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THIRD-PARTY FINANCING AND LITIGATION EXPENDITURES

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INTRODUCTION

Over the last years, third-party financing (TPF) of litigation[1] has received considerable attention from both legal commentators and economists. Legal commentators have mainly

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1. Also called third-party funding of litigation. We will use both terms interchangeably throughout the article.

examined whether third-party litigation financing agreements violate the common law doctrines of maintenance and champerty.[2] Economists have investigated whether allowing third parties to finance litigation will result in the filing of more lawsuits,[3] encourage the filing of frivolous claims,[4] discourage settlement,[5] remedy the imbalance of power that favours defendants in settlement negotiations,[6] whether class actions magnify the potential effects,[7] etc. One aspect which has been largely overlooked however is how third-party financing may affect the litigation expenditures in individual cases. It is often claimed that third-party financing increases total litigation costs, but this is largely based on the expectation that TPF increases the volume of litigation, rather than the costs of individual cases. An examination of this issue is warranted given that third-party financing influences several elements which have an impact on the parties' litigation efforts and thus on the social costs of litigation. One prominent effect is the relaxation of budget constraints.[8] In this article, we use rent-seeking theory to examine how the relaxation of budget constraints influences the litigation expenditures of the parties. Rent-seeking models are increasingly used to study the behaviour of liti-

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2. The United States Supreme Court defines maintenance as "helping another prosecute a suit" and champerty as "maintaining a suit in return for a financial interest in the outcome." *See In re* Primus, 436 U.S. 412, 124 n.15 (1978). Although there have been few prosecutions for champerty or maintenance in the last century, the doctrines are still considered valid in the U.S. By contrast, most Australian states have abolished those doctrines. *See* Daniel L. Chen & David S. Abrams, *A Market for Justice: the Effect of Litigation Funding on Legal Outcomes*, 15 U. PA. J. BUS. L. 1075, 1083 (2013) [hereinafter Chen & Abrams, *A Market for Justice*].

3. *See, e.g.*, Paul H. Rubin, *Third-Party Financing of Litigation*, 38 N. KY. L. REV. 673, 681–85 (2011); Chen & Abrams, *A Market for Justice, supra* note 2.

4. *See, e.g.*, Isaac Marcushamer, Note, *Selling Your Torts: Creating a Market for Tort Claims and Liability*, 33 HOFSTRA L. REV. 1543, 1604 (2005); Rubin, *supra* note 3.

5. *See, e.g.*, Jason Lyon, *Revolution in Progress: Third-party Funding of American Litigation,* 58 UCLA L. REV. 571, 595 (2010); Jonathan T. Molot, *A Market in Litigation Risk*, 76 U. CHI. L. REV. 367 (2009).

6. *See, e.g.*, Susan Lorde Martin, *Litigation Financing: Another Subprime Industry that Has a Place in the United States Market*, 53 VILL. L. REV. 83, 84–85 (2008).

7. *See, e.g.*, Deborah R. Hensler, *Third-Party Financing of Class Action Litigation in the United States: Will the Sky Fall?*, 63 DEPAUL L. REV. 499, 509–16 (2014).

8. *See, e.g.*, Chen & Abrams, *A Market for Justice, supra* note 2, at 1077.

gants during trial.[9] These models take into account that the parties can influence their probability of success by investing more effort in finding factual evidence and legal arguments in their favor (e.g. through letting their lawyer work more hours on the case). These models add reality to the economic theory of litigation. They have delivered several theoretical results that have been empirically confirmed.[10] In this essay we show that, in contrast to what intuition may suggest, relaxing budget constraints does not necessarily increase litigation expenditures. Due to strategic interaction between the parties, depending inter alia on the strength of the claim, expenditures under TPF may either decrease or increase. Interestingly, expenditures are more likely to decrease for meritorious suits and more likely to increase for relatively weak cases.

This article unfolds as follows: In the next section (I), we explain how economic models predict the effort levels of the parties and the various elements that influence the expenditures. We also discuss the empirical support for these theories. Section II examines how third-party financing may influence key determinants of litigation effort. Section III contains a formal model, and section IV discusses the findings of our model.

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9. *See, e.g.*, Jef De Mot, *Comparative Versus Contributory Negligence: A Comparison of the Litigation Expenditures*, 33 INT'L REV. L. & ECON. 54 (2013); Jef De Mot & Thomas J. Miceli, *Comparing All-or-Nothing and Proportionate Damages: A Rent-Seeking Approach*, 11 REV. L. & ECON. 1 (2015) [hereinafter De Mot & Miceli, *Comparing All-or-Nothing*]; Amy Farmer & Paul Pecorino, *Legal Expenditures as a Rent-Seeking Game*, 100 PUB. CHOICE 271 (1999); Jack Hirshleifer & Evan Osborne, *Truth, Effort, and the Legal Battle*, 108 PUB. CHOICE 169 (2001); Avery Katz, *Judicial Decisionmaking and Litigation Expenditure*, 8 INT'L REV. L. & ECON. 127 (1988); Francesco Parisi & Barbara Luppi, *Litigation as Rent Seeking*, *in* COMPANION TO THE POLITICAL ECONOMY OF RENT SEEKING 293 (Roger D. Congleton & Arye L. Hillman eds., 2015); Jef De Mot, Barbara Luppi & Francesco Parisi, *Are Sequential Trials Really Better than Unitary Trials?*, (June 8, 2015) (unpublished manuscript), http://economix.fr/pdf/workshops/2015_law_economics/BLuppi.pdf.

10. *See infra* Section I.B; *see also* Jef De Mot, *Litigation Success Functions*, *in* RESEARCH HANDBOOK ON ECONOMIC MODELS OF LAW 165 (Thomas J. Miceli & Matthew J. Baker eds., 2013) [hereinafter De Mot, *Litigation Success Functions*].

I.
The Economics of Litigation Expenditures

In order to understand the effect of TPF on the effort levels of the parties and on the likelihood that the particular suit will be brought, we will first present the simple economic model of litigation, explaining that the success rate of the plaintiff (for example a victim in a tort case) will depend upon the efforts invested by that plaintiff in convincing the court of the merits of his case. Obviously, the final outcome will equally depend upon similar efforts taken by the defendant. We discuss this in subsection A. Next we will review the empirical literature which has tested the extent to which the theoretical model can be relied upon (e.g. what is the relationship between the amount at stake and the effort levels of the parties, and can we empirically establish what theory predicts about the behavior of the parties?). This is done in subsection B. Finally, subsection C provides a brief summary.

