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ABSTRACT

Legalizing Bribe Giving*

A model of harassment bribes (paid for services one is entitled to) is developed and used to analyze the recent proposal to legalize paying bribes while increasing fines on accepting bribes. We explore performance as regards corruption deterrence and public service provision. A modified scheme, where immunity is conditional on reporting, addresses some key objections. We highlight complementarities with other policies aimed at improving accountability and performance of law enforcement agencies, and discuss the relevance for fighting other forms of corruption.

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1 Introduction

Corruption remains an endemic problem in the developing world and has become a central political issue in many countries. Empirical work has considerably advanced understanding of how widespread corruption is and how it can cause harm.¹ Governments and agencies like the World Bank sponsored numerous anti-corruption programs. However, regarding insights how to best fight corruption in practice, it's been said that "research has been lagging behind policy."²

Recently, however, Kaushik Basu – then chief economist of the Indian government, now chief economist of the World Bank – proposed a specific approach to fight a certain form of corruption. In his (2011) pamphlet "Why, for a Class of Bribes, the Act of *Giving* a Bribe should be Treated as Legal" he describes a society in which bribery is "rampant ... a scourge that deserves to be banished," and proposes – for the case of "harassment bribes" that people pay to get services they are legally entitled to³ – the following policy:

Legalize bribe-giving, double the fine for bribe-taking, and make the bribe-taker pay back the bribe if discovered.

When a citizen bribes a bureaucrat, under traditional law the two become partners in crime. They thus lack incentives to report the activity. Under Basu's policy (BP), which he deems "fairly radical", incentives are provided for the bribe-giver to report the bribe-taker. If this is foreseen, the bureaucrat would not accept the bribe in the first place. That is the key idea.

Will it work? A hot debate has raged in Indian and international press. *The Economist* appeared sympathetic.⁴ However, in some quarters the proposal stirred outrage and commentators discarded it mainly on moral grounds.⁵ More tempered/thoughtful criticism has come from econo-

¹See Svensson (2005) and Olken & Pande (2011) for excellent reviews.

²The citation is from Banerjee, Hanna & Mullainathan (2012, p.1). Olken & Pande similarly explain: "On the one hand, there has been a revolution in the measurement of corruption and this has, in turn, led to a blossoming of the academic literature on corruption. On the other hand, if we were asked by a politician seeking to make his or her country eligible for Millennium Challenge aid or the head of an anti-corruption agency what guidance the economic literature could give them about how to tackle the problem, we realized that, beyond a few core economic principles, we had more questions to pose than concrete answers."

³Think *e.g.* of a person getting a passport, or a qualified entrepreneur getting an operating license.

⁴"Who to Punish," May 5, 2011. See also Paul Seabright's piece in *Le Monde*, May 24, 2011.

⁵At times seemingly reflecting knee-jerk response rather than careful analysis; see *e.g.* P. Saniat's "Bribes: a small but radical idea" in *The Hindu* (April 21, 2011; p. 10), or listen to the commentary in the BBC World

mists. Jean Drèze (2011), in particular, wrote a penetrating comment arguing that Basu does not give adequate attention to some institutional and moral concerns which may change conclusions.

Basu's intriguing and inspirational presentation is informal as is the heated debate it inspired. Perhaps one shouldn't expect the issues to be easily settled through such discourse? The proposal is reminiscent of somewhat analogous tools used in other fields, such as leniency policies in antitrust and whistleblower protection and reward schemes against fraud and organized crime. Scholars who studied those measures have suggested they may be very effective if well designed and administered, but counterproductive if details are not set right.⁶ Deeper understanding of the pros & cons of subtle legal rules may require careful scrutiny within a formal model.

Harassment bribes constitute a somewhat different type of corruption than typically analyzed.⁷ We develop a formal model and represent the scenarios Basu and his commentators care about as explicit games. By comparing equilibria we draw conclusions regarding which legal rules should work well in what setting.

BP gets mixed, context-dependent grades and we highlight complementarities with other policies. Legalizing bribe paying and strengthening sanctions for bribe taking tends to work best if coupled with measures that increase the costs to bureaucrats of denying citizens what they deserve and which reduce the costs to citizens of getting justice. Taking into account the legal and moral considerations brought up by Drèze complicates the picture, but we propose a modified policy that escapes many of the objections. The idea is inspired by leniency rules in anti-trust. Rather than legalize bribe-giving, only those who report having paid a bribe are awarded legal immunity.

Section 2 introduces a stylized game with entrepreneur-civil servant interaction and harassment bribes in which the effects of BP can be evaluated for some benchmark settings. The complications brought to light by Drèze are addressed in section 3. Section 4 contains a series of complementary observations, including a discussion whether BP could be adapted to fight also more harmful forms of corruption. Section 5 concludes, summarizing the main policy implications.

Debate broadcast (from the World Economic Forum in Mumbai) of "Can India Beat Corruption?" (1.05 PM, Nov. 19, 2011; check after 47 min.).

⁶See Spagnolo (2008) for an overview.

⁷These bribes are paid to get a *legal* service, so they escape some standard corruption definitions. Banerjee *et al.* (2012), *e.g.*, define corruption as "the breaking of a rule by a bureaucrat (or an elected official) for private gain." With harassment bribes, the bureaucrat by contrast gets a bribe to *comply* with the rule (which to a degree is reminiscent of tips and mild forms of blackmail or extortion).

2 A simple model of harassment bribes

2.1 Preliminaries

The basic game

Consider the interaction between an entrepreneur (E) and a civil servant (S). The government has employed S trusting him with the task of issuing licences to people like E . However, it is within S 's power to deny E this treatment. The bureaucrat may require a bribe to issue the licence and E may choose to indeed offer S a bribe. Giving and accepting bribes is illegal and subject to fines, but the practice is so widespread that there is practically no chance of being caught unless an involved party reports the corrupt exchange to the government.

The situation is described by the game in Figure 1:

INSERT FIG 1 HERE!

At the root E either offers a bribe (B) or not ($\rightarrow B$). In the latter case S responds by issuing a licence (L) or not doing so ($\rightarrow L$). If E offers a bribe, then S has three choices: not accepting the bribe & not issuing a licence ($\rightarrow A \rightarrow L$); not accepting the bribe & issuing a licence ($\rightarrow AL$); accepting the bribe & issuing the licence (AL).⁸ If E chooses B and S responds with AL then the players simultaneously choose whether to report (R) or not ($\rightarrow R$) the exchange of the bribe. As regards the payoffs, b is the amount of the bribe, v the value to E of a licence, c the cost to S of issuing a licence, and F_E and F_S the fines to E and S if government discovers (through a report) that E paid a bribe to S .

We assume that $F_E, F_S > v > b > 0$ and that $b > |c|$ while c may be either positive or negative. $c > 0$ is relevant if S has an opportunity cost of not shirking, say filling in paperwork rather than doing some other activity that benefits him (possibly playing a computer game). $c < 0$ is relevant if denying E a licence implies risk that S is caught-in-the-act-and-fired. Of course, both considerations may apply in any given situation, so c should be interpreted as reflecting their net effect.⁹ Since the second consideration reflects ability to catch a shirking servant, we think of c as

⁸We assume that when the bribe is accepted E hands it over with one hand as he receives the licence in the other. Hence it is impossible for S to accept the bribe & not issue the licence. This marks a difference relative to Buccirosi & Spagnolo's (2006) analysis of illegal exchanges where decisions are not simultaneous and need an enforcement mechanism in their own right.

⁹It seems unlikely that the two effects would cancel exactly, so we'll neglect the case of $c = 0$.

reflecting how well organized government is (a lower value implying better organization). We view $c < 0$ as the standard case but in extreme situations of poor state capacity the situation may be better captured by $c > 0$.

The assumption that $v > b > c$ is key for furnishing scope for corruption. How is b determined? We will not model that process, as most of our results do not depend on the exact level of b (as long as $v > b > c$). Some results (especially in Section 3) require b to take a more specific value, in which case we offer related comments. We will then assume that S has all the bargaining power in determining b , so that he can be viewed as unilaterally having set its level subject to relevant incentive-constraints. (This assumption makes sense especially if S , but not E , interacts repeatedly, which we shall consider our main focus.)

