

INCENTIVIZING PRIVATE ANTITRUST ENFORCEMENT TO PROMOTE LENIENCY APPLICATIONS

*Sinchit Lai**

ABSTRACT

Both leniency programs and private antitrust enforcement are essential in combating cartels. The literature demonstrates that society benefits from both increased private actions and leniency applications. However, the present view is that private enforcement discourages cartel members from seeking leniency. Proponents of this view blame follow-on civil actions in the wake of successful public antitrust enforcement cases. This concern hinders the development of private antitrust enforcement. Nevertheless, the literature that expresses such a concern fails to consider standalone civil actions' impact. Building on a game theory model of leniency programs by Professor Joseph E. Harrington, this article reinvestigates the relationship between the two seemingly contradictory procedural devices of leniency programs and private enforcement. Considering a revised leniency game, this article reveals that incentivizing private antitrust enforcement does not necessarily discourage leniency applications. Accordingly, this article proposes ways for legislators to use private enforcement as a tool to promote leniency applications.

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I. INTRODUCTION

A. Leniency Programs and Their Benefits

Anticompetitive violations are generally conducted secretly and are difficult to detect.¹ Among all forms of anticompetitive conduct, hardcore cartel

* Assistant Professor, School of Law, City University of Hong Kong. S.J.D., University of Pennsylvania Law School. E-mail: sinclai2@cityu.edu.hk I would like to express my deepest gratitude to Professor Jonathan Klick, Professor Herbert Hovenkamp, and Joon-Buhm Lee from Penn Law for their comments on this article. I sincerely thank Professor Joseph Harrington from the Wharton School, whose game theory class provided a great deal of inspiration for this article. Many thanks to participants at the Yale Law School Doctoral Scholarship Conference, especially Kenneth Khoo, for thoughtful comments. I am indebted to anonymous reviewers and the editors of JCLE for providing insightful comments. All errors are on my own.

¹ *Anticompetitive Agreements*, EUROPEAN COMM'N, http://ec.europa.eu/competition/consumers/agreements_en.html (last visited November 14, 2018).

(“cartel”) arrangements are recognized internationally as the most harmful to society.² However, antitrust authorities have limited resources, so they cannot detect all wrongdoing.³ This situation leads to an important investigative tool in the field of antitrust—leniency programs. A typical leniency program provides, for instance, full immunity or the reduction of fines to cartel participants who are the first (or among the first few) to blow the whistle on their cartel to antitrust authorities.⁴ To obtain leniency, merely informing antitrust authorities of the existence of the cartel is insufficient. Leniency programs often require a whistleblower to provide concrete evidence on and admit participation in the cartel.⁵ These incriminating confessions and other elicited evidence can increase the probability of convicting the cartel, not only in public enforcement action but also subsequent private enforcement actions, if they occur.⁶

There are multiple benefits of leniency programs. First, leniency programs promote cartel detection by encouraging self-reporting.⁷ Relatedly, by making cartel discovery more likely, the programs also have the benefit of deterring cartel formation.⁸ For example, Professor Nolan H. Miller found out that the 1993 version of the U.S. leniency program increased cartel discoveries by about 60 percent (that is detection effect) and reduced cartel formation

² Hardcore cartels include price fixing, output restriction, market sharing, and bid rigging agreements formed between competitors. OECD, RECOMMENDATION OF THE COUNCIL CONCERNING EFFECTIVE ACTION AGAINST HARD CORE CARTELS 3 (1998), <http://www.oecd.org/daf/competiti on/2350130.pdf>; see Sinchit Lai, Comment, *Defining and Regulating Hardcore Cartels in Hong Kong: Agency Reconciling the Divergence between Legislators and International Standard*, 20 U. PA. J. BUS. L. 933, 938–944 (2018) (demonstrates why hardcore cartels are more harmful to society).

³ Zygimantas Juska, *The Effectiveness of Private Enforcement and Class Actions to Secure Antitrust Enforcement*, 62 ANTITRUST BULL. 603, 605 (2017).

⁴ See INT’L COMP. NETWORK, GOOD PRACTICES FOR INCENTIVISING LENIENCY APPLICATIONS fn. 1 & 23–4 (2019), <https://www.internationalcompetitionnetwork.org/wp-content/uploads/2019/05/CWG-Good-practices-for-incentivising-leniency.pdf> (dissections of leniency programs).

⁵ *Id.* at 25.

⁶ Public enforcement is the enforcement of antitrust laws by a government, such as antitrust authorities or prosecutors; whereas private enforcement refers to antitrust litigation initiated by private parties, such as consumer victims. OECD, RELATIONSHIP BETWEEN PUBLIC AND PRIVATE ANTITRUST ENFORCEMENT 3 (2015), https://www.concurrences.com/IMG/pdf/daf-comp-wp3_2015_14.pdf?40555/8f29d71e1c5258415acc3f16be97a95141aec3ee.

⁷ OFF. OF FAIR TRADING, APPLICATIONS FOR LENIENCY AND NO-ACTION IN CARTEL CASES—OFT’S DETAILED GUIDANCE ON THE PRINCIPLES AND PROCESS 6 (2013), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/284417/OFT1495.pdf; See Joseph E. Harrington & Myong-Hun Chang, *Modeling the Birth and Death of Cartels with an Application to Evaluating Competition Policy*, 7 J. OF THE EUR. ECON. ASS’N 1400, 1418–9 (2009) (an example of relevant literature).

⁸ OFF. OF FAIR TRADING, *supra* note 8, at 6; Joseph E. Harrington & Myong-Hun Chang, *supra* note 8, at 1418; see, for example, Giancarlo Spagnolo, *Optimal Deterrence Mechanisms Against Cartels and Organized Crime* 22 (U. of Mannheim, August 2003), https://pdfs.semanticscholar.org/8dc1/9a844101bacd6f6849d75517c1edeaa4fb18.pdf?_ga=2.165045820.2026850550.1566917870-1213007025.1563566647; Maria Bigoni *et al.*, *Fines, Leniency, and Rewards in Antitrust*, 43 RAND J. OF ECON. 368, 378–9 (2012) (examples of relevant literature).

by 40 percent (that is deterrence effect) in the country.⁹ Third, leniency programs could reduce cartel activities by not only deterring formation but also encouraging operating cartels to desist.¹⁰ Fourth, with the information on a given cartel offered by leniency applicants, antitrust authorities could save on investigation and prosecution costs.¹¹ For instance, Professor Steffen Brenner found that the 1996 version of the E.U. leniency program sped up cartel investigation and prosecution by almost 18 months on average.¹² Finally, leniency programs benefit victims by raising their ability to seek redress¹³ because such programs may uncover cartels that are otherwise unnoticed.¹⁴ Additionally, a leniency application may result in an infringement decision, which can later be used as the basis for victims' damages claims and raise the chances of recovery of losses.¹⁵

B. Private Antitrust Enforcement and Its Benefits

In addition to leniency programs, private enforcement plays a vital role in combating cartels internationally. From 2017 to 2018, the International Competition Network (ICN) surveyed national competition agencies and non-governmental advisors from 36 different jurisdictions.¹⁶ About 94 percent of the respondents stated that private damages actions against antitrust violators are possible in their jurisdictions.¹⁷ Among them, only about 20 percent considered private antitrust enforcement "frequent."¹⁸ That said, 46 percent of the respondents stated that private enforcement is "increasing" in their jurisdiction.¹⁹ These figures reflect the potential and contemporary reality of lawmakers promoting private actions to combat cartels in many jurisdictions.²⁰

⁹ Nathan H. Miller, *Strategic Leniency and Cartel Enforcement*, 99 AM. ECON. REV. 750, 760–1 (2009).

¹⁰ OFF. OF FAIR TRADING, *supra* note 8, at 6; Joseph E. Harrington, *Optimal Corporate Leniency Programs*, 56 THE J. OF INDUS. ECON. 215, 221 (2008).