A. *Litigation Success Functions*

If we want to predict how much effort a litigant will spend to convince the court and what the key determinants of these effort levels are, we need an explicit function for the probability of a plaintiff victory. In the literature, these litigation success functions usually take the following form:

$$P(X,Y) = \frac{XF}{XF + Y(1-F)} = \frac{\left(\frac{X}{Y}\right)F}{\left(\frac{X}{Y}\right)F + (1-F)}$$

The plaintiff wants to maximize her or his expected value, which equals the probability of winning times the amount at stake, minus her or his litigation expenditures (which are equal to the litigation effort times the unit costs of litigation):

$$EV_{pl} = p(X,Y)J - C_pX$$

The defendant wants to minimize her or his expected loss, which equals the probability of winning times the amount at stake, plus her or his litigation expenditures:

$$EV_{def} = p(X,Y)J + C_dY$$

with X and Y the effort levels[11] of the plaintiff and the defendant respectively, F the degree of defendant fault (with 0<=F<=1; this can also be seen as the inherent quality of the case), J the monetary stakes of the case (e.g. if the plaintiff wins, the court will award an award of J = $100,000), and C_p and C_d the unit costs of the plaintiff and defendant respectively (e.g. the hourly fee of the lawyer).[12] One could think of the simple example of a tort victim who suffered harm as the result of a traffic accident and who wishes to bring a lawsuit against the defendant. The likelihood of success of the victim will depend upon the efforts the victim spends in convincing the judge of the merits of his case, (for example providing declarations and testimony of witnesses who were present at the scene of the accident). This we denote as X. It equally depends upon the efforts taken by the defendant who could obviously equally invest in finding arguments that deny the claim of the plaintiff, which is denoted at Y. F (the defendants fault) represents the inherent merit of the claim. A value of F close to 0 represents a claim with virtually no merit, a value of F close to 1 represents a very strong claim. For example, if the defendant drove much faster than legally allowed, F would be close to 1.

This function (the relationship between the probability of success and the factors X, Y, and F) obviously has the following features:[13] (1) The determinants of success include both the degree of defendant fault and the litigation effort of the par-

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11. It is easiest to think of effort levels as the number of hours spent on a case.

12. Interestingly, the formula for the plaintiff's win rate can be derived in four different ways: stochastic, axiomatic, optimally-derived, and microfounded. *See* Hao Jia et al., *Contest Functions: Theoretical Foundations and Issues in Estimation*, 31 INT'L J. INDUS. ORG. 211 (2013). In stochastic derivations, effort is a noisy contributor to some output, and the outcome of the contest is determined by a comparison of the outputs of the players. Axiomatic derivations link combinations of axioms to functional forms. In optimal design derivations, a designer with specific objectives about effort or other variables designs the contest, and the functional form is then a result of such a design. Microfounded derivations derive contest functions by characterizing environments in which they naturally emerge as win probabilities of the contestants (e.g. incomplete information, search-based and Bayesian foundations); *see also* De Mot, *Litigation Success Functions*, *supra* note 10.

13. *See* Hirshleifer & Osborne, *supra* note 9.

ties;[14] (2) The probability of a plaintiff victory depends on the ratio of the effort levels, hence the term "ratio form" is used for this functional form; (3) For a very close case (F=1/2), the outcome at trial depends only upon the litigation efforts; (4) Given equal efforts, the outcome depends only on the degree of fault; (5) If the defendant is totally in the wrong (F=1), she always loses as long as the plaintiff makes some effort (X>0); and (6) If the defendant is totally without fault (F=0), she always wins as long as she makes some effort (Y>0).

B. *Are These Functions Realistic?*

Several articles that rely on these litigation success functions have produced results that have been empirically confirmed.[15] It is important to stress that the literature indicates that the relationship between the several factors we have indicated above (X, Y, and F) is quite accurate in many respects. More particularly, the literature has examined how these various elements are related to each other, that is how they mutually influence each other. A first example concerns "strategic reciprocality."[16] To describe this phenomenon, it is necessary to introduce some definitions. A party's effort is called *provocative* when a marginal increase in her effort leads to an increase in her opponent's effort.[17] A party's effort is called *deterring* when a marginal increase in her effort leads to a decrease in her opponent's effort. The *favorite* is the party with a greater than fifty percent probability of winning, and the *underdog* is the party with a less than fifty percent probability of winning. Strategic reciprocality means that at the (Nash) equilibrium one party's effort is provocative and one party's effort is deterring. The models using the ratio form lead to such a result: the

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14. The final outcome of the case will obviously depend upon the merit of the case (F), but also upon the efforts taken by victim (X) and defendant (Y) to convince the judge.

15. *See, e.g.*, George B. Shepherd, *An Empirical Study of the Economics of Pretrial Discovery*, 19 INT'L REV. L. & ECON., 245 (1999); James S. Kakalik et al., *Discovery Management: Further Analysis of the Civil Justice Reform Act Evaluation Data*, 39 B.C. L. REV. 613, 648 (1997–1998); Thomas E. Willging et al., *An Empirical Study of Discovery and Disclosure Practice Under the 1993 Federal Rule Amendments*, 39 B.C. L. REV. 525, 532 (1997–1998).

16. Katz, *supra* note 9.

17. One can think of the example where the plaintiff comes with one additional witness, thus leading to additional efforts of the defendant as well (for example, providing a report by an expert in traffic accidents).

effort of the favored party is deterring and the effort of the underdog is provocative. In other words, the underdog will spend less when the favored party increases his effort, and the favored party will spend more when the underdog increases his effort. This can be explained intuitively. When the favored party increases his effort, the case becomes even less close. It becomes less worthwhile for the underdog to spend more. When the underdog increases his effort, the case becomes a closer one. It becomes more worthwhile for the favorite to spend more. Shepherd made an empirical study[18] of the economics of pretrial discovery in 1999.[19] His findings are in accordance with strategic reciprocality. The author examined 369 United States federal cases in which the attorneys of *both* sides provided information about the number of days they devoted to seeking discovery.[20] Further information was available through court docket sheets and written questionnaires. Shepherd found that plaintiffs and defendants behave very differently when conducting discovery. When the plaintiff engages in excessive discovery,[21] the defendant retaliates. The plaintiff on the contrary retreats when the defendant engages in excessive[22] discovery.[23] Note that the result of Shepherd implies

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18. Shepherd, *supra* note 15. Shepherd uses data from a survey that researchers at Columbia University conducted in 1962 and 1963 to assess the consequences of the discovery provisions in the Federal Rules of Civil Procedure. The author argues that the data is still relevant despite its age (over forty years). This is because the discovery rules have not changed substantially after the survey. Although approximately one third of the states introduced a requirement of automatic disclosure, discovery not within the scope of automatic disclosure is still subject to the 'old' rules. Moreover, about two thirds of states still follow the system without automatic disclosure.

19. During pretrial discovery, the parties can force each other to disclose documents and other evidence relevant for the case.