Welfare

What game outcomes would be good or bad from a society point of view? To appreciate our approach, note first that c is not a cost to care about for welfare purposes. Recall, S is hired with the understanding that he should issue a licence to people like E . It is implicit that S is adequately compensated and that the value to society of licensing is (much) higher than c . Hence, if S fails to issue a licence to E this is a bad outcome. Second, there may be welfare costs of bribes not reflected in the game's payoffs (as given). Why is there public debate about the (negative) effects of bribes and corruption even when they do not appear to distort allocations? The answer has to do with externalities. It may serve the public's interest, somehow, that people like E get a licence when they earn it. That was our example above. Similarly, occurrence of bribes may be bad. Why? Perhaps if E has to bribe S to get his licence, then this undermines civic morale. Perhaps, for example, it increases E 's propensity to cheat when filling out his tax return. Or maybe it's something else. The issue may be real but nebulous. We shall not attempt any exact quantification of the societal benefits and costs associated with licenses and bribes. Rather, we use two qualitative yardsticks:

- *To what degree are bribes deterred?*
- *To what degree are licences issued?*

Predictions

In section 2.2 we look at the case where the game in Figure 1 is all there is to the interaction. In section 2.3 we then consider the arguably more natural extension where S plays the game

repeatedly. We treat the cases $c > 0$ and $c < 0$ separately, because the sign of c turns out to matter crucially to the solutions.

2.2 One-shot interaction

The case of $c > 0$

Once the reporting subgame is reached (see Figure 1) each player has a (weakly) dominant choice not to report. Assuming each player thus chooses $\rightarrow R$ there, the game possesses a unique associated subgame perfect equilibrium (SPE): S chooses AL following B ; S chooses $\rightarrow L$ following $\rightarrow B$; the best response for E at the root is B . Compactly described, walking through information sets from left to right, for each player, the strategy profile in question can be written as $((B, \rightarrow R), (\rightarrow L, AL, \rightarrow R))$. The outcome: E offers a bribe to S , who accepts it and issues a licence; no player reports the bribe. Is this good or bad? That depends. A bribe is paid, which is bad. On the other hand, a licence is issued, which in our context is good.

Consider now BP (=Basu's policy): *Legalize bribe-giving, double the fine for bribe-taking, and make the bribe-taker pay back the bribe if discovered.* This policy leads to the game of Figure 2:¹⁰

INSERT FIG 2 HERE!

If dominant choices are made in the reporting subgame (R for E ; $\rightarrow R$ for S), this game has two SPE. Compactly described, as before, they are: $((\rightarrow B, R), (\rightarrow L, \rightarrow A \rightarrow L, \rightarrow R))$ and $((B, R), (\rightarrow L, \rightarrow A \rightarrow L, \rightarrow R))$. E may or may not offer a bribe, but the outcome is the same: S does not accept any bribe & does not issue a license. The welfare implications are flipped relative to the previous case. On the one hand, bribes disappear. On the other hand, no licences are issued. When the government is so poorly organized that $c > 0$, BP is successful on corruption deterrence but reduces the number of licenses issued.

The case of $c < 0$

Back to Figure 1. Assuming that the dominant choices of $\rightarrow R$ are made, there is a unique associated SPE: $((\rightarrow B, \rightarrow R), (L, AL, \rightarrow R))$. E does not offer any bribe but S issues a licence anyway, a good outcome on all fronts.

¹⁰We assume the bribe is taken away from the bureaucrat if he is discovered, as most legislations prescribe this independent of how the bribe taker is discovered. Results would not change if instead the bribe were taken away from the bureaucrat only when it must be paid back to a bribe payer, as implicit in Basu's formulation.

BP is now redundant, as the SPE path is the same when we move to the game in Figure 2: E does not offer a bribe but S issues a licence anyway.¹¹

The appeal of these conclusions is questionable. We can think of many cases where harassment bribes are paid when $c < 0$, arguably the most empirically relevant parameter range ($c > 0$ refers to probably less common situations of more extreme bureaucratic inefficiency). What is missing from the picture? We believe the answer is that we have so far neglected important aspects that concern repeated play, and which change the conclusions. We show this in the next section.

2.3 Repeated interaction ('long-run S')

Civil servants who deliver licenses or perform analogous tasks are often around a long time. They may serve or harass many citizens/entrepreneurs, who are then likely to talk about the experience.¹² A more realistic setting to explore BP is therefore one in which S is a 'long-run' player who interacts over and over again with new ('short-run') E 's.

Assume the game analyzed in the previous section is played an infinite number of periods. In each period S interacts with a different E , who knows the history of play until then. Time is discrete and periods indexed by $t = 1, 2, 3, \dots$. Let δ denote the intertemporal discount factor, with $0 < \delta < 1$. (As usual, discounting ensures that this captures situations in which the game is repeated a finite but uncertain number of times.)

In such a 'one-sided repeated game,' perpetual play (following any history) of the one-shot equilibrium discussed in the previous section corresponds to a SPE. However, while short-run players are bound to play according to their static best-response strategies, the threat of perpetual reversion to a stage game Nash equilibrium can credibly be used to sustain other equilibria where the long run player avoids her static best response (see Fudenberg, Kreps & Maskin 1990). We focus on equilibria with as much bribery as possible, and explore whether BP changes patterns.

¹¹The overall solution changes off-path: The dominant choices in the reporting subgame are R for E and $\rightarrow R$ for S , so the game of Figure 2 has two associated subgame perfect equilibria: $((\rightarrow B, R), (L, \rightarrow AL, \rightarrow R))$ and $((B, R), (L, \rightarrow AL, \rightarrow R))$.

¹²Vannucci & Della Porta (2007) study conversations between corrupt parties recorded by the police when the large Italian corruption network (*Tangentopoli*) was discovered in the 90s. They note that corrupt public officials are careful in developing, spreading, and maintaining a reputation for being reliable corrupt officials, who accept bribes without reporting bribery attempts to the police, and who reciprocate bribes with good performance and otherwise hardly perform at all. (We are grateful to Elisabetta Iossa who brought V&DP's work to our attention.)

Long-run S , $c > 0$

When the public bureaucracy is so inefficient that $c > 0$, allowing S to be a long-run player does not make bribery any less supportable as a SPE phenomenon than in section 2.1. Perpetual play of the equilibrium of the one-shot game (starting at any history) is a SPE of the one-sided repeated game.

What happens if BP is introduced? Since short-term players are not able to commit, each E has a dominant choice to report and claim back a bribe. Therefore S accepts no bribe. Just as in the one-shot case, BP successfully deters corruption but has the drawback that no licenses are issued.

Long-run S , $c < 0$

As flagged for at the end of section 2.2, allowing for a long-lived civil servant has potentially dramatic effects when $c < 0$. Perpetual play of the equilibrium from the one-shot scenario, where E does not bribe and S delivers the licence, of course remains viable under repetition. However, since S is a long-run player, other equilibria emerge where S conditions his stage-game choices on whether or not he was offered a bribe. As long as S is sufficiently patient he may commit not to deliver the licence unless a bribe is paid. This behavior is sustainable as follows:

- *S : Accept the bribe and issue a licence if E offers a bribe. Do not issue a license if E does not offer a bribe.*
- *Each E : Offer the bribe if in the past S always issued a license every time a bribe was offered and did not issue a license every time no bribe was offered. Do not offer a bribe otherwise.*

This SPE involves an intriguing form of trigger-strategy combination, executed by the collection of short run E players: S issues a license iff he is bribed. This is sustained by the threat that if at any time a bribe were not offered and S still delivered a license then the 'live' short-run players, from then on, would forever stop offering bribes and play would revert to perpetual repetition of the one-shot game equilibrium (with no bribes+licensing).