¹¹ Steffen Brenner, *An Empirical Study of the European Corporate Leniency Program*, 27 INT. J. IND. ORGAN. 639, 644 (2009); OECD, FIGHTING HARD CORE CARTELS: HARM, EFFECTIVE SANCTIONS AND LENIENCY PROGRAMMES 11 (2002), <https://www.oecd.org/competition/cartels/1841891.pdf>.

¹² Steffen Brenner, *supra* note 12, at 643.

¹³ OFF. OF FAIR TRADING, *supra* note 8, at 6.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ INT'L COMP. NETWORK, *supra* note 5, at 6 & fn. 4–5.

¹⁷ See INT'L COMP. NETWORK, DEVELOPMENT OF PRIVATE ENFORCEMENT OF COMPETITION LAW IN ICN JURISDICTIONS 3 (2019), https://www.internationalcompetitionnetwork.org/wp-content/uploads/2019/07/CWG_Privateenforcement-2019.pdf (the results of the survey).

¹⁸ INT'L COMP. NETWORK, *supra* note 18, at 3.

¹⁹ *Id.*

²⁰ See also OECD, CHALLENGES AND CO-ORDINATION OF LENIENCY PROGRAMMES—BACKGROUND 9 (2018), [https://one.oecd.org/document/DAF/COMP/WP3\(2018\)1/en/pdf](https://one.oecd.org/document/DAF/COMP/WP3(2018)1/en/pdf) (showing that some countries have "adopted measures to promote more vigorous private enforcement, with positive results").

The existing literature reveals that private antitrust enforcement offers a range of benefits to society. For example, private parties can help detect cartels as they are directly affected and have the most proximate information on the violations (beyond the information held by the lawbreakers themselves).²¹ Despite private parties reporting cartels to antitrust authorities, however, the authorities may not follow the leads and take action against the cartels. This may be due to sloth or corruption²² or to a lack of enforcement resources. Therefore, when antitrust authorities fail to act, private actions may substitute for public enforcement.²³ Moreover, even if an antitrust authority does prosecute and fine a cartel, its victims are not compensated. Private actions can fill this gap by allowing victims to seek damages.²⁴ Additionally, the possibility of private damages actions deters future violations.²⁵ Further, some antitrust laws are made or clarified by courts.²⁶ Thus, having more private cases litigated in court might facilitate the evolution of the legal standards of antitrust law.²⁷

C. Questions Raised

From the above analysis, one can see that society may benefit from having more leniency applications and private damages actions. Moreover, many jurisdictions are in the process of promoting both types of measures. However, a contradiction seems to exist between private cartel enforcement and leniency programs. Currently, the dominant view is that private enforcement has a negative impact on leniency applications²⁸—a view that can hinder the development of private enforcement.

More specifically, it is only “follow-on” private actions that are blamed for the negative impact on leniency applications. In brief, private actions may be classified into two types: follow-on and standalone actions.²⁹ The former is defined as civil actions brought after a public enforcement decision, whereas the latter refers to civil actions brought without any prior decision.³⁰

²¹ ERNEST GELLHORN *et al.*, *ANTITRUST LAW AND ECONOMICS IN A NUTSHELL* 543 (5th edn, 2004).

²² *Id.*

²³ See Robert H. Lande & Joshua P. Davis, *Benefits from Private Antitrust Enforcement: An Analysis of Forty Cases*, 42 U.S.F. L. REV. 879, 905 (2008) (suggesting that private enforcement has often substituted government action when the latter did not act or did not achieve meaningful results).

²⁴ ERNEST GELLHORN *ET AL.*, *supra* note 22, at 543.

²⁵ *Id.*

²⁶ See William Letwin, *The First Decade of the Sherman Act: Judicial Interpretation*, 68 YALE L.J. 900, 901–9 (1959) (showcasing how U.S. courts interpreted the Sherman Act under the common law doctrine in 1890s).

²⁷ ERNEST GELLHORN *ET AL.*, *supra* note 22, at 543.

²⁸ See OECD, *supra* note 21, at 8–10 (OECD’s comments on the relationship between private enforcement and leniency programs); see also INT’L COMP. NETWORK, *supra* note 5, at 26–8 & 32 (many antitrust authorities believe that private enforcement disincentivizes leniency applications, but none believe that private enforcement incentivizes leniency applications).

²⁹ OECD, *supra* note 7, at 3.

³⁰ *Id.*

As descriptive,³¹ theoretical³² and experimental³³ works show, the pursuit of follow-on damages discourages leniency applications. This result arises because, even after successfully applying for leniency and being exempted from fines, the applicant is still liable for any damages under subsequent private enforcement (that is follow-on actions).³⁴ Public antitrust enforcement induces follow-on private actions in at least two ways. First, public enforcement reveals the existence of a cartel that might otherwise be undetected.³⁵ Second, a successful public enforcement action raises the chance that private parties will prevail in court. This is because infringement decisions obtained from public enforcement are often binding on civil courts,³⁶ which means that private plaintiffs do not need to prove again that there was an infringement.³⁷ In addition, civil courts might have the power to order antitrust authorities to transmit documents submitted by leniency applicants.³⁸ These documents can be used as evidence against cartel members, especially the applicants themselves, in civil actions.³⁹ By contrast, if no cartel members apply for leniency, the cartel may not be detected by antitrust authorities so the members may not need to face follow-on actions and pay damages.⁴⁰ Thus, the literature expresses concern that as the likelihood of follow-on actions increases, the

³¹ See, for example, Christopher R. Leslie, *Trust, Distrust, and Antitrust*, 82 TEXAS L. REV. 515, 641–2 (2004); Cornelis Canenbley & Till Steinvoth, *Effective Enforcement of Competition Law: Is There a Solution to the Conflict Between Leniency Programmes and Private Damages Actions?*, 2 J. OF EUR. COMP. L. & PRAC. 315, 316 (2011); Caterina Migani, *Directive 2014/104/EU: In Search of a Balance between the Protection of Leniency Corporate Statements and an Effective Private Competition Law Enforcement*, 7 GLOBAL ANTITRUST REV. 81, 97 (2014); Thomas Knight & Wouter de Weert, *On Implementing Private Damages in European Competition Cases* (Working Paper, 2015); Tom Bainbridge, *The EC Leniency Programme—Hamstrung by Private Litigation?*, 17 COMP. L. INSIGHT. 1, 1–2 (2018); Paolo Buccirossi et al., *Leniency, Damages, and EU Competition Policy*, VoxEU.org, July 14, 2015; Miriam C. Buiten, *The Ambivalent Effect of Antitrust Damages on Deterrence*, CPI ANTITRUST CHRONICLE 1, 7 (2019) (examples of relevant descriptive studies).

³² See, for example, CTR. FOR EUR. POL'Y STUD. ET AL., MAKING ANTITRUST DAMAGES ACTIONS MORE EFFECTIVE IN THE EU: WELFARE IMPACT AND POTENTIAL SCENARIOS 495–6 & 499–501 (2007), https://ec.europa.eu/competition/antitrust/actionsdamages/files_white_paper/impact_study.pdf; Philipp Kirst & Roger Van den Bergh, *The European Directive on Damages Actions: A Missed Opportunity to Reconcile Compensation of Victims and Leniency Incentives*, 12 J. OF COMP. L. & ECON., 1, 13–5 (2015) (examples of relevant theoretical study).

³³ See Olivia Bodnar et al., *The Effects of Private Damage Claims on Cartel Stability: Experimental Evidence 14–5 & 22–3* (DICE Discussion Paper No.315, June 2019), http://www.dice.hhu.de/fileadmin/redaktion/Fakultaeten/Wirtschaftswissenschaftliche_Fakultaet/DICE/Discussion_Paper/315_Bodnar_Fremerey_Normann_Schad.pdf (an example of relevant experimental study).

³⁴ CTR. FOR EUR. POL'Y STUD. ET AL., *supra* note 33, at 501.