20. With exclusion of the days the litigant devoted to responding to the requests of the other party.

21. Excessive according to the defendant.

22. Excessive according to the plaintiff.

23. *See* Shepherd, *supra* note 15, at 260. Shepherd also looks at 'normal' (contrary to excessive) discovery behavior: plaintiffs choose an amount of discovery that reflects the case's underlying fundamentals, like the amount at stake or the number of factual issues. They do not raise their level of discovery when the defendant increases his discovery effort. The defendant however does not look at the fundamentals of the case, but rather mimics the plaintiff: when the plaintiff chooses one unit of discovery, he chooses one unit of discovery himself.

that discovery may produce efficiency and justice since the plaintiff bases his discovery amount on the fundamentals of the case. At the same time, the fact that the defendant behaves strategically without looking at the fundamentals of the case directly leads to social waste and injustice.[24]

A second result that has been empirically validated concerns the influence of an increase in the (monetary) stakes on the expenditures of the parties. In theoretical models that use the ratio form, an increase in the stakes (e.g. when we look at cases in which the damage is $200,000 instead of $100,000) induces both parties to increase their effort since the marginal value of effort rises. Increased stakes lead to an increase in expenditures. Empirical studies have indeed found a strong correlation between the stakes and the efforts of litigants. Kakalik found that "higher stakes are associated with significantly higher total lawyer work hours, significantly higher lawyer work hours on discovery, and significantly longer time to disposition."[25] More exactly, "median total lawyer work hours were more than two and a half times larger for cases with monetary stakes over $500,000 than for cases with monetary stakes of $500,000 or less, while mean total lawyer work hours were almost four times larger."[26] Willging found that "the size of the monetary stakes in the case had the strongest relationship to total litigation costs of any of the characteristics we studied."[27]

Third, in its simplest version, $P(X,Y) = \frac{X}{X+Y}$, the model predicts that each party spends one fourth of the amount at stake in litigation expenditures. Also in the more complex case of $P(X,Y) = \frac{FX}{FX+(1-F)Y}$, each party spends approximately one fourth of the amount at stake if the case is a close one ($F \approx 1/2$). This result has been shown to be valid in experimental simulations. More concrete, Eastman and Viswanath analyze the litigation expenditure decisions of parties in a setting in which litigants believe that they can outsmart, (or be out-

24. *See* Shepherd, *supra* note 15, at 263.
25. Kakalik et al., *supra* note 15, at 648.
26. *Id.*
27. Willging et al., *supra* note 15, at 532.

smarted by,) the other litigant in making spending decisions.[28] Litigants were told that their probability of victory was equal to the ratio of their effective litigation spending to that of the other side. The instructions explained that effective litigation spending could be equal to actual dollars spent, but could also be higher or lower than actual spending. The litigants were told that the effectiveness of their spending would be determined based on an outside evaluation. The case involves a car accident with stipulated damages of $100,000. Litigants were given the option of spending on several categories (e.g., legal research, hiring a detective, etc.). They were not given the opportunity to settle the case. The authors found that the respondents spent an average of $30,000, which is relatively close to and statistically not different from the prediction of the rational choice theory described above, which would put expenditures at one fourth the amount at stake in the litigation, $25,000.

Fourth, the model predicts that when the parties have more or less equal access to evidence, the plaintiff will spend the same amount as the defendant (for any given case quality). This finds some confirmation in the experimental study of Eastman and Viswanath (2003).[29] In most cases, the parties spent a similar amount.

II.
High Costs, Budget Constraints and Their Consequences

A. *The Costs of Civil Cases*

High levels of litigation costs are a concern in the United States as well as in Europe. In the United States, in cases with one or more types of discovery, median litigation costs, including attorneys' fees, are $15,000 for plaintiffs and $20,000 for defendants.[30] In Europe, the average cost of a civil case varies enormously among countries. For example, the cost of a simple divorce case amounts to 248 Euros in Hungary, but equals

28. Wayne Eastman & P.V. Viswanath, *Repeated Interaction, Deep Pockets and Litigation Spending*, (Mar. 1, 2003) (unpublished manuscript), http://webpage.pace.edu/pviswanath/research/papers/litigation.pdf.

29. *Id.*

30. Emery G. Lee III & Thomas E. Willging, Preliminary Report to the Judicial Conference Advisory Committee on Civil Rules 35–36 (2009), http://www.fjc.gov/public/pdf.nsf/lookup/dissurv1.pdf/$file/dissurv1.pdf.

4000 Euros in Italy; for a relatively simple commercial contract case, in which a company delivered goods for an amount of 20,000 Euros and was not paid because the buyer considers that the goods were not in conformity, costs vary between 800 Euros (Slovenia) and 9477 Euros (Austria).[31] Note that median and average costs obscure the fact that for certain categories of cases, costs are typically much larger.[32] For example, Polinsky and Shavell discuss the high costs of the product liability system: "[f]or each dollar that an accident victim receives, two dollars of legal expenses are incurred. In all, the tort system and thus the product liability system is very expensive."[33] For every dollar paid in compensation to a victim, at least one dollar is paid in litigation costs.[34] According to the Lawyers for Civil Justice, outside legal fees and costs for Fortune 200 companies increased from an average of $66 million in 2000 to nearly $115 million in 2008.[35] Costs are also quite high in England.[36] A report drafted by Lord Justice Sir Rupert Jackson, entitled Review of Civil Litigation Costs,[37] provides an overview of the relationship between the costs paid to claim-

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31. *See* Demolin Brulard Barthelemy, STUDY ON THE TRANSPARENCY OF COSTS OF CIVIL JUDICIAL PROCEEDINGS IN THE EUROPEAN UNION, at 287–289, 291293, https://e-justice.europa.eu/content_costs_of_proceedings-37-en.do.

32. For many disputes, the costs are much lower. For an older study, see David M. Trubek et al., *The Costs of Ordinary Litigation*, 31 UCLA L. REV. 72, 92 (1983). The authors found that the legal fees in the world of ordinary litigation were modest. In half the cases the nominal fees were under $1000; only in 8% of the cases were fees larger than $10,000.

33. A. Mitchell Polinsky & Steven Shavell, *The Uneasy Case for Product Liability*, 123 HARV. L. REV. 1437, 1470 (2010).

34. *Id.* Similar findings are presented by Johnny Hersch & W. Kip Viscusi, *Tort Liability Litigation Costs for Commercial Claims*, 9 AM. L. & ECON. REV. 330 (2007).