S will play his part as long as the following incentive constraint is satisfied:

$$-c \leq \frac{\delta}{1-\delta}b,$$

where $-c$ is S 's short-run gain [note: $c < 0$ so $-c > 0$] from delivering a licence even if a bribe is not paid. On the right-hand-side we have the expected discounted loss of future payoffs caused

by such a deviation.¹³

Suppose this equilibrium is relevant and consider the effect of BP. Since entrepreneurs are short term players, reporting is a dominant choice if a bribe is exchanged. So, the best S can do is to never accept a bribe but to always issue a license anyway. BP thus works very well, both in terms of corruption deterrence and of efficiency. It makes it impossible to sustain equilibria with bribes and rationing by undermining S 's ability to commit to a conditional licensing strategy, re-establishing the unique efficient static equilibrium.

We find this last case particularly plausible, possibly most relevant in reality, and closest to what Basu had in mind. We take it as the main benchmark to relate back to in the analysis to follow, although we also keep track of what happens if $c > 0$ or if S is not a long-run player.

3 Drèze's criticism

In the games of section 2 the case for BP was rather positive. BP did very well, eliminating bribery and generating licences, in the more plausible scenario with $c < 0$ and long-run S . When instead the bureaucracy were so inefficient that $c > 0$, BP worked less well; it reduced bribes but also eliminated the delivery of licenses (independent of whether or not S was a long-run player).

In a thoughtful commentary to BP, Drèze (2011) raised a number of subtle objections linked to the complexity of the institutional environment. In this section we reformulate these as parameter changes and explore how they affect conclusions. Our findings lead us to propose a modification of BP that circumvents some of the problems.

3.1 Costly reporting

In previous sections we worked under the assumption that it is costless for E to report the corrupt exchange to law enforcement authorities and get back the bribe. However, in many situations where corruption is widespread among public servants, the law enforcement system is also inefficient or corrupt. As Drèze notes for India, a person who reports a bribe may expect "huge litigation costs, possible harassment, and little chance of getting justice."

Consider the case of costly law enforcement, where E expects to bear substantial costs to have

¹³The per-period payoff of sticking to the equilibrium is $b - c$; the per-period payoff following a deviation is $-c$; the difference is $(b - c) - (-c) = b$, and the rhs records present value.

S convicted and get the bribe returned.¹⁴ We assume that if E reports he expects litigation and further harassment costs $C > 0$, unless S also self-reports/confesses. If these changes are incorporated to the pre-BP game of Figure 1, predictions do not change. For the one-shot interaction, we get bribes+licenses when $c > 0$ and no bribes+no licenses when $c < 0$. For the one-sided repeated game with long-run S , we get the conclusions of section 2.3 with the stage-game as seen in Figure 1. In this sense, the Drèze-inspired re-parametrizations are irrelevant without BP.

However, with BP in operation, some predictions are affected. Incorporating the mentioned parameters changes to the game in Figure 2 we get the game in Figure 3:

INSERT FIG 3 HERE!

If the cost of reporting is substantial, so that $C > b$, even after having paid a bribe and received the licence E has no incentive to report. For the one-shot interaction, deriving predictions as usual, we get bribes+licenses when $c > 0$ and no bribes+no licenses when $c < 0$. For the one-sided repeated game with long-run S , we get the same conclusions as we got in section 2.3 if the stage-game were that of Figure 1. In other words, the Drèze-inspired re-parametrization undoes the effects that would otherwise result from BP.

A twist to these conclusions should be noted. Assume that S has all the bargaining power in determining b (as seems especially natural in the one-sided repeated game scenario). Before BP, in an equilibrium with bribery, we would expect $b = v - \epsilon$ where ϵ is the minimum that S needs to leave for E to make him willing to offer a bribe in exchange for a licence. Now suppose that C is moderate: $0 < C < v - \epsilon$. Does this mean that Drèze's critique does not apply? Not quite. S may still be able to ensure that $C > b > 0$ by choosing b such that $0 < b < C < v - \epsilon$, thus reinstating an equilibrium with bribery. In this case, BP would not be ineffective. Rather than eliminating bribes, it would lead to a reduction in the size of the bribe sustainable in equilibrium.¹⁵

Is there any policy that could help complement BP, to overcome the problems caused by a large C ? One possibility would seem to be to offer a reward, over and above bribe restitution, to effectively reduce C and induce bribe-givers to report. The high costs of legal action and of harassment from employers born by whistleblowers is precisely the reason why in the US the False

¹⁴In section 4 we discuss the slightly different case of *corrupt* law enforcement.

¹⁵If the discount factor is binding in the long-run S case, we would expect the bribe to be set at the highest level satisfying S 's incentive constraint with equality: $-c\frac{1-\delta}{\delta} = \bar{b}$. An intermediate level of $C < \bar{b}$ may then sustain a corrupt equilibrium even with BP in place, but with the bribe reduced to satisfy $0 < b < C < \bar{b}$.

Claim Act, IRS's and SEC's whistleblower schemes pay hefty monetary rewards. This might not work for harassment bribes however, as these typically concern a large number of small payments. The rewards and administrative costs of the program may be large before any deterrence effect materializes, which has to be financed by tax-payers. This might generate further outrage as well as incentives for information fabrication and attempts to capture/blackmail otherwise innocent bureaucrats. Therefore, if C is sizable, policies directly aimed at increasing the efficiency of law enforcement institutions appear an essential pre-requisite for BP to work.

3.2 The moral & legal costs of bribing & not reporting

Until now we assumed that, apart from b itself, there were no costs associated with paying a bribe (unless, of course, someone reported it). Drèze points out two reasons why this may lead to incorrect conclusions. First, there could be a positive probability of being detected and convicted even without a report. Second, some people may suffer a moral cost when they illegally bribe.¹⁶ In these cases, Drèze argues, legalizing bribe-giving may even *increase* corruption. This is because E , who otherwise would offer no bribe, may now do so while planning on not reporting. Why? Drèze refers again to the litigation costs C discussed in section 3.1.

To explore these aspects within our setting,¹⁷ let $0 < \alpha < 1$ be the probability of conviction if no party reports the bribe, $M > 0$ the moral cost of illegal bribe-giving, and C the expected cost of reporting and getting back the bribe (as before). Without BP, we get the game in Figure 4:

INSERT FIG 4 HERE!

With BP, paying a bribe is no longer illegal for E , so $F_E = 0$. Moreover, it would arguably no

¹⁶An alternative hypothesis not considered by Drèze is that people feel outraged when forced to pay an illegal bribe for a service they should be entitled to, incurring an "outrage cost" M . Legalizing bribe paying may then reduce the "outrage cost" and lead fewer people to resist bribe-paying.

¹⁷While we discuss the effects of BP in the presence of moral concerns we refrain from commenting on the morality of the proposal itself, which appears very subjective. For example, some Indian commentators regard it as 'fair' to consider harassment bribe-payers as victims of bureaucrats (see e.g. *Business News*, April 23, 2011). Drèze, by contrast, dislikes BP because it relies on "bribe-givers being doubly corrupt: by giving a bribe, and by stabbing bribe-takers in the back as they blow the whistle." Judging negatively the act of turning in a fellow wrongdoer is common but not necessarily well grounded in ethics. It attributes the same positive value to legal and criminal cooperation, and the same negative value to betraying fellow citizens and mafia members. It is one of the reasons – together with violent revenge – why in some cultures it is difficult to find witnesses against criminal organizations.

longer be morally reprehensible to bribe, so $M = 0$.¹⁸ Finally, as in Figure 2, we assume that E gets back the bribe if he reports. The game of Figure 4 changes into that of Figure 5:

INSERT FIG 5 HERE!

One-shot interaction

Without BP (Figure 4), no one reports, but if α and M are high enough then E does not wish to reach the reporting subgame regardless. We get no bribe+no license when $c > 0$ and no bribes+license when $c < 0$ – the same paths as with BP before, but now without BP. After introducing BP (Figure 5), when $c > 0$ we move to a bribe+license equilibrium, so corruption increases. When $c < 0$ there is no change (no bribe+license).