³⁵ OFF. OF FAIR TRADING, *supra* note 8, at 6.

³⁶ OECD, *supra* note 7, at 18–9.

³⁷ *Id.*

³⁸ OECD, *supra* note 20, at 9.

³⁹ *Id.*

⁴⁰ When private enforcement is unlikely, the probability of detection due to public enforcement becomes the key factor that affects whether cartel members apply for leniency. CTR. FOR EUR. POL'Y STUD. ET AL., *supra* note 33, at 494.

number of leniency applications declines.⁴¹ In view of the above, some nations and scholars have been finding ways to promote private enforcement without discouraging leniency applications. However, their proposals made so far either do not entirely resolve the problem or give rise to other problems.⁴²

A common limitation in the literature is that it does not consider the impact of standalone actions on leniency applications.⁴³ There is only one previous work on this issue (that is Knight and Claire, 2019).⁴⁴ The authors of that study employed a simple dynamic model of collusion that includes not only follow-on but also standalone private enforcement.⁴⁵ The authors found that holding the amount of damages liability constant, an increase in the probability of facing standalone actions enhances the likelihood of “desistence” from cartel-related infractions.⁴⁶ Since Knight and Claire separated the choice to seek leniency and to desist,⁴⁷ they did not suggest that promoting standalone actions enhances leniency applications. This implication can be inferred from their model.⁴⁸ Nevertheless, the model has a limitation—it is based on the assumption that a conspirator will always face follow-on private actions if he is detected by the antitrust authority or seeks leniency.⁴⁹ In reality, however, follow-on actions are not guaranteed. Therefore, it is unclear whether the authors’ argument that there is a positive relation between standalone actions and leniency applications still holds if the abovementioned assumption is relaxed.

Unlike the assumptions made in the existing literature, most jurisdictions provide both standalone and follow-on rights of action to private parties in practice, and these rights are either not fully used or unused. Therefore, it

⁴¹ See discussion in fn.32, 33 & 34.

⁴² *Infra* Part III(D).

⁴³ Take the most recent experimental work done by Olivia Bodnar *et al.* as an example. When the authors develop a hypothesis that private damages claims reduce the frequency of leniency application, they define a condition where colluding is better than defecting (that is applying for leniency). However, this condition does not provide the possibility of cartel members facing standalone private actions if they decide not to apply for leniency and continue to collude. Olivia Bodnar *et al.*, *supra* note 34, at 14–5; the authors designed an experiment to test such hypothesis. However, if we refer to *stage 3* of the experiment, where participants (that is cartel members) need to decide whether to apply for leniency, we can see that the participants only face the threat of public enforcement, not standalone private actions. *Id.* at 8–9.

⁴⁴ Thomas Knight & Casey Ste. Claire, *Reconciling the Conflict: Antitrust Leniency Programs and Private Enforcement* (Working Paper, 2019), <https://people.clas.ufl.edu/thomasknight/files/KnightSteClaire.pdf>.

⁴⁵ *Id.* at Part C.

⁴⁶ *Id.* at Part D.

⁴⁷ *Id.* at Part I.

⁴⁸ The authors define that a conspirator would choose to defect on a cartel agreement and seek leniency when $D \leq \frac{P}{(1-p)(1-q)} F$, where q , defined as a collusive agreement, is detected by a private plaintiff instead of the antitrust authority. *Id.* at Part C; from this inequality, we can infer that a rise in q would promote leniency application as, holding other things constant, it would increase value on the right-hand side of the inequality.

⁴⁹ *Id.* at Part C.

would be helpful to have a single model that reflects such characteristics to verify the findings of previous studies. Further, not all policies designed to promote private antitrust enforcement are specific to standalone or follow-on claims. Thus, in the absence of a model that incorporates the possibility of both types of actions, we cannot determine the overall impact on leniency applications of a policy that incentivizes all private antitrust actions indiscriminately.

This article aims to offer a new game theory model to reassess the impact of private enforcement on leniency applications. Unlike the model used in the existing literature, the proposed model allows for not only follow-on but also standalone actions. My model is a revised version of a game created by Professor Joseph E. Harrington (Part II).⁵⁰ My contributions are twofold: First, Harrington's game assumes that the members of a cartel who do not apply for leniency are penalized under both public and private enforcement.⁵¹ I relax this assumption to incorporate the possibilities of cartel members being penalized under either public or private enforcement. This enables us to later investigate the impact of incentive policies that target a specific group of claimants. Second, Harrington's game assumes that after a leniency application and a subsequent public conviction, private parties always bring a follow-on action.⁵² I also relax this assumption and incorporate uncertainty over these private actions. This modification is essential because whether a conspirator faces a follow-on action after applying for leniency is an important concern of potential applicants.⁵³

After introducing the model, I use it to analyze different ways of incentivizing private enforcement and hypothesize how the number of leniency applications would react correspondingly. For example, I am interested in knowing whether my new model, consistent with the literature, also suggests that (1) follow-on actions always have a negative impact on leniency applications (Part III (A)) and (2) standalone actions might have a positive impact on leniency applications (Part III (B)). More importantly, I investigate how applications would be affected if lawmakers were to promote both follow-on and standalone

⁵⁰ I had the privilege of auditing Professor Harrington's class titled "Game Theory for Business" offered at the Wharton School in spring 2018. The details of the game theory model I provide in this article are largely based on the lectures by Professor Harrington. Joseph Harrington, Course on Collusive Practices (July 2018), at 238–240, https://joeharrington5201922.github.io/pdf/Harrington_CRESE%20Lecture%20Slides_2018.pdf.

⁵¹ In Professor Harrington's leniency game, the conspirator's payoff under the strategic profile (not apply, not apply) is $P(F + D)$. This means the game assumes that conspirators need to pay both damages and a fine when convicted if no conspirator applies for leniency. The could only happen when a conspirator is penalized under both public and private enforcement. *See id.* at 238 (showing the payoffs of Harrington's leniency game).

⁵² In Professor Harrington's leniency game, in the strategic profiles (apply, apply), (apply, not apply) and (not apply, apply), the D s are not multiplied by P . This means the game assumes that the penalty in the form of damages is guaranteed after a leniency application. This could only happen when private parties always bring an action following a public conviction supported by a leniency application. *See id.* at 238 (showing the payoffs of Harrington's leniency game).

⁵³ *See* discussion in Part I (C).

actions at the same time (Part III (C)). Finally, based on these findings, I sketch some policy implications (Part III (D)).

II. THE BRIDGE BETWEEN ANTITRUST ENFORCEMENT AND LENIENCY PROGRAMS

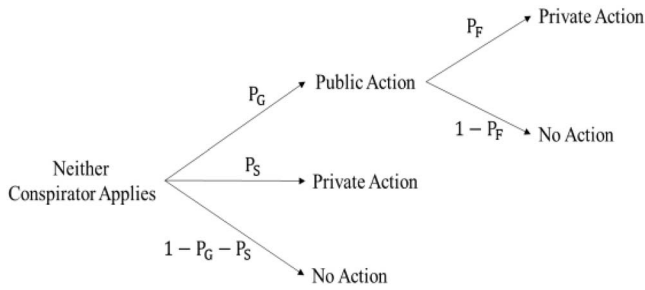
A. A Leniency Game

In this section, I introduce the revised game to reinvestigate the relationship between private antitrust enforcement and leniency programs in Part III. The setting of the strategic form game includes two conspirators (that is X and Y); after participating in a cartel, each faces the decision to *apply* or *not apply* for leniency from the government. The main variables that determine the conspirators' decision are: (i) probability of conviction in a public action (denoted as P_G), where $0 < P_G \leq 1$; (ii) fine resulted from public enforcement (denoted as F), where $F > 0$; (iii) probabilities of conviction in a private action under difference circumstances (denoted as P_L , P_F , and P_S), where $0 < P \leq 1$; and (iv) damages resulted from private enforcements (denoted as D), where $D > 0$. Based on the decisions of conspirators X and Y, one of the following three scenarios may occur.

