Financing litigation:  
A Comparative Analysis  

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Abstract  

In this paper, we analyze three different ways to finance litigation, namely (i) self-finance by plaintiffs, (ii) contingent fees arrangements and (iii) third-party financing. We analyze how these models impact on the access to justice, and on the decision to settle or to go to courts, when claims can be meritorious or frivolous. Our results show that third-party financing does not necessarily enlarge the access of a plaintiff to justice, nor the equilibrium settlement amount, especially when the rate of return on capital required by the investors is high.

1 Introduction  

In Europe, the right for an injured party of a tortious or contractual wrongdoing to receive compensation was granted a fundamental value. The European Court of Human Rights has indeed decided that a credit for damages deriving from a wrongdoing, i.e. a liability credit or liability claim, is a good for the purpose of application of Protocol 1 of the European Convention of Human Rights (Tuil and Visscher [2010]). However, in practice, the

implementation of this fundamental right is far from being satisfactory. Several types of losses do not receive compensation because of the practical difficulties and the costs necessary to achieve it. The traditional way for an injured party to seek compensation is to bring a claim directly and individually in court, but legal fees still represent an economic barrier to pursuing a lawsuit. For instance, in Canada, the legal fees of a typical civil case for a three days trial in the Ontario Court is estimated at $38,200 to the plaintiff (Puri [1998]). These costs can become even higher if we include service of process fees, fees relating to examination of discovery or expert testimony. In the U.S., pursuing a civil action in federal court costs an average of $15,000, the Federal Judicial Center reported last year. Cases involving scientific evidence, like medical malpractice claims, often cost more than $100,000. Recently, experts have estimated that four-fifths of low-income people have no access to a lawyer when they need one. Last, the 2007 report on the transparency of costs of civil judicial proceedings in the EU shows that high levels of litigation costs are also a concern for the European states.

In such a context, there is a need to find alternative means to fund litigation. In this paper, we compare three different ways to finance litigation, namely self-finance, contingent fees and third-party financing. Our comparison aims to establish what is the impact of each of these systems on (i) the number of plaintiffs accessing to courts, (ii) the equilibrium settlement amounts, (iii) the decision of the defendant to settle or to go to court, and (iv) the probability that an uninjured plaintiff decides to file a claim.

Let us precise that they are many other possibilities to finance litigation (such as loans, insurances, conditional fees, or even complex financial vehicles). However, we do not aim to explore all possible ways to finance litigation, nor to seek to determine which of these financing systems would be the most socially efficient. We only focus on how contingent fees agreements and third-party financing (whose potential introductions in several countries raise a lot of debates) lead to different incentives for plaintiffs to file a claim, and for defendants to settle or not, compared to self finance.

Third party financing is funding by investors of a plaintiff’s litigation costs in exchange for an agreed share of any recovered proceeds. In other words, the investors extend a nonre-
course loan to the plaintiff. If the claim is successful, either in litigation or in settlement, the funder receives a percentage of the recovery. Third-party financing is motivated by the expectation of a positive return for the investors, and is often regarded as an extension of contingent fees agreements to nonlawyers. In contingent fees contracts, a lawyer pays for the litigation costs of a plaintiff. He obtains a percentage of the plaintiff’s award if the lawsuit succeeds, but has no compensation if the lawsuit fails.\(^5\)

However, it is worth noting that third-party financing is not a simple extension of contingent fees arrangements to a larger class of investors. The first difference is that under contingent fees agreements, the lawyer retained provides services (i.e. he invests his time and resources in prosecuting a case), rather than the funds necessary to procure such services. A second difference is that investors choose to finance litigation with the expectation of a positive return and could invest their funds otherwise on the financial market.

The proponents of third-party financing argue that it allows a better access to justice, since it lowers deeply the budgetary constraint of the plaintiffs thanks to the large financial means of the investors. However, the question is today to determine whether third-party financing increases access to justice or access to courts. As underlined by the Chamber institute report (Beisner [2009], p.4), “this is an important distinction because increasing plaintiff access to the courts also increases the likelihood that any potential defendant will be hauled into court on a meritless claim”. Indeed, critics attack third-party funding on a variety of grounds, including that it increases frivolous lawsuits, is unnecessary, creates conflicts of interest and imperils the relationship between attorneys and clients. The assertion that funding will spawn meritless litigation stems from the belief that funders base their investment decisions on considerations that go beyond the merits of a claim and instead focus on the present value of the expected return. Funders may also be able to tap other investors to finance litigation, securitize litigation costs and sell derivative interests in lawsuits to spread the risk of a frivolous lawsuit among numerous investors.