Long-run S ; $c > 0$

Without BP (Figure 4), E 's participation constraint (to play a bribe+licence equilibrium) will be satisfied if $v - b - \epsilon - M - \alpha F_E \geq 0$, while S 's participation constraint is satisfied if $b - c - \alpha(b + F_S) \geq 0$. Corruption is therefore viable only if the joint participation constraint

$$(c + \alpha F_S)/(1 - \alpha) \leq b \leq v - \epsilon - M - \alpha F_E$$

is satisfied; this cannot hold for sufficiently high M , α , F_E , F_S , or c .

With BP (Figure 5), the range of bribes satisfying the joint participation constraint widens:

$$(c + \alpha F_S)/(1 - \alpha) \leq b \leq v - \epsilon.$$

It is thus possible that the pre-BP joint participation constraint cannot be satisfied while the new one can, a scenario which would seem to pave the way for Drèze's conclusion. However, to get the full picture one has to take into account that, with BP, if the bribe is too high then E would report and S would hence not accept the bribe. Put differently, as seen via Figure 5, E will report when $v - C > v - b$, or $b > C$. To rule this out, the following incentive constraint must hold: $b \leq C$, or say $b \leq C - \epsilon$ to break a tie. Summing up, Drèze's objection – that legalizing bribe giving makes people who previously did not bribe now do so – is valid only if the following inequalities all hold:

$$(c + \alpha F_S)/(1 - \alpha) > v - \epsilon - M - \alpha F_E,$$

¹⁸We favor Drèze (and crispness) here; arguments could be made that moral costs remain positive with BP.

$$(c + \alpha F_S)/(1 - \alpha) \leq b \leq v - \epsilon,$$

$$b \leq C - \epsilon.$$

Note also the following related observation. Suppose that $(c + \alpha F_S)/(1 - \alpha) \leq v - \epsilon - M - \alpha F_E$; the pre-BP joint participation constraint holds. In this case, equilibrium bribery is possible before and after the introduction of BP, but the size of the bribes may differ. Sticking to the assumption that S holds all the bargaining power, taking account of the stated inequalities, we get $b^{PRE} = v - \epsilon - M - \alpha F_E$ as the pre-BP bribe and $b^{POST} = \min\{C - \epsilon, v - \epsilon\}$ as the bribe with BP implemented. Hence, we get $b^{PRE} < b^{POST}$ if $v - M - \alpha F < C$, and vice versa. In words: if C is high enough, the bribe size increases with the introduction of BP; if C is lower, BP instead decreases the bribe size, and deters corruption altogether when $C \leq (c + \alpha F_S)/(1 - \alpha)$.¹⁹

Long-run S , $c < 0$

Without BP (Figure 4), as in Section 2, a bribe+licence equilibrium is sustainable using trigger-strategies. The same joint participation constraint applies as above:

$$(c + \alpha F_S)/(1 - \alpha) \leq b \leq v - \epsilon - M - \alpha F_E.$$

To rule out that S delivers a licence without a bribe the following incentive constraint must hold:²⁰

$$-c \leq \frac{\delta}{1 - \delta}(b - \alpha(b + F_s)).$$

Now introduce BP (Figure 5). By setting $M, F_E = 0$ the range of bribes satisfying the relevant joint participation constraints widens:

$$(c + \alpha F_S)/(1 - \alpha) \leq b \leq v - \epsilon.$$

S 's incentive constraint remains as pre-BP, but for E we have to add (as in the $c > 0$ case)

$$b \leq C - \epsilon.$$

¹⁹Similar bribe size remarks apply to the one-shot case, but seems less relevant as the idea that S has all the bargaining power makes more sense if S is a long-run player.

²⁰The lhs is S 's short-run gain. The rhs is the present value of long run loss: the per-period payoff of sticking to the equilibrium is $b - c - \alpha(b + F_s)$, the per-period payoff following a deviation is $-c$, so the difference is $b - \alpha(b + F_s)$.

The overall conclusions (regarding parameter regions under which Drèze's objection goes through or bribe sizes increase with BP) are analogous to those for the $c > 0$ case above. When reporting costs C are large, the size of the equilibrium bribe will increase with BP; if C is low, BP decreases the bribe size, and deters corruption when $C \leq c + \alpha F_S$.

Two additional points can be brought home. First, Drèze's concerns about moral & legal costs of bribing do not bite *per se*. As implied by E 's incentive constraint $b \leq C - \epsilon$, it is necessary that BP – due to sufficiently high reporting costs – would not be effective in deterring corruption even if moral and legal costs were irrelevant. Second, bribes tend to be regressive. Imagine that individuals differ in their value of C , and that S is experienced and gauges his co-player's C correctly and adjusts b . Individuals facing higher costs of reporting – most likely weaker, poorer persons unable to defend themselves from police harassment – would be asked to pay higher bribes (up to the constraints given above). This is probably a common aspect of corruption, but it emerges quite naturally in our simple set up.

3.3 A slightly modified proposal

Here is a new policy which is similar to BP, yet to a degree immune to the problems highlighted in section 3.2. We exploit an idea from leniency laws in anti-trust under which participating in a cartel is not legal although immunity from fines is assured to whoever first reports the activity.²¹ We propose to grant E similar immunity if he reports having paid a bribe.

Apply that idea to the game in Figure 4. That is, if E chooses R then, in the corresponding row, remove b and F_E . Make no change concerning M and α ; bribing is still illegal and hence presumably morally costly, and on not reporting E is still caught and fined with probability α . We get the game in Figure 6:

INSERT FIG 6 HERE!

Drèze's concerns about moral costs and exogenous probability of conviction now lose relevance. To see this, consider the analogs of the participation and incentive constraints discussed in section 3.2. For S , no payoffs change, so no constraints change. For E , recall first his bribery-equilibrium participations constraint for the game of Figure 4: $c + \alpha F_S \leq b \leq v - \epsilon - M - \alpha F_E$. Analogous

²¹In a dynamic model of oligopolistic collusion Spagnolo (2004) shows that – if sanctions are sufficiently severe or rewards can be paid to the first reporting party – these schemes can lead to the first best (*i.e.* full deterrence with no policing costs).

reasoning as before makes it clear that this constraint does not change when considering instead Figure 6, so it is impossible that the pre-leniency joint participation constraint cannot be satisfied while the new one can. Next consider E 's incentive to report; as seen via Figure 6, he will do this when $v - C - M > v - b - M - \alpha F_E$, or $b + \alpha F_E > C$. Hence the relevant incentive constraint (to not report) is: $b \leq C - \alpha F_E$, or say $b \leq C - \alpha F_E - \epsilon$ to break a tie. The analogous constraint from section 3.2 was $b \leq C - \epsilon$, so the new constraint implies the old one. All in all, unlike BP, the leniency policy shrinks the set of parameter constellations under which a bribe+license equilibrium is sustainable.

There is, however, one possible concern that must be noted regarding this modified proposal. Because bribe paying is not made legal, an entrepreneur that reports having paid a bribe will be a "guilty wrongdoer" when he enters the police station to report. By contrast, under BP, he would be an innocent citizen. One may imagine that our leniency proposal enhances the scope to be harassed by the police. That is, with leniency C may increase relative to BP. In other words, while softening Drèze's concerns about moral & legal costs, leniency may worsen his concern about inefficient law enforcement. That said, one should also take into account that our scheme provides stronger incentives to report relative to BP, as a reporter gains immunity from fines besides getting back the bribe. This may compensate for the increase in reporting costs C .

4 Alternative assumptions and extensions

In this section we collect a series of important observations and extensions that complement sections 2 and 3, but which would have hampered flow had we included it there. We discuss law enforcers' corruption (as compared to law enforcement costs); situations where both parties are long term players; how BP and leniency would fare with more harmful forms of corruption; and finally how to perform empirical tests related to the legal tools discussed in this paper.

4.1 Corrupt law enforcement

In section 3.1 we discussed the effects of exogenous law enforcement costs (C) for agents that report having paid a bribe. Here we compare those results to what would happen if instead there were *corrupt* law enforcement. Assume that after the reporting stage, but before law enforcers establish whether or not corruption occurred, the parties can offer new bribes to affect the verdict.