Scenario 1: Only one of the two conspirators applies for leniency. When a conspirator applies for leniency and turns himself and the cartel in to the government, he will be immune from fines. With the information and evidence provided by the leniency recipient, the government would then sue the conspirator who did not apply for leniency and impose a fine. Once the government brings a suit against the nonapplicant in court, the cartel is exposed. Then, private individuals harmed by the cartel might file their own claims against the conspirators for damages. Note that a typical leniency program does not preclude private individuals from suing the leniency recipient. This means that each conspirator is liable for damages to the plaintiffs. Let us denote the probability that a conspirator is convicted by a court in a follow-on private action *that results from a leniency application* as P_L . Therefore, the payoffs of the conspirator who applies and that of the conspirator who does not are $P_L D$ and $(F + P_L D)$, respectively.

Scenario 2: Both conspirators apply for leniency. Leniency programs often have a "first-in-the-door" requirement, which means that only the first successful applicant can receive immunity from paying F .⁵⁴ This means that conspirators who submit a leniency application could still be liable for F . However, conspirators cannot find out whether they are the first applicant until they apply. In view of this, it is assumed that if both conspirators turn themselves in to the government, each one has an equal chance of being

⁵⁴ The United States' leniency program is an example. DEP'T OF JUSTICE, FREQUENTLY ASKED QUESTIONS ABOUT THE ANTITRUST DIVISION'S LENIENCY PROGRAM AND MODEL LENIENCY LETTERS 5–6 (2017 ed. 2008), <https://www.justice.gov/atr/page/file/926521/download>.

**Figure 1.**

the first in the door. Thus, each applicant should expect to pay half of F . The government action exposes the cartel, following which private individuals harmed by the cartel become aware and sue the conspirators for D . The probability of conviction here is the same as that in the previous scenario (that is P_L). Hence, the conspirators' payoff is $(F/2 + P_L D)$ when both apply for leniency.

Scenario 3: Neither conspirator applies for leniency. If neither conspirator applies for leniency, there could be four different outcomes, as shown in [Figure 1](#).

First, the cartel might not be convicted (that is the lowest branch of [Figure 1](#)). In this case, cartel members do not need to pay either a fine or damages. Next, if the cartel is convicted, initially, it could be due to either a private action (with a chance of P_S) or a public action (with a chance of P_G). After the first conviction, the government or private parties who did not participate in the initial case may file a follow-on case. However, for simplicity, I assume that after a first-round private action, antitrust authorities will not bring a follow-on action. This assumption is realistic because antitrust authorities' goal is usually to prevent and restrain antitrust violations, which is likely to have already been achieved by the initial private action.⁵⁵ Additionally, a follow-on public action does not benefit from an initial private action as much as a follow-on private action can from an initial public action. This discrepancy is due to differences in the standards of proof between criminal and civil cases. For instance, the U.S. Department of Justice (DoJ) criminally prosecutes cartels.⁵⁶ The DoJ in such cases must prove guilt "beyond a reasonable doubt."⁵⁷ In contrast, civil damage lawsuits brought against the same violations require a lower burden of proof, which is the "preponderance

⁵⁵ See *Am. Sales Co., LLC v. AstraZeneca LP*, 842 F.3d 34, 60 (2016) (FTC's comment on the difference between the interest behind private and public antitrust enforcement).

⁵⁶ Niall E. Lynch, *United States Antitrust Law, Policies & Procedures* (September 19, 2011), at 4–5, <https://www.lw.com/presentations/us-antitrust-law-policies-and-procedures>.

⁵⁷ *Id.* at 21.

		Conspirator Y	
		Apply	Not apply
Conspirator X	Apply	$\frac{F}{2} + P_L D, \frac{F}{2} + P_L D$	$P_L D, F + P_L D$
	Not apply	$F + P_L D, P_L D$	$P_G F + P_G P_F D + P_S D, P_G F + P_G P_F D + P_S D$

Figure 2.

of the evidence.”^{58,59} Therefore, it is possible for conspirators to first lose a private action but subsequently prevail in a public action. As a result, we seldom see follow-on public actions. Private actions that do not follow (and are not followed by) public action are known as standalone private actions. I denote the corresponding probability as P_S . In this case, conspirators need only pay D and not F .

As mentioned, without a leniency application, a cartel could also be first convicted in a public action with a probability of P_G and with that of P_F , it might also be convicted in a subsequent private action (that is a follow-on private action). When this is the case, cartel members need to pay both D and F . Alternately, with a probability of $(1 - P_F)$, the cartel is not convicted in a follow-on private action and only needs to pay F .

Combining the four possible outcomes described above shows that when no conspirator applies for leniency, the payoff of each conspirator equals $P_G P_F (D + F) + P_G (1 - P_F) F + P_S D + (1 - P_G - P_S)(0)$, which can be simplified to $P_G F + P_G P_F D + P_S D$.

Above is the payoff matrix of the revised game (Figure 2). Given that one conspirator does not apply for leniency, it is indefinite whether it is more or less costly for the remaining conspirator to *apply* (that is $P_L D$) rather than *not apply* (that is $P_G F + P_G P_F D + P_S D$). Therefore, under two different conditions, the game has different solutions. When determining the game’s Nash equilibria, one should keep in mind that the damages and fines are costs to the conspirators, so they prefer to *minimize* their payoffs.⁶⁰

First, when $P_G F + P_G P_F D + P_S D < P_L D$, this game has two equilibria—both conspirators apply for leniency, or both do not. Thus, there is an individual and common interest for the two players of this game to make the same

⁵⁸ *Id.* at 26.

⁵⁹ Similarly, in Canada, a higher standard of proof is required in criminal competition law cases (that is beyond a reasonable doubt) than in civil competition law cases (that is balance of probabilities). DAVIT D. AKMAN, PRIVATE COMPETITION LAW ACTIONS PRACTICAL LAW CANADA 1 (2017), https://blg.com/en/News-And-Publications/Documents/Private-Competition-Law-Actions_-_2017.pdf.

⁶⁰ Joseph Harrington (2018), *supra* note 51, at 238.

choice (that is a coordination game).⁶¹ A coordination game does not always reveal the equilibrium the players will settle on.⁶² However, in the existing game, when $P_{GF} + P_{GPFD} + P_{SD} < P_{LD}$, the payoff to each conspirator is lower when both do not apply (that is $P_{GF} + P_{GPFD} + P_{SD}$), compared with when they both apply (that is $F/2 + P_{LD}$). Hence, the conspirators want to coordinate on the Nash equilibrium (*not apply, not apply*).

Second, when $P_{GF} + P_{GPFD} + P_{SD} > P_{LD}$, both conspirators have a dominant strategy of applying for leniency and will always use it.⁶³ This creates a unique equilibrium in which both conspirators apply. Therefore, the conspirators will race for leniency. Although it could be in both's interest to not apply, this optimal outcome may not be achieved when both act on self-interest to follow their dominant strategy. Therefore, when $P_{GF} + P_{GPFD} + P_{SD} > P_{LD}$, the conspirators face the prisoner's dilemma.

In summary, the game presented above identifies that when $P_{GF} + P_{GPFD} + P_{SD} < P_{LD}$, conspirators want to coordinate on the equilibrium and both do not apply for leniency, whereas when $P_{GF} + P_{GPFD} + P_{SD} > P_{LD}$, they have a dominant strategy of applying for leniency. Considering this, we can derive an insightful policy implication: to encourage a race for leniency, legislators could change the strategic situation facing conspirators from a coordination game to prisoner's dilemma. To achieve this, legislators must find ways to turn condition $P_{GF} + P_{GPFD} + P_{SD} < P_{LD}$ into $P_{GF} + P_{GPFD} + P_{SD} > P_{LD}$ by altering the magnitude of the probabilities, damages or fine.⁶⁴ For example, the conspirators' strategic situation can be changed from a coordination game to a prisoner's dilemma by increasing fine⁶⁵ because an increase in F increases the value on the left-hand side of the inequality (that is $P_{GF} + P_{GPFD} + P_{SD}$). As a result, the inequality will lean towards the condition $P_{GF} + P_{GPFD} + P_{SD} > P_{LD}$, making conspirators more likely to race for leniency. Hereinafter, I refer to $P_{GF} + P_{GPFD} + P_{SD} > < P_{LD}$ as the "deciding inequality."