35. LAWYERS FOR CIVIL JUSTICE ET AL., LITIGATION COST SURVEY OF MAJOR COMPANIES 7 (2010), https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwjSxMqh0q_LAhWEqh4KHeCzAI4QFggdMAA&url=http%3A%2F%2Fwww.uscourts.gov%2Ffile%2Fdocument%2Flitigation-cost-survey-major-companies&usg=AFQjCNHgUXsuDpsCZjhpXZW-C-gSxeXbnA&sig2=dPh050zg75x5JiC4FckCRg&cad=rja. Note figure 3, showing that not every Fortune 200 company reported costs to the LCJ. *Id.*

36. Note that England has a system of fee shifting.

37. *See* Rupert Jackson, REVIEW OF CIVIL LITIGATION COSTS: FINAL REPORT (2009), https://www.judiciary.gov.uk/wp-content/uploads/JCO/Documents/Reports/jackson-final-report-140110.pdf.

ants and damages. The report[38] distinguishes between cases in which conditional fee arrangements (CFA) apply and cases in which such arrangements do not apply.[39] With respect to district court cases, claimant costs amounted to approximately 158% of damages in CFA cases won by claimants. In non-CFA cases, claimant costs amounted to approximately 51% of damages.[40] Regarding circuit court cases, the total costs paid to claimants were on average 203% of the damages paid to the claimants in CFA cases. In non-CFA cases, the total costs paid to claimants were on average 55% of the damages paid to claimants.[41] Further interesting data comes from insurers concerning personal injury claims. The average costs in cases worth below £5000 that were settled amounted to almost three time the average damages. Average costs also exceeded average damages in claims between £5000 and £15,000. For claims of very high value (over £100,000), costs were more proportionate (just over 20% of damages on average).[42] So especially for plaintiffs with relatively small claims (up to £15,000), the costs of claiming may be prohibitive.[43]

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38. The report is based *inter alia* on Hazel Genn, REVIEW OF CIVIL LITIGATION COSTS: PRELIMINARY ANALYSIS OF COSTS DATA (2009), https://www.ucl.ac.uk/laws/judicial-institute/events/Jackson_Costs_Review_Preliminary_Analysis_of_Costs_Data_.pdf.

39. A CFA is an agreement in which a lawyer agrees with his or her client to be paid a success fee in the event of the client's claim succeeding, and the success fee is not calculated as a proportion of the amount recovered by the client. A typical example of a CFA is a 'no win, no fee' agreement.

40. Jackson attributes this difference partly to the type of cases CFAs attract.

41. JACKSON, *supra* note 37, at 16.

42. JACKSON, *supra* note 37, at 18.

43. Many other studies confirm the high costs of the tort litigation system. Most of those studies refer to defendants' costs. For an overview see Ben C.J. van Velthoven, *Empirics of Tort*, *in* TORT LAW AND ECONOMICS, 470–71 (Michael Faure ed., 2009). With respect to the Netherlands, Croes and Van Os provide a detailed analysis of the costs of litigation for plaintiffs and discuss an example in which a plaintiff has a conflict with a shop concerning particular furniture with which he was not satisfied and which has a value of €3000. They estimate that the total costs for the plaintiff could amount to €2192.02. If the plaintiff were to win and the defendant convicted to pay the plaintiff's costs, the defendant would pay a maximum of only €875, still leaving the plaintiff with substantial costs. If the plaintiff were to lose, in addition to having to pay his own costs, he could equally be convicted to pay the costs of the defendant (up to a maximum of €875). In the latter case, his total costs could be higher than the value of the furniture he

B. *Budget Constraints*

Logically, the more substantial the costs of litigation are, the higher is the chance that individuals will not have sufficient wealth or liquid assets to pursue a claim. Unsurprisingly, experts estimate that four-fifths of people with low income in the United States have no access to an attorney when they need one.[44] However, budget constraints are not only a problem for individuals, but also for some companies. Consider two companies who are litigating over a failed business venture.[45] For one company, the business venture was one of many it pursues each year and the amount at stake is just a small fraction of the company's assets. For the other company however, the business venture was central to the company's development and all of its financial resources were devoted to it. While the large company will often be able to hire the best counsel money can buy, the smaller company will likely be unable to gather the financial resources necessary to hire top counsel to litigate the case.

C. *Consequences of High Costs and Budget Constraints*

There are two important consequences of the fact that litigation is (sometimes very) costly. First, many claims cannot be brought to court because their expected benefit (the probability of winning multiplied by the award in case of a victory) is smaller than their costs.[46] In other words, these claims have negative expected value. From a societal point of view, this is not a problem for weak cases, but many meritorious cases also suffer from this problem. When deserving plaintiffs do not bring suit they go uncompensated. This lowers the expected cost of engaging in activities that pose a risk to individuals with low wealth, which results in suboptimal deterrence of

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purchased. *See* M.T. Croes & R.M.V. van Os, *De kosten van procedures: Gedragskeuzen in de delta van geschillenbeslechting*, WODC MEMORANDUM 2012-7, at 29, https://www.wodc.nl/onderzoeksdatabase/2115-kosten-van-een-rechtszaak.aspx?cp=44&cs=6800.

44. Editorial, *Addressing the Justice Gap*, N.Y. TIMES, Aug. 23, 2011, at A22.

45. For a similar example, see Jonathan T. Molot, *The Feasibility of Litigation Markets*, 89 IND. L.J., 175–76 (2014).

46. Note that since lawsuits often involve a lot of uncertainty for claimants, even cases in which the statistically correct expected benefit of the case is larger than the costs may not be brought because of risk aversion.

wrongful behavior in such activities.[47] Rubin and Shepherd find indeed that there is less deterrence of wrongful behavior directed towards lower income groups.[48]

Second, even when claims have positive expected value, a plaintiff may be unable to pursue the claim because he or she does not have the minimal funds required to do so. Similarly, a plaintiff may have enough funds to bring the claim to court, but not enough funds to invest in the case as vigorously as he or she would have absent the budget constraint (X in the model above). That is the point we will develop in sections III and IV. Suboptimal investment or a complete lack of investment may once again result in meritorious cases going undercompensated, with suboptimal deterrence as a consequence. Here, third-party financing can play an important role by removing the budget constraint. With respect to Burford, one of the largest providers of capital for litigation and arbitration in the world, Molot (2014) writes: "[a]lthough Burford's capital has been used by different businesses for different purposes, as a general matter Burford's financing has enabled those businesses to retain higher-quality counsel and/or mount a more vigorous prosecution of a case than would have been pursued in some form even without Burford financing. Each of the lawsuits that Burford financed likely would have been pursued in some form even without Burford financing."[49]

We now turn to the question how budget constraints affect the parties' investment in litigation and the plaintiff's expected value.

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47. *See* Joseph Franaszek, *Justice and the Reduction of Litigation Costs: A Different Perspective*, 37 RUTGERS L. REV. 337 (1985).

48. Paul H. Rubin & Joanna M. Shepherd, *The Demographics of Tort Reform*, 4 REV. L. & ECON. 591, 615–16 (2008). For a general analysis of a failing deterrent effect of the tort system in particular circumstances, see Steven Shavell, *Liability for Harm versus Regulation of Safety*, 13 J. LEGAL STUD. 357 (1984); see also Michael Faure & Franziska Weber, *Dispersed Losses in Tort Law – An Economic Analysis*, 6 J. EUR. TORT L. 163 (2015) and, with an application to consumer law, see Michael Faure, Anthony Ogus & Niels Philipsen, *Curbing Consumer Financial Losses: the Economics of Regulatory Enforcement* 31 L. & POL'Y 161, 181–82 (2009).