E can offer a new bribe $b_E^* \geq 0$ to law enforcers to convict S and get back the original bribe; S can offer a bribe $b_S^* \geq 0$ to have the law enforcers falsely declare that there was not corruption. Suppose that this bribing competition takes the form of an English auction, and that law enforcers have some cost-of-lying denoted by π (possibly because there is some small chance they will be indicted). Then S will win the competition and be declared innocent if he is willing to pay more than π in addition to the highest bribe that E is otherwise willing to offer; S is then convicted and E obtains the original bribe b back (but of course not the new bribe b_E^*).

Assume that at this bribing competition stage any preceding cost of reporting (C) is sunk and does not reduce E 's willingness to pay (our conclusions would be strengthened otherwise). E will be willing to pay up to the original bribe b to have it back after a conviction of S . On the other hand, in case of conviction S will have to return the bribe b and pay the increased fine $2F_S$, hence his willingness to pay will be up to $2F_S + b$. As long as $2F_S + b > b + \pi$, i.e. as long as $2F_S > \pi$ the bribe competition will be won by S who will not be convicted; the opposite happens when $2F_S < \pi$.

Corruption of law enforcers tends to be more harmful to the functioning of BP and its variations than an exogenous enforcement costs C . The sanctions for accepting harassment bribes ($2F_S$) need to be large to deter bribe taking in the first place. But if $2F_S$ is larger than the cost π law enforcers incur in lying, S will win the bribing game and E thus not report to start with.

4.2 Long-run S , long-run E

One may conceive of situations where both E and S are long-run players, effectively playing a repeated game. For example, short-term E 's may be represented by an long-run intermediary, licences may need to be regularly renewed, or the long-run S may be in charge of several different services needed by a long-run E . What would happen if also E is a long-run player?

Clearly the usual folk theorem kicks in, so that if discount rates are large enough 'anything can happen' (irrespective of c). In this sense, BP would loose its teeth in terms of deterrence. Fighting corrupt exchanges between two patient long-run players may likely require more powerful incentives/policy instruments.

This is not to say that BP would be irrelevant. If bilateral repetition prevents BP from deterring bribery, then Drèze's concerns about moral & legal costs will apply. Since corruption is not deterred but bribe-paying made legal, entrepreneurs that were not paying bribes before BP

was introduced (because they find doing so immoral, or too risky) may now decide to pay bribes.

As discussed in section 3.3., these potential drawbacks can be avoided by modifying BP, turning into a leniency policy; bribe payers obtain amnesty and get their bribe back only if they self-report. This conditional amnesty does not legalize bribe paying, so Drèze's concerns about moral costs and the risk of being convicted without any report do not apply.

4.3 More harmful forms of corruption

Basu carefully circumscribed his proposal to harassment bribes. These may seem relatively innocuous in comparison to other forms of corruption that distort allocations of important assets and contracts and which may hurt third parties. Moreover, distinguishing an harassment bribe from, say, a bribe to jump in front of a line (to get something one is otherwise entitled to) may be difficult in practice. It is therefore natural to wonder how extensions of BP, or our leniency modification, would fare in regards to corruption more broadly. We initially planned to leave this issue for future research, but with the above analysis in hand, we had an intriguing insight we now wish to highlight.

As a background, let us abstract from the complications of section 3 and summarize the results of the basic model of section 2 in a table describing the welfare effects of BP:

	$c > 0$	$c < 0$	
One shot game	+ deterrence -efficiency	irrelevant irrelevant	.
Long-run S	+ deterrence -efficiency	+ deterrence +efficiency	

Columns 2 and 3 describe the effects of BP when $c > 0$ (bad institutions): they are positive as regards deterring corruption (indicated by "+") but inefficiently interrupt the provision of public service (indicated by "-"). Columns 4 and 5 report BP's effects when $c < 0$ (good institution), extremely positive in the most plausible case in which S plays repeatedly.

How do these conclusions change if instead of harassment bribes one considers situations with bribes for an illegal licence? To get at that, one must first consider: How do the games of sections 2 change in the new situation? The answer is: not at all! The payoffs for players E and S arguably remain exactly as indicated, so all implications regarding strategic play remain unchanged.

The only aspect of the analysis that changes is that whereas before we argued licenses are good (from society's point-of-view) we now have to assume they are bad. We can thus examine whether BP does well or badly using the above table, except we must switch efficiency's signs:

	$c > 0$	$c < 0$
One shot game	+deterrence +efficiency	irrelevant irrelevant
Long-run S	+deterrence +efficiency	+deterrence -efficiency

Actually, we are not done yet. If we maintain the assumption that S is hired to perform legal acts, then the $c < 0$ column must be irrelevant. To see this, note that whereas before S was hired to issue licences that people deserved, in the new situation the service performed in exchange for a bribe is illegal. So, S must have been hired to do something else. If he nevertheless accepts a bribe and issues a licence then the two factors affecting c discussed in section 2 (opportunity cost of not shirking and risk of being caught-in-the-act-and-fired) point in the same direction; both serve to ensure that $c > 0$. Hence, we can drop the two rightmost columns, and get:

One shot game	+deterrence	+efficiency
Long-run S	+deterrence	+efficiency

At first glance, this table seems to reflect a success story. To summarize: BP was introduced solely with an aim on harassment bribes, and our analysis indicates that its benefits may be a mixed bag. When we shift attention to the case of non-harassment bribes, the effect of BP becomes clearer and unambiguously good: bribes are eliminated, and no illegal services are performed.

However, this conclusion comes with a serious caveat (in addition to those discussed in section 3). Consider the event that a bribe is given, that the illegal licence is awarded, and that E reports to the government. We have implicitly assumed that in such a case E gets to keep the licence. This is a strong assumption. The policy maker must be ready, in principle, to not revoke illegally awarded licences which license holders report that they have acquired illegally.

The game theorist in us objects that this does not matter; along the equilibrium path no licences are ever awarded. But the practical economist in us feels troubled. Consider an illegal licence that would very seriously hurt third parties. For example, assume that a technically unfit entrepreneur is granted a state-sanctioned monopoly on the control and sale of water. Or let the licence concern the right to convert Grand Canyon into a driving range. Would it be ethically and politically defensible to sanction such arrangements, even counterfactually?

Of course not. It is therefore clear that in the cases of distortive forms of corruption monetary rewards must be introduced to complement the scheme and compensate entrepreneurs that report having paid the bribe for the additional loss of the valuable albeit distortive licence.

4.4 Empirical tests

The issue of evaluating BP is not entirely hypothetical, as analogous provisions have been in place in several European countries, and in particular in China since 1997. However, based on archival data, there is hardly any conclusive empirical evidence regarding their effects.²²

A promising approach may be to run experiments. The last decade saw a burst of interest experimental studies of aspects of corruption; see Abbink & Serra (2012) for a survey. A recent intriguing laboratory study by Abbink, Dasgupta, Gangadharan & Jain (2012) evaluates BP and shows it may reduce corruption, but retaliation by bribe-takers can hamper the effect. Abbink *et al.*'s design is not tailored to test our theory (in particular, they have no counterpart to our c). However, their finding about retaliation suggest that the issues surrounding C in our theory (cf. section 3) are a real worry. Inclination by S to retaliate would be one reason for C to be high.

Apropos the leniency policy we advocated (section 3.3), it is worth noting that theoretically appealing properties is not its only advantage. There is also some empirical evidence about the effectiveness (and drawbacks) of leniency policies in other contexts.²³

5 Conclusions: policy implications

We now recall our findings and discuss what to take away as regards policy advice.