Intuitively, this inequality reveals that when a conspirator (for example X) decides whether to apply for leniency, assuming that the fellow conspirator (for example Y) will not apply, X compares his own cost of *applying* and *not applying*. On the one hand, if conspirator X chooses to apply, he faces liability of a follow-on action, which is expected to cost P_{LD} . On the other hand, if X does not apply, he faces liability of (1) only a public action, (2) both public

⁶¹ *Id.*; JOSEPH E. HARRINGTON, JR., *supra* note 82, at 107–8.

⁶² JOSEPH E. HARRINGTON, JR., *supra* note 82, at 108.

⁶³ *Id.*

⁶⁴ A similar policy implication is first presented by Professor Joseph Harrington with his original leniency game. The key difference between our works is the deciding inequality. Professor Harrington's inequality is $P(D + F) > < D$, whereas mine is $P_{GF} + P_{GPFD} + P_{SD} > < P_{LD}$. See Joseph Harrington (2018), *supra* note 51, at 240; JOSEPH E. HARRINGTON, JR., *supra* note 82, at 115 (the deciding inequality and policy implication presented by Professor Harrington).

⁶⁵ Joseph Harrington, Leniency Programs: Past Experiences and Future Challenges (December 13, 2010), at 11, https://joeharrington5201922.github.io/pdf/Harrington_AAL%20slides.pdf.

action and follow-on action, or (3) only a standalone action. As shown above, the expected cost of not applying is $P_G F + P_G P_F D + P_S D$. The rule of thumb is that when the cost of applying or not applying increases for conspirators, the alternative becomes more attractive. Therefore, when the relative cost of applying over not applying rises, they are discouraged from applying, while when the relative cost of applying drops, they are encouraged to apply.

B. Probabilities of Conviction in Detail

Before applying the leniency game to study the impact of private antitrust enforcement on leniency applications, it is essential to consider P_L , P_F , and P_S conspirators face and the differences among them.

First, I reason that each of these probabilities of conviction consists of three critical components. The first is the chance that the government or private parties detect the existence of the cartel (that is $P(\text{Detect})$). The next is the chance that the “informed” private parties file a lawsuit against the conspirators (that is $P(\text{Sue})$). It costs both money and time for victims to initiate and participate in litigation. If these costs outweigh the victims’ expected benefit from legal action (for example damages), they might give up on suing. The third component is the chance that private plaintiffs will eventually prevail in court (that is $P(\text{Prevail})$). Without any of these three components, there will be no conviction.⁶⁶

Second, I reason that the values of P_L , P_F , and P_S are not the same. To begin with, I assume that the P_F is larger than P_S for three reasons. First, if there is a public enforcement effort upfront, private parties are more likely to be aware of the existence of the cartel (that is $P_F(\text{Detect}) > P_S(\text{Detect})$).⁶⁷ Second, with the binding effect of criminal infringement decisions, plaintiffs in follow-on cases are more likely to prevail in court (that is $P_F(\text{Prevail}) > P_S(\text{Prevail})$).⁶⁸ Third, knowing that recovering damages from conspirators is less costly and more probable after public enforcement, victims are more eager to initiate litigation (that is $P_F(\text{Sue}) > P_S(\text{Sue})$). In short, a given conspirator is more likely to be detected, sued and convicted by a court in a private action if there is a public conviction upfront.

Further, I assume that P_L is larger than P_F for a few reasons. First, a leniency application exposes a cartel to the antitrust authority. Additionally, leniency applicants often need to provide concrete evidence on and admit participation in the cartel scheme.⁶⁹ Therefore, antitrust authorities are more likely to bring conspirators to justice when there is a whistleblower. In light of this, antitrust authorities are more eager to take action against the cartel in the first place if a leniency applicant blows the whistle. In addition, because a leniency application is more likely to result in successful public enforcement,

⁶⁶ Mathematically, P equals $P(\text{Detect}) \times P(\text{Sue}) \times P(\text{Prevail})$.

⁶⁷ See discussion in Part I (C).

⁶⁸ *Id.*

⁶⁹ INT’L COMP. NETWORK, *supra* note 5, at fn.1, 23&24.

victims are more likely to learn about the existence of the cartel, whether through administrative infringement decisions or court judgments (that is $P_L(\text{Detect}) > P_F(\text{Detect})$). Further, when there are leniency applications upfront, claimants may benefit from having the leniency documents collected by the antitrust authorities transmitted to civil courts.⁷⁰ These documents can help claimants establish causation between infringement and damages and determine damage amount.⁷¹ Therefore, plaintiffs in follow-on cases supported by leniency applications are more likely to prevail in court than those in follow-on cases without such documents (that is $P_L(\text{Prevail}) > P_F(\text{Prevail})$). Knowing that there is a higher chance of recovering damages and that the cost of doing so is lower, victims are more eager to initiate follow-on actions when there are leniency applications (that is $P_L(\text{Sue}) > P_F(\text{Sue})$). In short, a given conspirator is more likely to be detected, sued and convicted by a court in a follow-on private action if the action is supported by a leniency application.

Considering the analysis above as a whole, we obtain two important assumptions: (1) $P_L(\text{Sue}) > P_F(\text{Sue}) > P_S(\text{Sue})$ and (2) $P_L > P_F > P_S$. In the following section, I apply the leniency game to investigate the impact on leniency applications of legislators incentivizing private parties to sue. In doing so, I assume all other things are equal, including $P(\text{Detect})$ and $P(\text{Prevail})$. Thus, a percentage change of $P(\text{Sue})$ will result in the same percentage change of P . Thus, for example, when $P_S(\text{Sue})$ increases to $P_S(\text{Sue})K$ (where K is a multiplier larger than 1), P_S increases to P_SK at the same time.

III. IMPACT ON LENIENCY APPLICATIONS

Below, I apply the revised leniency game to different scenarios where more incentives are given to private cartel enforcement, investigating how such incentives would affect leniency applications.

A. Concerning Follow-on Private Actions

First, I examine how the number of leniency applications would respond if more incentives were provided for private parties to bring follow-on actions. There are many effective ways to promote follow-on actions. However, for this article, the critical question is not *what* measures are adopted to incentivize follow-on actions but rather *who* the victims targeted by these measures are. For instance, follow-on actions can be divided into two groups: follow-on actions that (a) result from leniency applications and (b) do not result from leniency applications. Therefore, when legislators design a policy to incentivize follow-on actions (for example providing legal aid to claimants), the incentive

⁷⁰ OECD, *supra* note 21, at 9.

⁷¹ *Id.*

can be provided for private parties in group (a) only, group (b) only or both groups (a) and (b). Below, we investigate how leniency applications would be affected in each scenario.

Scenario 4: Incentives are increased only for those bringing follow-on actions that result from leniency applications (that is group (a) only). Let us assume legislators introduce a new policy to incentivize follow-on actions; for example, by providing legal aid. However, instead of sponsoring all follow-on actions, we further assume that this new legal aid is only available for private cases that follow successful public enforcement resulting from leniency applications.

Applying our leniency game, the payoff matrix faced by conspirators is identical to that in Figure 2 before the new policy's introduction. All conspirators who have not applied for leniency perceive $P_G F + P_G P_F D + P_S D < P_L D$ and want to coordinate on the equilibrium, wherein both do not apply for leniency.⁷² Recall that for a given conspirator (for example X), the L.H.S. of this inequality corresponds to the cost of both not applying, whereas the R.H.S. corresponds to the cost of only the given conspirator applying.