To address this issue, we propose here a model where the consequences of self finance, contingent fees and third-party financing are compared as regards to the number and type of plaintiffs filing a suit and to the decision of the defendant to settle or to go to court.

In our model, a claim can thus be either meritorious or frivolous. We define a “frivolous lawsuit” as a suit that has sufficiently low chance of prevailing at trial so that it would

\(^5\)This is often referred to as the “no win, no fee” principle.
not be brought but is filed only in the hopes of obtaining a favorable settlement (Katz [1990], Miceli [1994]). In other words, a frivolous lawsuit is that of an uninjured plaintiff obtaining a payment to which he is not entitled, at the expense of an uninformed defendant. It occasions rent-seeking and may lead to waste resources.\(^6\) Let us also mention that our analysis does not address suits in which the prospect of judicial error or jury confusion at trial permits a plaintiff to obtain a settlement that is undeserved according to some external normative standards. Instead, we take a strictly positive view of the law and treat all suits expected to prevail at trial as genuine. Neither do we address suits that turn out \textit{ex post} to have little basis in law, but that \textit{ex ante} seemed plausible.

To explain how an uninjured plaintiff may be offered a positive amount in settlement, we propose a model of asymmetric information. More precisely, we assume that the defendant may face two types of plaintiff: a truly injured one and an uninjured one. The plaintiff and his lawyer know whether the claim is frivolous or meritorious, so that the defendant is the only agent who cannot distinguish between a frivolous and a meritorious one. We show that under each litigation financing system, two types of equilibria appear, according to the defendant’s belief of the probability that the claim is meritorious. We show that third-party financing does not necessarily outperform contingent-fees arrangements. Third-party financing leads to a trade-off between “access” (since it makes access to justice easier for a plaintiff by providing him with larger financial means) and “quality of the claim” (since it also increases the probability that an uninjured plaintiff files a frivolous claim). Our results highlight that the higher the rate of return on capital the investors require under third-party financing, (i) the lower the probability that a plaintiff accesses to court is, and (ii) the lower the equilibrium settlement amount offered by the defendant is. As a consequence, (iii) the higher the probability that the defendant decides to settle rather than to go to court is, and (iv) the higher the probability that an uninjured plaintiff opens a file with the hopes of obtaining a settlement is.

The basic theoretical framework of our model is inspired by Katz [1990] and Miceli [1994]. Miceli [1994] compares two types of litigation financing: hourly fees paid by the plaintiff and contingent fees arrangements. We extend this framework into two directions: first, we introduce a third type of litigation financing, \textit{i.e.} third-party financing under which

\(^6\)See Katz [1990] for examples of direct and indirect costs caused by frivolous lawsuits (resources used in filing and defending such meritless suits, costs of investigation to distinguish frivolous and genuine claims, additional trials).
external investors finance the claim. Second, we introduce a cost constraint on the plain-
tiff: while Miceli [1994] assumes that a plaintiff can always afford to go to court, we rather 
consider that a plaintiff cannot finance the cost to go to court above some threshold. This 
allows us to show that each financing system has two kind of distinguished impacts: an 
impact on the probability to access to courts, and an impact on the probability that a 
frivolous claim arises, while Katz [1990] and Miceli [1994] focus only on the last conse-
quence, without regarding the problem of access to justice for a credit-constrained plaintiff. 
It seems to us that both effects have to be taken into account to really assess the net im-
pact of contingent fees arrangements and third party financing.

Up to now, many papers in the economics literature have discussed contingent fees (Dana 
and Spier [1993], Rubinfeld and Scotchmer [1993], Emons [2000], Emons and Garoupa 
[2006], Emons [2007]), but third-party financing has drawn far less attention. Our paper 
thus contributes to the emerging literature on third-party financing (Abramowicz [2010], 
Rubin [2010], Lyon [2010], Chen and Abrams [2011]). While Zhou [2008] and Demougin 
and Maultzsch [2011] look at how litigation financing systems impact on the attorney’s 
behavior, our concern is rather on the consequences of these financing systems on the 
credit-constrained plaintiff.