- The effects of Basu's policy (=BP) on harassment bribes may largely depend on the quality of the institutions of the country in which it is introduced. It is likely to have good deterrence effects in environments with pressure on bureaucrats to perform independent of bribes ($c < 0$) and where little prevents citizens from reporting having paid a bribe when they are not liable (C small). The proposal may instead have counterproductive side-effects in weaker institutional environments with little pressure on bureaucrats to perform apart from bribes ($c > 0$) and where individuals would likely not report having paid a bribe, e.g. because of

²²A *Financial Times* blog post by Xingxing Li (10:50 am, May 1, 2012) argues the Chinese policy worked poorly; however, to draw that conclusion with confidence one needs a counterfactual, which seems lacking. Link:

<http://blogs.ft.com/beyond-brics/2012/05/01/guest-post-bribery-and-the-limits-of-game-theory-the-lessons-from-china/#>

²³See Miller (2009) for market-data regarding cartels, and Apesteguia, Dufwenberg & Selten (2007), Hinloopen & Soetevent (2008), and Bigoni, Fridolfsson, LeCoq & Spagnolo (2012) for experimental evidence. For suggestive evidence of success against mafia-related crime, see Acconcia, Immordino, Piccolo & Rey (2009).

high expected harassment costs ($C > 0$) from the police or from future interaction with the corrupt bureaucrat (if he is not replaced).

- Some of the possible negative side effects can be avoided by adopting a modified version of BP, inspired by leniency policies successfully used in other areas of law enforcement. The briber gets immunity from fines only if he reports having paid the bribe, so it is still illegal to pay bribes and if a briber does not report he remains at risk of being caught and fined.
- There are strong policy complementarities. The pressure to perform on bureaucrats (c), the expected cost/outcome of reporting having paid a bribe (C), and the level of corruption among law enforcers (π) are crucial determinants of the functioning of the reporting schemes and can be affected by appropriate policies. Rather than giving up the possible large gains from say a leniency policy (well known from other areas where it was employed), the policy could be accompanied or preceded by complementary measures directed at (i) improving the efficiency of the public bureaucracy, and (ii) ensuring that a reliable, trusted law enforcement channel is present that collects and fairly processes reports from bribe payers rather than harasses them. Such coordinated reforms have been implemented before, with the creation of small agencies/specialized task forces with the exclusive mission of facilitating collection of whistleblowers' reports while protecting their anonymity.
- Our results highlight the central relevance of law enforcement institutions, as well as the importance of fighting corruption of these institutions more than their inefficiency. If planning an anti-corruption campaign, one should start from cleaning up corruption from law enforcement institutions (police & courts), all the rest comes second.
- If designed with care and combined with necessary complementary policies and monetary rewards, analogous revelation schemes may be effective also for more harmful forms of corruption than the harassment bribes on which the debate has focused until now.
- There is no single recipe valid for all seasons. In countries with strong moral norms and well functioning law enforcement institutions, where corruption is not pervasive, leniency conditional on reporting is probably a policy likely to have strong corruption deterrence effects. In weaker institutional environments, where law enforcement institutions are less efficient, corruption is more widespread, and moral norms are weak legalizing bribe paying

may be better if preceded by the needed complementary reforms. A specific assesment of the particular situation is always necessary to design policies effectively.

Conclusions three and four above appear quite robust. Even if institutions are initially very weak (in the sense that $c > 0$ or that C is large) one may imagine policies which could complement BP, or similar schemes, and render them more useful.²⁴ The general point is that fighting corruption in countries with weak institutions is likely to require a set of complementary policies that accompany revelation schemes like BP or our leniency-based variation, measures aimed at improving civil service performance and the accountability of law enforcement institutions.

It is interesting to note that several recent proposals have been made that illustrate the feasibility of such policies with potential to move c or C . Consider, for example, the following customer satisfaction feedback system recently implemented in the Jhang district of Punjab, as described in *The Economist* (Sept 24, 2009):²⁵

Zubair Bhatti, a Pakistani bureaucrat, asked all clerks in the Jhang district who handled land transfers to submit a daily list of transactions, giving the amount paid and the mobile-phone numbers of the buyer and the seller. He explained that he would be calling buyers and sellers at random to find out whether they had been asked to pay any extra bribes or commissions. When charges were subsequently brought against a clerk who had asked for a bribe, the others realised that Mr Bhatti meant business, and buyers and sellers reported a sudden improvement in service. Mr Bhatti extended the scheme to other areas, such as cracking down on vets who demanded bribes from farmers, and has proposed that the Jhang model [...] be adopted in other districts.

The scheme may reduce c (customer satisfaction information is used to sharpen bureaucrats' incentives) and C (can become a special protected channel for whistleblowing). Another example is Björkman & Svensson's (2009) field experiment documenting positive effects of village meetings on health service provision; this transparency/disclosure policy arguably reduced c .

²⁴This is in the spirit of Mookherjee & Png (1995). They analyze an inspection-corruption game and show that if government can use other instruments to induce inspectors to perform (stricter monitoring, higher efficiency wages, tougher sanctions) and has an unlimited budget, then one can find an equilibrium without bribes that welfare-dominates one with. In such a world, BP would increase welfare by facilitating corruption deterrence.

²⁵We thank Husnain Ahmad for alerting us to the Jhang model. Read more about it in *The Pakistani Spectator – A Candid Blog*, at <http://www.pkhope.com/incredible-“jhang-model”-of-good-governance/>.

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FIGURE 1: STANDARD LAW ENFORCEMENT