49. Molot, *supra* note 45, at 179–80.

III.
THE MODEL

We first describe the structure of the game-theoretic model. Note that all symbols we used before retain their original meaning. The model in this section adds to the existing literature by looking at the consequences of a budget constraint (B). Both parties select their level of legal effort (X for the plaintiff and Y for the defendant) once and simultaneously. The effort levels are investments made to persuade a fact-finder. The amount at stake equals J. Both parties are assumed to be risk-neutral. Each contender aims to maximize his or her expected income. Each party is assumed to be responsible for his or her own legal expenses regardless of the outcome (the American rule of cost allocation applies).[50] The degree of defendant fault (or actual merit of the claim), F, is known by both litigants.[51] Without third-party financing, the plaintiff faces a budget constraint: his expenditures are capped at B. Hence, B is the amount that the plaintiff has at his or her disposal to finance the claim. The defendant does not face a budget constraint. The unit cost of effort equals C_p for the plaintiff and C_d for the defendant. The expenditures of the plaintiff thus equal C_pX and of the defendant C_dY. We obtain solutions for the litigation efforts under the Nash–Cournot protocol (which means that the parties choose their effort levels simultaneously, thus neither party knows the effort level of the other party when choosing her or his own effort level).[52]

The plaintiff wants to maximize her or his expected value:

$$EV_{pl} = \frac{XF}{XF + Y(1-F)} J - C_p X$$

50. This implies that each party bears his or her own litigation cost, irrespective of the outcome of the case.

51. This can be justified by supposing that the facts of the case are made public during pre-trial discovery. An extension of the model could deal with the situation in which the parties hold different views of F or J (e.g. the parties are relatively optimistic).

52. An extension could deal with the situation of bluffing. One party would then choose his level of effort first, and the other party then needs to respond to that effort level. In such a case, the Stackelberg equilibrium concept can be used. Since the plaintiff is the one that initiates a lawsuit, it may be natural to assume that he will often be the one that chooses his effort level first.

with $X \leq B$

The defendant wants to minimize her or his expected loss:

$$EV_{def} = \frac{XF}{XF + Y(1-F)} J + C_d Y$$

We first look at the equilibrium expenditures[53] of the parties when the plaintiff does not face a budget constraint.

The first-order conditions are (these conditions represent the fact that each party will choose additional effort until the marginal benefit of this additional effort is equal to the marginal cost of this additional effort)[54]:

$$F(1-F)YJ = C_p(XF + Y(1-F))^2$$

$$F(1-F)XJ = C_d(XF + Y(1-F))^2$$

From these conditions, it follows that $X=(C_d/C_p)Y$: the plaintiff's effort is directly proportional to the defendant's unit cost, and inversely proportional to his own unit cost. When the unit costs of the parties are equal, the plaintiff spends as much as the defendant regardless of the level of fault ($X^*=Y^*$ for all F).

By putting the above result in the first order conditions, we can now easily find the equilibrium effort levels of the parties:

$$X^* = \frac{F(1-F)J}{C_d(F + \frac{C_p}{C_d}(1-F))^2}$$

$$Y^* = \frac{C_p F(1-F)J}{C_d^2(F + \frac{C_p}{C_d}(1-F))^2}$$

The equilibrium expenditures equal:

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53. These are the expenditures, which are optimal for each party from their private point of view.

54. Mathematically, the first derivative of the plaintiff's expected value and the defendant's expected loss is set equal to zero.

$$C_p X^* = \frac{C_p F(1-F) J}{C_d (F + \frac{C_p}{C_d}(1-F))^2}$$

$$C_d Y^* = \frac{C_p F(1-F) J}{C_d (F + \frac{C_p}{C_d}(1-F))^2}$$

The expenditures of the plaintiff equal the expenditures of the defendant. The expenditures increase with the amount at stake J. When the unit costs of the parties are the same, the expenditures are highest for close cases (F=1/2) and lowest for cases with extreme high or low merit (F=0 and F=1).

The plaintiff's probability of winning $P_{pl}(X^*,Y^*)$ is:

$$\frac{F}{F + \frac{C_p}{C_d}(1-F)}$$

and thus equals the merits of the case (F) when the unit costs of the parties are equal (P_{pl}=F when $C_p C_d$).

The expected value of the plaintiff and the expected loss of the defendant equal respectively:

$$EV_{pl} = \frac{F}{F + \frac{C_p}{C_d}(1-F)} J - \frac{C_p F(1-F)}{C_d (F + \frac{C_p}{C_d}(1-F))^2} J$$

$$EV_{def} = \frac{F}{F + \frac{C_p}{C_d}(1-F)} J + \frac{C_p F(1-F)}{C_d (F + \frac{C_p}{C_d}(1-F))^2} J$$

Now we look at what changes when the plaintiff faces a budget constraint B, as a result of which they may not be able to adopt an effort level of X* and thus invest an amount of $C_p X^*$.

Obviously, when $B = C_p X^*$, the effort levels of the parties remain X* and Y*. In that case, the plaintiff has sufficient funds to adopt an effort of X*. In the opposite case however, thus when $B < C_p X^*$, the plaintiff cannot choose X* and is forced to choose a lower effort. We can easily see that the plaintiff will choose an effort level equal to B/C_p: between an

effort of zero and X*, his expected value is increasing concavely for all values where:

$$\frac{\partial^2 EV_{pl}}{\partial X^2} = -2\frac{YF^2(1-F)}{(XF+Y(1-F))^3} < 0$$

Consequently, if X* is not possible, the maximum possible effort level B/C_p is the next best thing for the plaintiff. Given that the plaintiff chooses an effort level of B/C_p from the second first-order condition it follows that the defendant chooses an effort level equal to:

$$\frac{\sqrt{\frac{F(1-F)BJ}{C_pC_d}} - \frac{BF}{C_p}}{1-F}$$

So when the plaintiff faces a budget constraint, the parties' expenditures equal B for the plaintiff, and, for the defendant, equal:

$$C_d \frac{\sqrt{\frac{F(1-F)BJ}{C_pC_d}} - \frac{BF}{C_p}}{1-F}$$

The total litigation expenditures are smaller without the budget constraint than with the budget constraint when the following conditions are satisfied:

$$\frac{2C_pF(1-F)J}{C_d(F+\frac{C_p}{C_d}(1-F))^2} < B + Cd\frac{\sqrt{\frac{F(1-F)BJ}{C_pC_d}} - \frac{BF}{C_p}}{1-F}$$

$$B < \frac{C_pF(1-F)J}{C_d(F+\frac{C_p}{C_d}(1-F))^2}$$

With respect to the first inequality, the left hand side represents the sum of the litigation expenditures of the plaintiff and the defendant when there is no budget constraint. The right hand side represents the sum of the plaintiff's and the defendant's expenditures when the plaintiff faces a budget

constraint. The second inequality represents the fact that the plaintiff will not lack funds for *all* cases. Whether the plaintiff lacks funds or not depends on the amount at stake, the unit costs of the parties and the merits of the case (see the right-hand side of the second inequality, which is simply equal to the plaintiff's optimal expenditure level). Suppose the plaintiff has funds equal to $20,000. When the merits of the case equal 0.8 (a rather strong case), the amount at stake equals $100,000, and the unit costs of the plaintiff and the defendant are the same, then the plaintiff would normally spend $16,000, and he can do so without third-party funding. However, if all would remain the same, except that the merits of the case are now equal to 0.5, then the plaintiff would normally want to spend $25,000. This time, he is not able to spend this amount, and would need to acquire additional funding to reach his optimal expenditure level.