After the introduction of legal aid, private parties are more eager to sue. To conspirators, this means they face a higher $P(\text{Sue})$. However, as defined, such legal aids can only be used in follow-on actions against cartels in which at least one conspirator applied for leniency. Thus, only $P_L(\text{Sue})$ and hence P_L on the R.H.S. of the inequality rises. Let us assume the new policy increases such chances by a multiplier K (for example when the increase is 20 percent, K equals 1.2). Therefore, the inequality faced by conspirators after policy change is $P_G F + P_G P_F D + P_S D < P_L D K$. Comparing the inequalities before and after change, only the R.H.S. increases, meaning that the relative cost of applying rises. As a result, conspirators would be more eager to coordinate on the equilibrium (*not apply, not apply*) and less willing to apply for leniency.

Scenario 5: Incentives are increased for any victims bringing follow-on actions, regardless of whether the actions result from leniency applications or not (that is both groups (a) and (b)). For this, we assume legislators provide incentives for private parties who bring a follow-on action regardless of whether there were leniency applications upfront. Similarly, before the new policy, all conspirators who have not applied for leniency perceive $P_G F + P_G P_F D + P_S D < P_L D$.

After the introduction of the incentive scheme, private parties would be more eager to sue. Unlike in the previous scenario, the incentive scheme can be used in *all* follow-on actions, regardless of an upfront leniency application. Thus, both $P_F(\text{Sue})$ and $P_L(\text{Sue})$ increase. Consequently, P_F on the L.H.S. and P_L on the R.H.S. rise. However, depending on the policy, P_F and P_L could rise disproportionately or proportionally.

Scenario 5.1: The case of a disproportional rise. One example of a policy

⁷² Conspirators who perceive $P_G F + P_G P_F D + P_S D > P_L D$ would have applied for leniency before the introduction of the new legal aid scheme.

with P_F and P_L rising disproportionately is reducing the costs of all follow-on actions equally, such as by subsidizing all follow-on actions for the same amount. Since $P_L(\text{Sue}) > P_F(\text{Sue})$, the percentage increase in $P_L(\text{Sue})$ will be less than that of $P_F(\text{Sue})$. Let us denote the change in $P_L(\text{Sue})$ and in $P_F(\text{Sue})$ as A and B , respectively (that is $1 < A < B$). This means that the new policy will cause the L.H.S. of the inequality to rise from $P_G F + P_G P_F D + P_S D$ to $P_G F + P_G P_F D B + P_S D$ and the R.H.S. to rise from $P_L D$ to $P_L D A$. In this case, it is unclear if there will be a net increase in L.H.S. or R.H.S. Hence, the impact is indefinite.

Scenario 5.2: The case of a proportional rise. One plausible example of a policy with P_F and P_L rising proportionally is extending the statutory limitation periods of all follow-on actions equally. If we assume that a new policy causes both P_F and P_L to increase proportionally by a factor of K , then the L.H.S. changes from $P_G F + P_G P_F D + P_S D$ to $P_G F + P_G P_F D K + P_S D$, whereas the R.H.S. changes from P_L to $P_L K$. By subtracting the inequalities before and after change, the L.H.S. increases $P_G P_F (K D - D)$ and the R.H.S. increases $P_L (K D - D)$. On comparing both increases, the increase on the R.H.S. is higher because early on, we assume that $P_L > P_F$ and defined P_G as a probability (that is $P_G < 1$). Therefore, the value of $P_G P_F$ falls short of P_L . A net increase on the R.H.S. means that conspirators' relative cost of applying rises. Therefore, the introduction of the new policy also raises their incentive to coordinate on the equilibrium (*not apply, not apply*), discouraging them from seeking leniency.

Scenario 6: Incentives are increased only for those bringing follow-on actions that do not result from leniency applications (that is group (b) only). Let us say lawmakers offer legal aid to private parties bringing a follow-on action that did not benefit from the leniency program. Again, before the introduction of the new policy, all conspirators who have not applied for leniency perceive $P_G F + P_G P_F D + P_S D < P_L D$. After the introduction of legal aid, private parties would be more eager to sue. This time, the legal aid could only be used in follow-on actions against cartels in which no conspirator applied for leniency. Therefore, only $P_F(\text{Sue})$ and hence P_F on the L.H.S. increases. If we assume the new policy causes P_F to increase by a factor K , then the L.H.S. rises to $P_G F + P_G P_F D K + P_S D$, whereas the R.H.S. remains $P_L D$. Comparing the inequalities before and after change, only the L.H.S. increases, meaning that conspirators' relative cost of applying drops. As a result, they will be more likely to race for leniency.

Takeaways: Our findings are consistent with those of the existing literature, since we also identify that follow-on actions *could* have a negative impact on leniency applications. Note that when commentators illustrate that private enforcement negatively impacts leniency applications, they focus on conspirators' chances of facing follow-on actions *after applying for leniency*.⁷³ As shown

⁷³ See discussion in Part I (C).

in Scenarios 4 and 5, under the revised leniency game, this chance corresponds to P_L on the R.H.S. The present analysis reveals that P_L is the source of the negative impact because its rise increases the expected cost of applying. Thus, conspirators are more interested in coordinating on the equilibrium (*not apply, not apply*).

However, we do not agree that incentivizing follow-on actions *always* generates a negative impact on leniency applications (that is Scenarios 5.1 and 6). Although this is unprecedented and not analyzed in the literature, legislators have the alternative to only incentivize victims who bring follow-on actions that do not result from leniency applications (that is Scenario 6). Doing so generates only a positive impact on leniency applications. In other words, when promoted properly, follow-on actions can be used as a tool to incentivize leniency applications. Part III (D) of this article explains the feasibility of legislators to design and implement targeted measures.

B. Concerning Standalone Private Actions

Scenario 7: Next, I investigate the impact on leniency applications when legislators offer more incentives for private individuals to bring standalone actions. For consistency, let us assume that the legislators offer legal aid to such private parties. Again, before the reform, all conspirators who have not applied for leniency perceive $P_G F + P_G P_F D + P_S D < P_L D$. Then, the introduction of legal aid specific to standalone actions would incentivize private parties to sue before there is any public enforcement. This new policy would cause P_S (Sue) and hence P_S to increase. If we assume it causes P_S to rise by a factor of K , then the L.H.S. rises to $P_G F + P_G P_F D + P_S DK$, whereas the R.H.S. remains $P_L D$. Comparing the inequalities before and after change shows only the L.H.S. increase. Thus, conspirators' relative cost of applying drops, making them more likely to race for leniency. This finding is consistent with Knight and Claire (2019) as introduced in the literature review.⁷⁴ Although unprecedented in the real world, legislators should consider measures to only incentivize standalone actions. These would be preferred over those that incentivize all follow-on actions (that is Scenario 5) because the former promotes leniency applications, whereas the latter might discourage applications. The feasibility of my proposal is analyzed in Part III (D).

C. Concerning Private Actions Generally

In practice, most policies encouraging private enforcement influence both follow-on and standalone actions at the same time. Hence, we must consider how conspirators respond when more incentives are given to private parties to sue generally.

⁷⁴ See discussion in Part I (C).

We assume that legislators provide incentives for all private parties who want to initiate antitrust litigation, meaning that the new policy does not discriminate between individuals bringing a follow-on or standalone action. Before the new policy, all conspirators who have not applied for leniency perceive $P_G F + P_G P_F D + P_S D < P_L D$. After the introduction of the incentive scheme, all private parties become more eager to sue, which means all $P(\text{Sue})$ increase. Consequently, P_F and P_S on the L.H.S. and P_L on the R.H.S. rise. Depending on the policy, P_F , P_L , and P_S could rise disproportionately or proportionally.