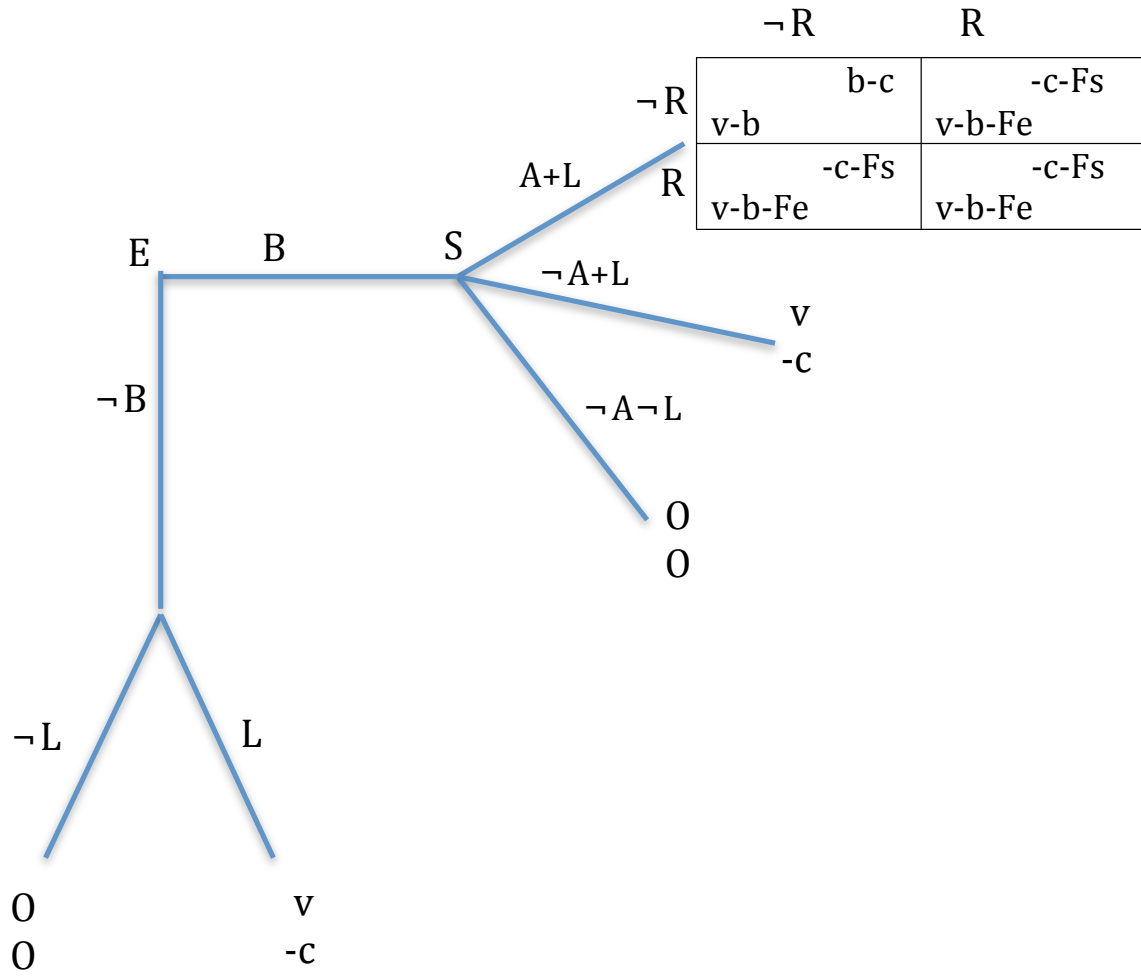


FIGURE 2: BASU PROPOSAL

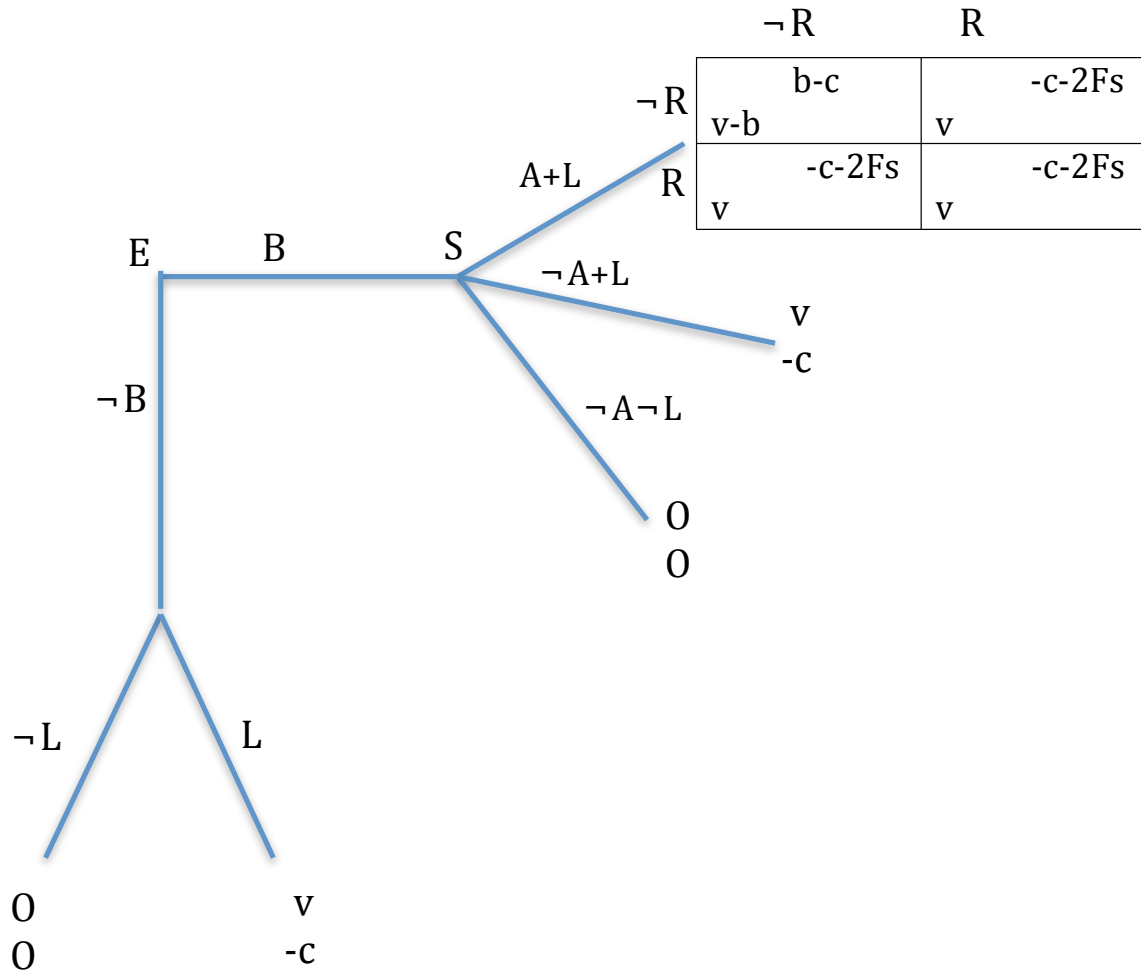


FIGURE 3: BASU + COSTLY LAW ENFORCEMENT

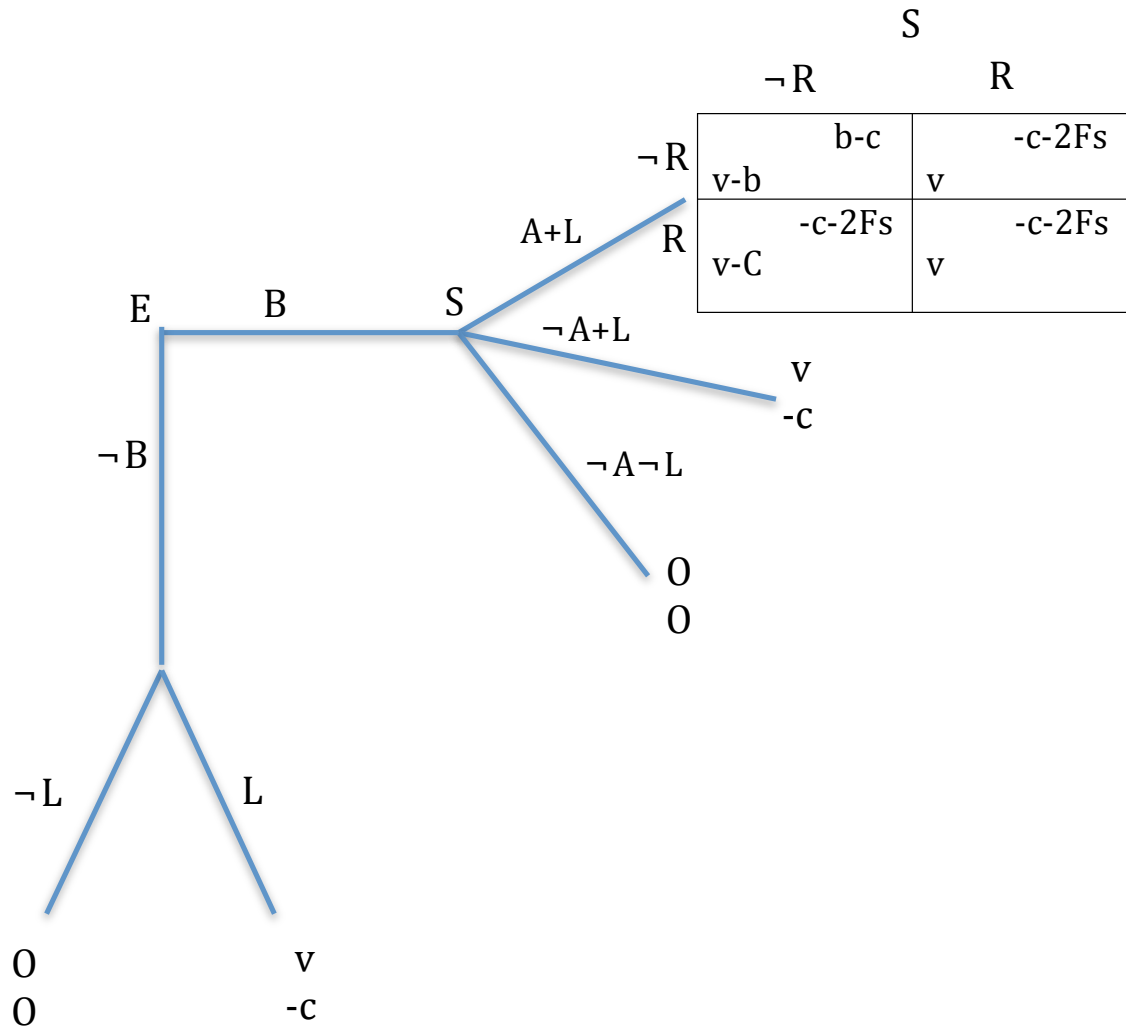


FIGURE 4: MORAL COSTS + EXOGENOUS CONVICTION