IV.
DISCUSSION

Given the complexity of the expressions above, it is not generally possible to compare the outcomes with and without a budget constraint analytically. We use numerical simulations to reveal the key differences.[55]

A. *Total Litigation Expenditures*

Figures 1, 2, and 3 below respectively look at the situation in which the inherent quality of the claim is most uncertain (F=1/2),[56] is relatively high (F=0.7),[57] and is relatively low

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55. For a similar approach in the context of all-or-nothing rules and proportionate damages, see De Mot & Miceli, *Comparing All-or-Nothing*, *supra* note 9, and in the context of the suppression of the product rule in litigation, see Jef De Mot & Thomas Miceli, *Litigation and the Product Rule: A Rent-Seeking Approach* (Univ. of Conn. Dep't of Econ. Working Paper Series, Working Paper No. 2015-13, 2015). Note that we abstract away from principal–agent problems in the model and the discussion. We implicitly assume that funder and plaintiff are able to select the investment level that maximizes the sum of the plaintiff's share and the funder's share.

56. The formulas are (0.5*x)/((0.5+x*0.5)^2)<y+2*(sqrt(0.25*(y/x))-(0.5*(y/x)) and y<x*0.25/(0.5+x*0.5)^2.

57. The formulas are 2*x*(0.21/(0.7+x*0.3)^2)<y+3.333* (sqrt(0.21*y/x)-0.7*y/x) and y<x*0.21/(0.7+x*0.3)^2.

(F=0.3).[58] The x-axis represents the unit costs of the plaintiff C_p, and the y-axis the plaintiff's budget constraint B. The defendant's unit costs have been set equal to 1. The light-green area represents the combinations of C_p and B for which the budget constraint condition is satisfied:

$$B < \frac{C_p F(1-F) J}{C_d (F + \frac{C_p}{C_d}(1-F))^2}$$

The grey area represents the condition for which the total trial expenditures are smaller without the budget constraint than with the budget constraint

$$\frac{2C_p F(1-F) J}{C_d (F + \frac{C_p}{C_d}(1-F))^2} < B + C_d \frac{\sqrt{\frac{F(1-F)BJ}{C_p C_d}} - \frac{BF}{C_p}}{1-F}$$

not taking into account the requirement for the budget constraint. The intersection of these areas, the dark green area, is what we are interested in. The reason is simple: if the budget constraint condition is not satisfied, the plaintiff can spend his optimal expenditure level and will not have to spend a lower amount.

58. The formulas are 2*x*(0.21/(0.3+x*0.7)^2)<y+(10/7)* (sqrt (0.21*y/x)-0.3*y/x) and y<x*0.21/(0.3+x*0.7)^2.

FIGURE 1. UNCERTAIN CLAIM QUALITY (F=1/2)

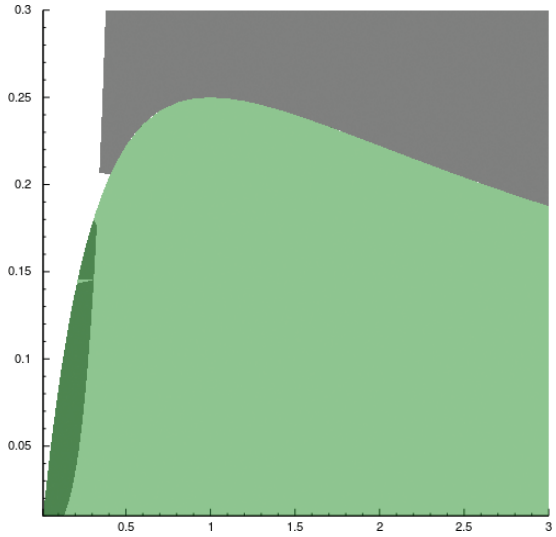


FIGURE 2. RELATIVELY HIGH CLAIM QUALITY (F=0.7)

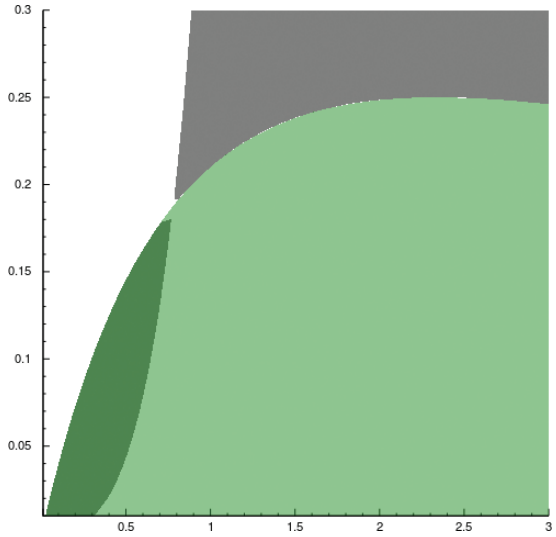
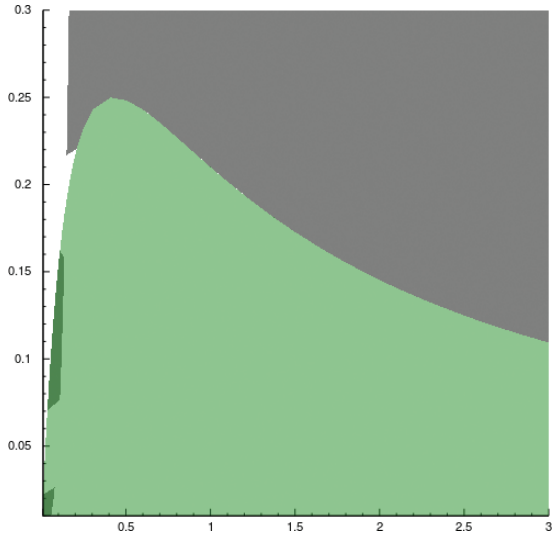


FIGURE 3. RELATIVELY LOW CLAIM QUALITY (F=0.3)



Interestingly, the ability of the plaintiff to spend more is more likely to reduce total litigation expenditures for quite strong claims than for weaker claims. Intuitively, this makes sense. For weak claims, when the plaintiff spends more due to vanishing budget constraints, the case becomes closer, and it becomes more worthwhile for the defendant to spend additional resources as well. For relatively strong claims, when the plaintiff spends more, the case becomes even less close and it becomes less valuable for the defendant to spend more.

Note further that litigation expenditures can only be lower without the budget constraint when C_p is relatively low compared to C_d (which is 1 here). Intuitively, total expenditures can only decrease when the decrease in the defendant's expenditures (if there is a decrease at all) is larger than the increase in the plaintiff's expenditures.