Scenario 8.1: The case of a disproportional rise. P_F , P_L , and P_S rise disproportionately if costs of all private actions are reduced for the same amount. Since $P_L(\text{Sue}) > P_F(\text{Sue}) > P_S(\text{Sue})$, the percentage increase in $P_L(\text{Sue})$ will be less than that of $P_F(\text{Sue})$, whereas the percentage increase in $P_F(\text{Sue})$ will be less than that in $P_S(\text{Sue})$. Let us denote the change in $P_L(\text{Sue})$, in $P_F(\text{Sue})$ and in $P_S(\text{Sue})$ as A , B , and C , respectively (that is $1 < A < B < C$). This means that the new policy will cause the L.H.S. to rise from $P_G F + P_G P_F D + P_S D$ to $P_G F + P_G P_F D B + P_S D C$ and the R.H.S. from $P_L D$ to $P_L D A$. In this case, it is unclear if there will be a net increase on the L.H.S. or R.H.S. Thus, the impact on leniency applications is indefinite.

Scenario 8.2.1: The case of a proportional rise. One plausible example of policy that causes P_F , P_L , and P_S rise proportionally is when the statutory limitation periods of all private actions are extended equally. If we assume that such new policy causes P_F , P_S , and P_L to increase proportionally by a factor of K , then the L.H.S. changes from $P_G F + P_G P_F D + P_S D$ to $P_G F + P_G P_F D K + P_S D K$, whereas the R.H.S. changes from $P_L D$ to $P_L D K$. By subtracting the inequalities, the L.H.S. increases $(P_G P_F + P_S)(K D - D)$ and the R.H.S. increases $P_L(K D - D)$. On comparing both the increases, the increase on the R.H.S. is higher because we assume that conspirators who have not applied for leniency perceive $P_G F + P_G P_F D + P_S D < P_L D$. By rearranging $P_G F + P_G P_F D + P_S D < P_L D$, we get $P_G P_F + P_S < P_L - (P_G F/D)$. Since our assumption implies that P_L after subtracting a positive value $(P_G F/D)$ is still larger than $P_G P_F + P_S$, it also implies that P_L itself is greater than $P_G P_F + P_S$. A *net* increase in the R.H.S. means that conspirators' relative applying cost rises, hence conspirators would be less eager to apply for leniency.

Scenario 8.2.2: The case of a proportional rise (continued). Resuming where we left off in the previous scenario, after initiating the scheme incentivizing all private antitrust actions, policymakers may continuously strengthen the scheme over time (t). We assume that every time the policymakers do so, it would again increase $P_S(\text{Sue})$, $P_F(\text{Sue})$ and $P_L(\text{Sue})$ by a factor of K . Since $P_S(\text{Sue})$, $P_F(\text{Sue})$, and $P_L(\text{Sue})$ are probabilities, their value cannot exceed one. Thus, the functions of $P_S(\text{Sue})(t)$, $P_F(\text{Sue})(t)$ and $P_L(\text{Sue})(t)$ are $\min\{P_S(\text{Sue})(0) \times K^t, 1\}$, $\min\{P_F(\text{Sue})(0) \times K^t, 1\}$, and $\min\{P_L(\text{Sue})(0) \times K^t, 1\}$, respectively.

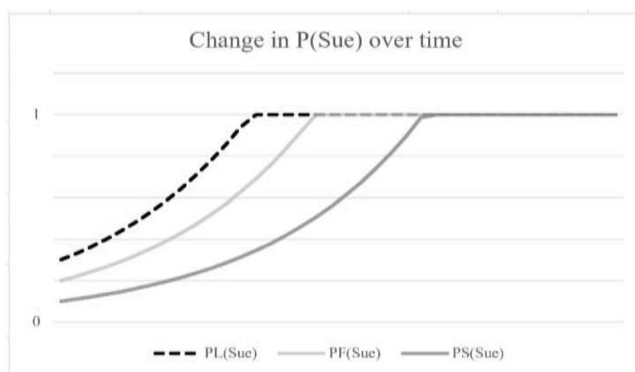


Figure 3.

Figure 3 presents three formulas to illustrate a property that prevails in all cases. Since I assume that $P_L(\text{Sue}) > P_F(\text{Sue}) > P_S(\text{Sue})$ before any government intervention (that is at $t = 0$),⁷⁵ $P_L(\text{Sue})(t)$ and $P_S(\text{Sue})(t)$ have the highest and lowest vertical intercepts, respectively. Given that $P_S(\text{Sue})$, $P_F(\text{Sue})$, and $P_L(\text{Sue})$ increase at the same rate K over time, $P_L(\text{Sue})$ maximizes at one before the others. Hence, there exists a stage where $P_L(\text{Sue})$ and P_L can no longer increase, while $P_F(\text{Sue})$, P_F , $P_S(\text{Sue})$, and P_S can. This means that the inequality conspirators face becomes $P_G F + P_G P_F D + P_S D < D$. In this stage, legislators further incentivizing private parties to sue merely causes P_F and P_S , and hence the L.H.S. to increase. In other words, conspirators' relative cost of applying drops, suggesting they are more likely to race for leniency.

Altogether, when $P_L(\text{Sue})$ is less than one, the negative effect of follow-on actions dominates, and incentivizing private actions generally and proportionally would discourage applications. After P_L reaches one, the positive effect of standalone and follow-on actions that do not result from applications dictate the situation, and incentivizing private actions would cause more conspirators to apply.

D. Policy Implications

In this section, two issues are addressed: first, how do these findings contribute to the literature and, second, what policy implications we can draw from these findings.

There are two camps of literature studying the relationship between private antitrust enforcement and leniency programs, with one camp focusing on follow-on actions' impacts and the other on standalone actions.⁷⁶ On the

⁷⁵ See discussion in Part II.

⁷⁶ See discussion in Part I (C).

one hand, consistent with the first camp, our findings show that follow-on actions can have a negative impact on leniency applications (Scenarios 4 and 5). However, we also identify a way to promote follow-on actions that encourages conspirators to seek leniency: only incentivizing follow-on actions that do not result from leniency applications (Scenario 6). Thus, we disagree that follow-on actions necessarily contradict leniency programs. On the other hand, regarding the literature that implies that standalone actions positively impact leniency applications,⁷⁷ our analysis reveals the same result (Scenario 7).

Further, our study introduces a leniency game that simulates the real world closely by assuming that private parties may bring either follow-on or standalone actions. This allows us, for the first time, to study the impact of private actions generally on applications. We find that when a jurisdiction incentivizes private antitrust enforcement generally and disproportionately, its impact on leniency applications is indefinite (Scenario 8.1). Additionally, as a jurisdiction first starts to incentivize private antitrust enforcement proportionally, conspirators are initially discouraged from applying for leniency (Scenario 8.2.1) but as the level of incentives grows, private enforcement promotes leniency applications (Scenario 8.2.2).

As analyzed, the view today is that private antitrust enforcement negatively impacts leniency applications. Thus, scholars and policymakers have been searching for ways to alleviate the problem by incentivizing leniency applications.⁷⁸ The most noteworthy proposal, adopted by multiple jurisdictions, is to reduce leniency recipients' liability in follow-on private actions.⁷⁹ For example, in the United States, under Section 4 of the Clayton Act of 1914, conspirators are liable for treble damages.⁸⁰ In 2004, the country passed the *Antitrust Criminal Penalty Enforcement and Reform Act* to reduce the civil liability of only the leniency recipient from treble to single damages.⁸¹ Similarly, in the E.U., for a long time, applicants were jointly and severally liable for all harm caused by the cartel in which they participated. The European Commission signed the *Directive 2014/104/EU on Antitrust Damages Actions*, which limits the joint

⁷⁷ *Id.*

⁷⁸ See INT'L COMP. NETWORK, *supra* note 5, at 30–1 (examples of ideas to incentivize leniency applications).

