fisman & Golden 2016, p. 244). Securing modest preliminary successes may inspire confidence and build momentum for more ambitious reforms (Karklins 2005, p. 159). An incremental approach may be more flexible and adaptable, facilitating experimentation and the tailoring of policies to circumstances, while also making the reform process more stable and cumulative (Bersch 2016; Taylor 2018). And in some cases, when comprehensive reform is simply not politically feasible, partial reforms can at least confer some modest benefits—benefits that would be forgone if policymakers eschew anything short of a big bang.

The jury is therefore very much still out on this complex question, and this paper does not purport to make a strong case for the superiority of the incremental approach. The empirical evidence so far is mixed and largely inconclusive, with a handful of at least arguable examples of successful anti-corruption big bangs, but plenty of other cases in which the control of corruption appears to have been accomplished through the accumulation of incremental reforms over an extended period (Mungiu-Pippidi 2015, pp. 159-160; Rothstein 2018). The objective of this paper is simply to demonstrate that the oft-repeated assertion that corruption's self-reinforcing property implies the superiority or necessity of a big bang anticorruption strategy is incorrect. Appreciating the extent to which corruption is a form of self-reinforcing behavior may well have profound implications—but this isn't one of them.

Does any of this matter? Perhaps not: Abstract, theoretical academic discussions like this might be irrelevant to policymakers and activists. Yet as Keynes (1936, p. 383) famously remarked, “The ideas of economists and philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Practical men who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist.” If that is so, prominent scholars’ misuse and misinterpretation of contingent-behavior models may have a malign, albeit subtle and indirect, influence on debates over anticorruption strategy. An excessive focus on “switching the equilibrium,” and an under-appreciation of the cumulative impact of gradual reforms, could produce an overemphasis on the *magnitude* of anticorruption reforms rather than on their *sustainability*. That would be unfortunate, as entrenching modest, partial reforms may have more of a long-term impact than splashy but short-lived crackdowns or campaigns. On a related note, the idea that the measure of a successful anticorruption reform is whether it produces a rapid “equilibrium switch” may make it harder to sustain reforms that don’t produce dramatic short-term results. Moreover, sometimes a big push is simply infeasible, and in such situations, the notion that corruption’s self-reinforcing nature renders it impervious to incremental interventions could produce resignation or fatalism, even when certain modest policy changes or institutional improvements could make a real difference. Finally, propagating the idea that only way to get corruption under control is through a dramatic, coordinated “big bang” might inadvertently increase the appeal of authoritarian or quasi-authoritarian top-down solutions, and of centralizing power in charismatic leaders. Thus, while the fact that corruption and other forms of wrongdoing are often strongly self-reinforcing is an indispensable insight, getting the implications of this insight wrong is not only an analytical error, but one that could have pernicious practical consequences.

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