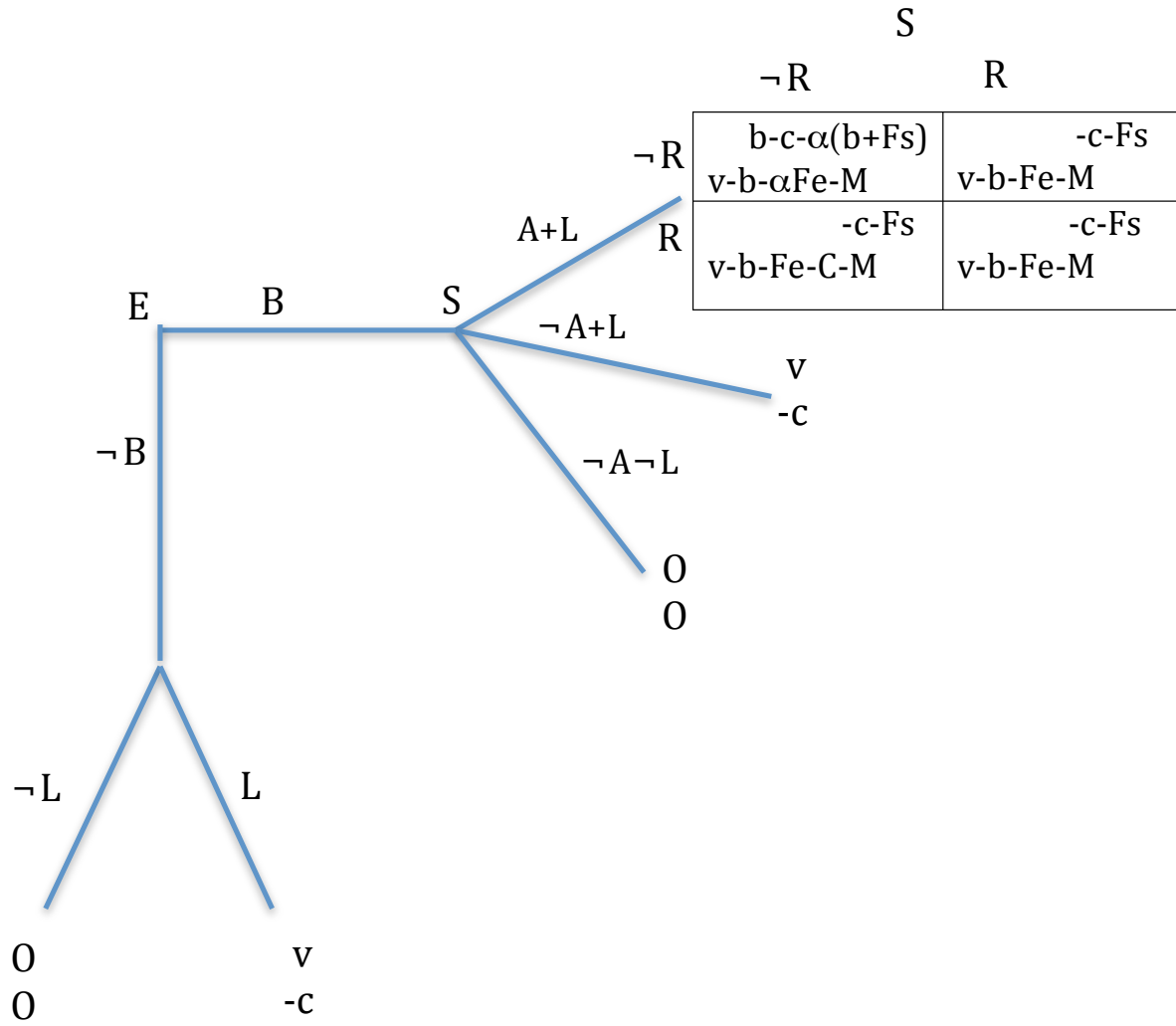


FIGURE 5: BASU + MORAL COSTS + EXOGENOUS CONVICTION

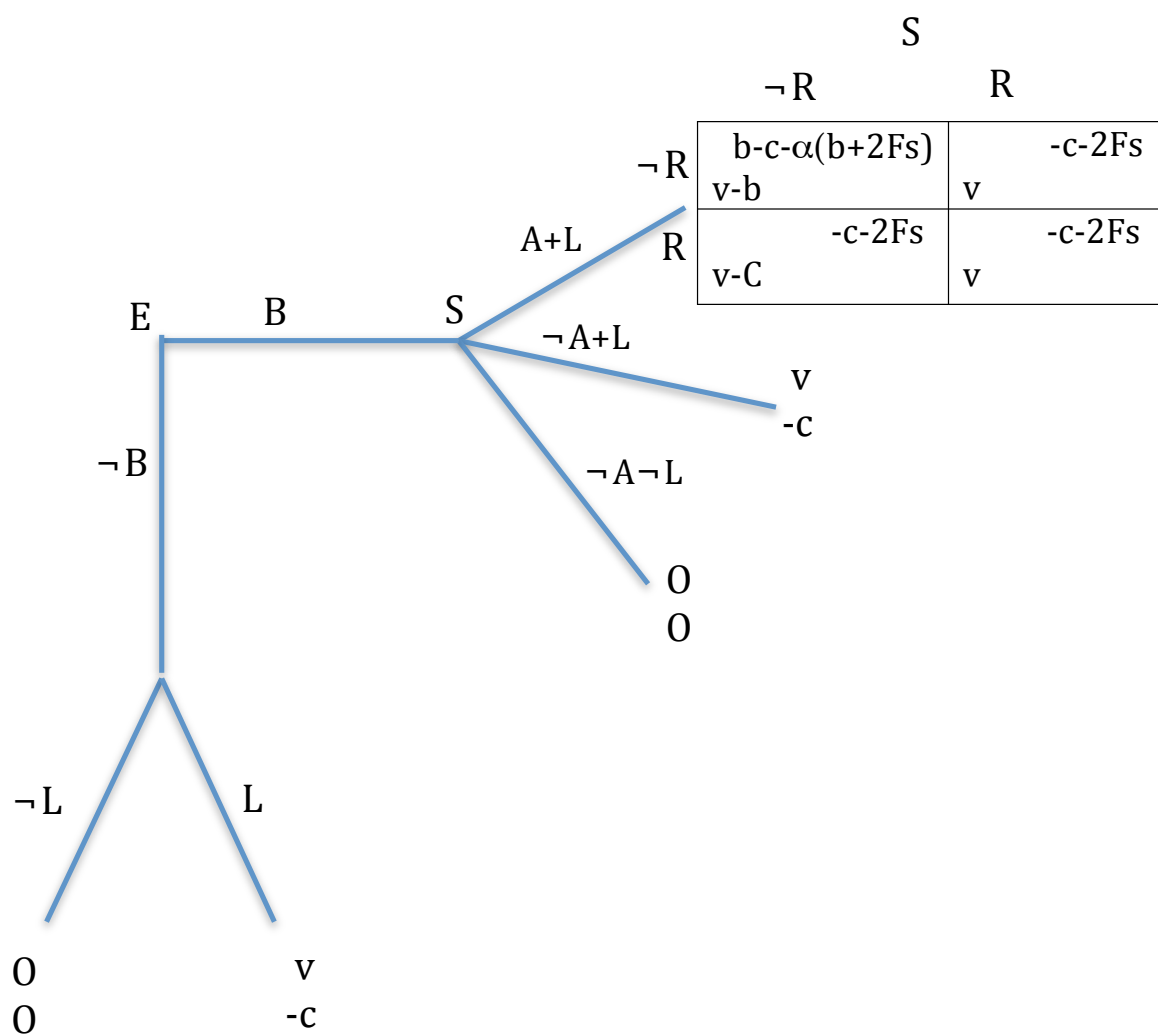


FIGURE 6: LENIENCY + MORAL COSTS + EXOGENOUS CONVICTION