⁷⁹ See Jonathan Green & Iona McCall, *Leniency and Civil Claims*, COMP. L. INSIGHT 3, 2 (2009); Caroline Cauffman, *The Interaction of Leniency Programmes and Actions for Damages*, 7 COMP. L. REV. 181, 218–221 (2011); Damien Geradin & Laurie-Anne Grelier, *Cartel Damages Claims in the European Union: Have We Only Seen the Tip of the Iceberg?*, 11 CONCURRENCES REV. (2014) (examples of relevant studies).

⁸⁰ United States—Clayton Act, 15 U.S.C. §15 (1982).

⁸¹ In addition, the double damages avoided by the leniency recipient pass on to the remaining conspirators. JOSEPH E. HARRINGTON, JR., GAMES, STRATEGIES, AND DECISION MAKING 115 (2015).

and several liability of applicants to the harm they caused to their own direct and indirect purchasers only.⁸²

The abovementioned reforms could promote leniency applications because they reduce conspirators' relative cost of application.⁸³ However, these reforms are not ideal since they only ease the problem and do not solve or avoid it. Even after such implementations, further incentivizing private enforcement will discourage applications. To illustrate this, let us take a U.S. cartel conspirator's case. Owing to the 2004 reform, the conspirator is only liable for single damages if a victim sues him after seeking leniency. However, if the government starts to subsidize private actions (that is further incentivizing private enforcement), he will be less interested in whistleblowing because single damages are still costly and his chances of being sued thus paying single damages rise due to the new subsidy scheme. Therefore, he is discouraged by the new policy.

In 2016, some scholars proposed that the conflict between private enforcement and leniency programs can be resolved by totally eliminating applicants' civil liability and making the nonreporting conspirators jointly and severally liable for the harm.⁸⁴ I believe that this works as applicants no longer face the cost of private actions after blowing the whistle.⁸⁵ Let us say the United States adopts the proposal made in the 2016 study—leniency applicants have no civil liability under any circumstances. If the government subsidizes private actions, then he is more likely to be sued after applying. However, his expected damages from any follow-on actions remain the same—zero. Thus, he will not be discouraged from applying by the new policy. However, the 2016 study admits that its proposal increases victims' risk of not being fully compensated for the harm they suffer as the nonreporting conspirators might not be able to fully compensate without the help of the applicant (in case of bankruptcy).⁸⁶ Further, although not mentioned in the 2016 study, reducing the expected

⁸² European Comm'n, *The Damages Directive—Towards More Effective Enforcement of the EU Competition Rules*, COMP. POL'Y BRIEF 1, 4 (2015), https://ec.europa.eu/competition/publications/cpb/2015/001_en.pdf.

⁸³ Under my leniency game, this proposal reduces the D on the R.H.S. of the deciding inequality. This means that the relative cost of applying (over not applying) for leniency drops. Consequently, conspirators are encouraged to apply for leniency. *See* discussion in Part III (examples of the application of my leniency game).

⁸⁴ Paolo Buccirossi *et al.*, *Leniency and Damages* 13–5 & 25–7 (SITE Working Paper, 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2566774.

⁸⁵ Under my leniency game, such a proposal reduces the D on the R.H.S. of the deciding inequality to zero. Therefore, the R.H.S. of the inequality (that is $P_L D$) becomes zero. Consequently, further incentivizing private enforcement only increases the L.H.S. of the inequality, causing the relative cost of applying (over not applying) for leniency to decline. Consequently, conspirators are encouraged to apply for leniency. *See* discussion in Part III (examples of the application of my leniency game).

⁸⁶ Paolo Buccirossi *et al.*, *supra* note 85, at 20–2.

penalties of collusion could motivate firms to collude in the first place.⁸⁷ In other words, promoting leniency applications through penalty reduction might lead to a social welfare loss. This leads to a policy question: is it possible for countries to incentivize private actions and leniency applications at the same time and do so without any “side effects”?

The answer to the above question is positive; this can be achieved by lawmakers incentivizing (1) follow-on actions that do not come after a leniency application only (Scenario 6); (2) standalone actions only (Scenario 7); or (3) private actions generally and proportionally surpassing the stage where private parties always bring follow-on actions when there are leniency applications (Scenario 8.2). Note that approaches (1) and (2) can be adopted concurrently (that is a hybrid approach). For example, legislators may provide legal aid only to private parties who want to bring standalone actions or follow-on actions when there is no leniency application upfront. Since both approach (1) and (2) generate a positive effect on leniency applications, a hybrid approach would generate a greater positive effect than merely adopting either one of the approaches. Moreover, a hybrid approach is more effective than approach (3) in promoting leniency applications. This is because a hybrid approach only promotes leniency applications, whereas approach (3) might discourage most of the time. Therefore, a hybrid approach would start promoting leniency applications earlier and promote more leniency applications than approach (3).

It is practicable for legislators to design and implement policies that discriminate among different types of private plaintiffs. Let us say that legislators allow the legal aid department to subsidize standalone and follow-on actions that do not result from leniency applications (that is an example of a hybrid approach). When a potential claimant approaches the legal aid department for a subsidy, the department could verify eligibility in two steps: in step 1, the applicant is asked for the intended action’s details (for example the alleged illegal conduct and parties involved) and in step 2, send this information to the antitrust authority who must check, as of the date on which the potential claimant applies for the subsidy, (a) whether the authority has imposed an administrative decision against the cartel or convicted the cartel in court and, if so, (b) whether that action was supported by a leniency application. If the answer to question (a) is “no,” the subsidy applicant intends to bring a standalone action; hence, the action is eligible for subsidies. If the answer to both questions is “yes, no,” the applicant intends to bring a follow-on action unsupported by a leniency application; hence, the action is eligible for the subsidy. If the answer is “yes, yes,” the applicant intends to bring a follow-on

⁸⁷ See Massimo Motta & Michele Polo, *Leniency Programs and Cartel Prosecution*, 21 INT. J. IND. ORGAN. 347, 349&375 (2003) (a study that shows the trade-off between the deterrence and desistence effects of leniency programs).

action supported by a leniency application; hence, the action is not eligible for subsidies.

In fact, not only could the legal aid department and antitrust authority classify victims as standalone or follow-on claimants, victims do so themselves. They could hire a lawyer to research whether the antitrust authority has imposed an infringement decision against the cartel or if the cartel has been convicted. This information is usually publicly available on the authority's website or case law databases.⁸⁸ Further, victims can learn from administrative decisions, court decisions or case dockets which of the cartel members have applied for leniency.⁸⁹ Therefore, victims could self-determine their eligibility for a targeted policy.

IV. CONCLUSION

The dominant view today is that private antitrust actions discourage leniency applications. Such a view creates resistance to the development of private antitrust enforcement. This article revises a leniency game created by Professor Joseph E. Harrington to reassess the relationship between the two procedural devices. Applying the revised game, this article identifies that follow-on actions can positively impact leniency applications under certain circumstances and finds that standalone actions have a positive impact on leniency applications. Further, this article shows that when a jurisdiction incentivizes private enforcement generally, it can encourage leniency applications under certain circumstances as well. In view of these findings, this article recommends ways for legislators to use private enforcement as a tool to promote leniency applications.

⁸⁸ Take the United Kingdom as an example. The country's antitrust authority, the Competition and Markets Authority, provides a searchable database on its webpage that lists all the administrative decision the authority has made. See Comp. & Mkt. Auth., *Competition and Markets Authority Cases*, GOV.UK, <https://www.gov.uk/cma-cases> (last visited January 10, 2020).

⁸⁹ Again, using the United Kingdom as an example, the antitrust authority discloses in its administrative decisions if the authority has accepted a leniency agreement and, if so, from which conspirator(s). See COMP. & MKT. AUTHORITY, DECISION OF THE COMPETITION AND MARKETS AUTHORITY—SUPPLY OF PRODUCTS TO THE CONSTRUCTION INDUSTRY 239–240 (2019), https://assets.publishing.service.gov.uk/media/5dfb98e7cd915d54a62419a6/Non-confidential_decision_201219_----.pdf (an example of the authority's written decision).