Summarizing, third-party financing may thus decrease total litigation expenditures for claims that are quite strong and for which the unit costs of the plaintiff remain relatively low compared to the unit costs of the defendant. However, total litigation expenditures may also increase due to third-party financing. This will especially be the case when cases are relatively weak or—even when the case is relatively strong—for cases in which the unit costs of the plaintiff are relatively high

compared to the unit costs of the defendant. In the next subsection, we look at which types of cases TPF actually promotes (in terms of the strength of the case and the relative unit costs of the parties). From a societal point of view, it would be most interesting if TPF promotes especially strong claims. Indeed, the possibility to pursue strong claims more vigorously can improve the deterrent function of the law.

B. *The Plaintiff's Expected Value of Trial*

Third-party financing relaxes budget constraints (see section II.B.). An important question is which types of disputes (strength of the case, unit costs of the parties) third-party financing is likely to promote. Without a budget constraint, the plaintiff's expected value at trial equals:

$$\frac{F}{F+\frac{C_p}{C_d}(1-F)}J-\frac{C_pF(1-F)}{C_d(F+\frac{C_p}{C_d}(1-F))^2}J$$

With a budget constraint, the plaintiff's expected value equals:

$$\frac{F\frac{B}{C_p}}{\sqrt{\frac{F(1-F)BJ}{C_pC_d}}}J-B$$

Figures 4, 5, and 6 all visualize for which claims the difference between the plaintiff's expected value without and with budget constraints is largest. The figures respectively look at the situation in which the unit costs of the plaintiff and defendant are both equal to one,[59] the situation in which the unit cost of the plaintiff equals two and the unit cost of the defendant one,[60] and the situation in which the unit cost of the plaintiff equals one and the unit cost of the defendant two.[61] Figure A always looks at the cases for which the difference is larger than twenty-five percent of the amount at stake, and figure B at the cases for which the difference is larger than forty percent of

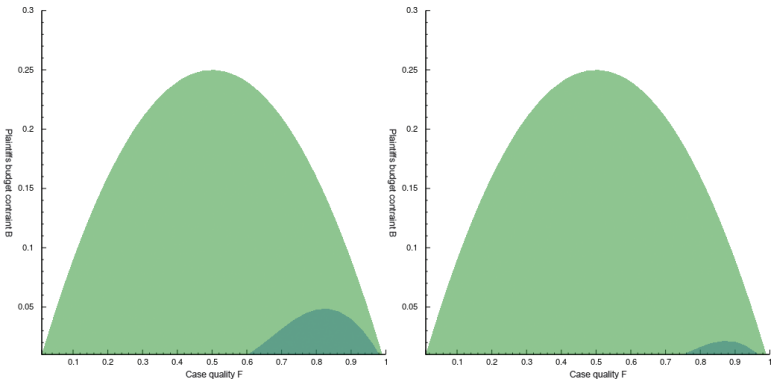
59. x-x*(1-x)-((y*x/(sqrt(x*(1-x)*y))-y)>0.25 or 0.4 and y<x*(1-x).

60. x/(x+2*(1-x))-2*x*(1-x)/(2-x)^2-((0.5*x*y/(sqrt(x*(1-x)*y*0.5))-y)>0.25 or 0.4 and y<2*x*(1-x)/(2-x)^2.

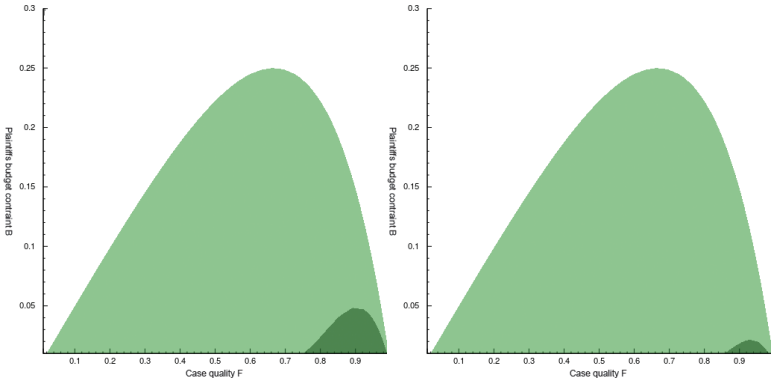
61. x/(x+0.5*(1-x))-0.5*x*(1-x)/(x+0.5*(1-x))^2-((y*x/(sqrt(x*(1-x)*y*0.5))-y)>0.25 or 0.4 and y<0.5*x*(1-x)/(x+0.5*(1-x))^2.

the amount at stake. The x-axis represents the inherent quality of the case (F), and the y-axis the budget constraint (B). The light green area represents the budget constraint condition, the dark green area the combinations of B and F for which the plaintiff's expected value is larger without the budget constraint. The area we are interested in is the intersection of both areas (which is once again the dark gray area, because the second area is fully covered by the first area).

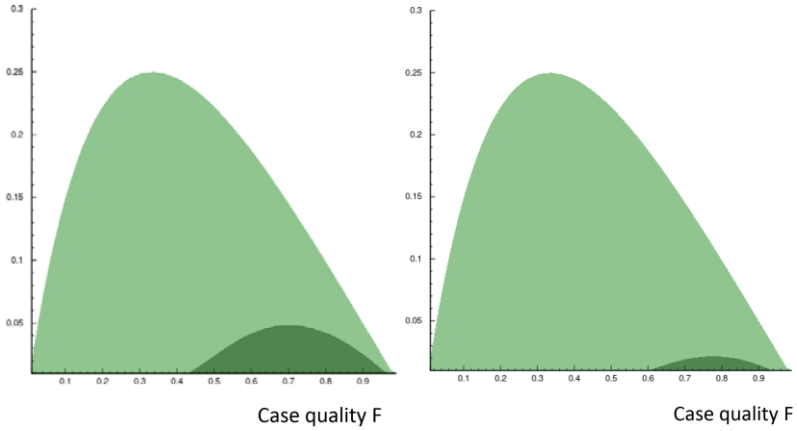
FIGURES 4A AND 4B. UNIT COSTS PLAINTIFF=UNIT COSTS DEFENDANT=1



FIGURES 5A AND 5B. UNIT COSTS PLAINTIFF=2; UNIT COSTS DEFENDANT=1



FIGURES 6A AND 6B. UNIT COSTS PLAINTIFF=1; UNIT COSTS DEFENDANT=2



The figures show that especially relatively strong claims have a higher expected pay-off without the budget constraint. The expected value of claims with a high F increases the most when TPF is available. Intuitively, for strong claims, the increase in the expected judgment (through the increase in the plaintiff's probability of winning) due to the additional effort exerted by the plaintiff outweighs the costs of this extra effort. Note further that this is especially the case when the plaintiff's unit costs are smaller than the defendant's unit costs (the dark green area is largest in Figure VI). Interestingly, the types of claims that are stimulated the most (strong ones with relatively low unit costs for the plaintiff) are the ones for which total expenditures often decrease.

C. *Implications*

Our analysis shows that third-party funders will mainly be interested in funding claims with a high value of F. Recall that F stands for the defendant's fault. Hence, the higher F, the more meritorious the plaintiff's claim is. At first sight, this is a good thing. The social value of litigating weaker claims is doubtful or outright negative. And if more meritorious suits can be brought to court, potential tortfeasors may adapt their behavior to society's advantage (taking more care in a tort setting, breaching contract only when breach is efficient, etc.). From an empirical perspective, Chen recently found that

third-party funding indeed results in or attracts higher quality suits.[62] The author uses a data set containing detailed financial information over a recent seven-year period for the Insolvency Management Fund Ltd. (IMF), the world's largest litigation funding firm. This company had $2.06 billion in claim value in 2011. More concrete, while funded cases were reversed twenty-five percent of the time, cases that sought funding but were rejected by IMF were reversed thirty-one percent of the time.[63] Molot notes that Burford's win-loss ratio so far exceeds eighty percent.[64]

However, our analysis also shows that third-party funders obtain the highest profits when funding cases with the highest values of F. As Shepherd points out, the goal of third-party investors is not to improve access to justice for financially constrained or risk-averse plaintiffs, but rather to maximize the returns from their investment. The author argues that the cases with the largest potential return are often the cases where the existing substantive law advantages plaintiffs.[65] According to Shepherd, these cases are the opposite of the sort of cases where financing could improve access to justice for vulnerable plaintiffs. She illustrates this with the fact that Juridica, a funder financing large commercial litigation, regularly invests in patent infringement and price-fixing cases, and Burford Capital in multi-party litigation, and sums up several reasons why the underlying substantive law in these types of cases creates imbalances that generally favor plaintiffs.[66] Our findings partly confirm Shepherd's results. Cases with a high level of F will not only be cases in which the true quality of the

62. Daniel L. Chen, *Can Markets Stimulate Rights? On the Alienability of Legal Claims*, 46 RAND J. ECON., 23, 49 (2015) [hereinafter Chen, *Can Markets Stimulate Rights?*].

63. *Id.* Note that Chen stresses the limitations of his data and research design. *Id.* at 52.

64. Molot, *supra* note 45, at 181 n.40.

65. Note that due to the increased economies of scale, funders are able to bring some cases contingency fee lawyers cannot bring, even some cases with a relatively large probability of success.

66. Among other reasons: the risk of significant losses at trial including treble damages and the possibility of preliminary injunctions in patent infringement cases; joint-and-several liability rules that prohibit proportional liability and rules against contribution in price-fixing cases.

case is large, but also cases in which the law advantages plaintiffs, for example through asymmetric burdens of proof.[67]

Our model also shows that funders will be interested in cases in which the unit costs of the plaintiff are relatively low compared to the unit costs of the defendant. Consequently, funders will not invest in cases in which access to evidence or good arguments are relatively difficult for the plaintiff, despite the fact that the inherent quality of the case is large. Consequently, within the contours of our model, funders will shy away from cases with ambiguous legal questions. In line with this, Juridica reportedly rejects "claims that raise novel legal questions or that will probably end up before a jury" (Glater, 2009).[68] Also, Abrams and Chen (2013) found that funders prefer cases that are likely to settle quickly, because the longer and more complex a matter is, the greater their risk.[69] One funder would only invest in cases with a ninety-five percent probability of winning. In contrast with this however, Chen (2015) recently found that funded cases are being cited much more often than cases that sought funding and were rejected, but still made it to trial (eleven versus five citations on average). He concludes that litigation funders may prefer new and novel issues for funding. Chen explains this result with a principal–agent framework where litigation funders provide expertise in reducing uncertainty in law firms' disutility of production. Our findings contradict Chen's finding. In our model, the result that funding may especially increase the value of a claim when the unit costs of the plaintiff are small compared to the unit costs of the defendant $C_p < C_d$, can be interpreted (inter alia) as a lack of interest of funders in new and novel issues: given the doctrine of stare decisis, it is usually much more difficult to find arguments in favor of creating a new pre-

67. Interestingly, in patent infringement cases, patents are presumptively valid as a matter of law. A defendant needs to prove that a patent is invalid by a standard of clear and convincing evidence. The plaintiff on the other hand must only prove infringement by a standard of preponderance of the evidence. *See, e.g.*, Christopher Harkins, *Fending Off Paper Patents and Patent Trolls: A Novel "Cold Fusion" Defense Because Changing Times Demand It*, 17 ALB. L.J. SCI. & TECH 437 (2007).

68. Jonathan D. Glater, *Investing in Lawsuits, for a Share of the Awards*, N.Y. TIMES, June 3, 2009, at B1.

69. Chen & Abrams, *A Market for Justice, supra* note 2, at 1088.

cedent than finding arguments against it ($C_p > C_d$). Note that Chen stresses the limitations of his data and research design.[70]

Finally, the influence of third-party funding on total expenditures also influences the settlement rate. Since total expenditures may drop for strong claims, the settlement frequency may drop, given that avoiding trial costs is one of the main reasons of settlement. So the reduction of expenditures for strong claims is not an unambiguous welfare effect. It may come at the expense of more trials relative to settlements. For weak claims, the situation is the opposite. Due to increasing total expenditures, third-party financing may lead to more settlement.

Conclusion

We have formally compared the litigation investments of parties and the expected value of the plaintiff's claim with budget constraints (no TPF) and without budget constraints (TPF). Our results highlight three facts. First, total expenditures do not necessarily increase with funding due to the strategic interaction between the plaintiff's and the defendant's effort levels. The idea that TPF would unambiguously lead to an overall increase of litigation costs is hence not supported by our analysis. Total expenditures are less likely to increase the larger the quality of the claim. Second, funders will generally be interested in funding strong cases rather than weak cases. Moreover, TPF companies can make the highest profits when funding the strongest cases, including those cases in which plaintiffs are already advantaged, for example by asymmetric burdens of proof. Third, funders can make the highest profits in cases in which the plaintiff's unit costs of litigation are smaller than the defendant's unit costs. This may help to explain the lack of interest of funders in claims with novel issues.

In conclusion, TPF can play an important role as an instrument to promote access to justice in addition to other instruments aimed at achieving the same goal. Given that TPF especially finances strong claims, society's interest and the private interest of funders may align to a considerable extent. However, funders primarily act out of profit maximization objectives and are not inherently interested in promoting so-

70. Chen, *Can Markets Stimulate Rights?*, *supra* note 62, at 52.

cial goals (like access to justice). It is therefore still possible that in some instances funders may focus on cases in which plaintiffs are already so advantaged by the law that additional funding may further distort the imbalance between the litigants. Finally, it is interesting that funders will generally be interested in those cases in which funding will not necessarily increase total expenditures. This is however not an unambiguous welfare benefit, given that it may decrease the settlement frequency.