The rest of the paper is organized as follows: in section 2, we describe the different ways 
to finance litigation, and we underline more precisely the benefits and costs of third-party 
financing. In section 3, we compare the types of litigation financing when claims are mer-
itorous. Last, in section 3, we extend our comparison to the case where claims can be 
frivolous. Section 5 concludes.

2 How to finance litigation?

2.1 To overcome cost barriers

Many victims do not have sufficient financial resources to meet the costs of a court case 
or legal representation. To deal with this problem, many countries provide with legal 
aid. The right to legal aid is enshrined by the European Convention on Human Rights 
(ECHR) (Article 6 (3)(c) of the ECHR) and guarantees the right to legal assistance where 
the defendant has insufficient means to pay for legal assistance, and to get free legal
aid when the interest of justice so requires. The Charter of Fundamental Rights of the European Union (Article 47 of the Charter) also stipulates that legal aid shall be made available to those who lack sufficient resources in so far as such aid is necessary to ensure effective access to justice.

In the U.S., the Legal Services Corporation, created by Congress, gives out federal grants that provide the bulk of support for legal aid to the poor. It allocates the funding to State Legal Aid Services Offices across the United States. Over the decades, that budget has shrunk - it was $404 million in 2011, about one-third less than it was 15 years ago, adjusted for inflation. The House Appropriations Committee has proposed reducing that to $300 million for 2012.7

Then, in the U.S. as in Europe, legal aid is generally available only to the very poorest.8 Most of the plaintiffs have then to self finance their claims, or give up the idea to be represented by lawyers.

Traditionally, attorneys are paid an hourly wage for time spent, or by the service performed, regardless of the outcome of the case. Because legal representation is costly, many alternative financing systems have then developed to help victims to file a claim. Among these systems, contingent fees arrangements foresee that the attorney gets a share of the proceeds if his client wins and nothing if his client loses.

Contingent legal fees are widely used in the US. In around 87% of all torts and 53% of all contractual issues plaintiffs retain their lawyer on a contingency basis (Kritzer [1990]).

In Europe, contingent fees were strictly forbidden during a long time. However, things begin to change. In 2007, Germany’s constitutional court ruled that Germany’s ban on contingency fees is unconstitutional.9 The UK government made a series of announcements on 30 March 2011 about major reforms of funding and reform of the civil justice system.10

One of these reforms is the introduction of contingent fees arrangements in civil litigation.

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8 More than 50 million Americans are eligible to receive civil legal aid from LSC-funded programs, including 13 million children - one in five. Most are at or below 125 percent of the federal poverty level threshold, an income of approximately $25,000 a year for a family of four (Source: http://legalaid.uslegal.com/). In Europe, there are many differences among the Member states: the broad objective in some States seems to be to make legal services and access to justice generally available, whereas in others, legal aid can be available only to the very poorest.
9 The court directed the German Parliament to amend its law accordingly, but it seems that the Parliament never made the amendment.
In many other European countries as France, Belgium or the Netherlands, contingent fees arrangements are not allowed but under discussion.\(^{11}\)

Recently, a new way to finance litigation has emerged. “Third-party financing” or “litigation financing” corresponds to the funding of litigation by a party who has no pre-existing interest in the litigation, usually on the basis that \((i)\) the funder will be paid out of the proceeds of any amounts recovered as a consequence of the litigation, often as a percentage of the recovery sum\(^{12}\); and \((ii)\) the funder is not entitled to payment should the claim fail.

Traditionally, third party involvement in litigation was prohibited in common law as well as in civil law countries. The most interesting change concerns Australia. In this country, which does not permit contingent fees, third party litigation funding has been tolerated since the 1990s in some contexts, such as the disposition by liquidators or trustees in bankruptcy of an insolvent’s causes of action. More recently, the scope of litigation funding has recently expanded with the emergence of funders who support general commercial litigation with no interest other than the potential for a commercial return on investment.

In the U.S., the legal status of third-party financing is far from clear (Lyon [2010]). The common law doctrines of maintenance and champerty\(^{13}\) make the legality of third-party financing uncertain in many states. However, some state courts (as in Maine or Ohio) have begun to make third-party financing possible, by enacting legislation setting requirements for contracts between litigation financing companies and consumers. England and Wales have recently embraced third party litigation financing, and the industry has kept on growing, financing insolvency cases, commercial litigation and arbitration, group litigation as well as professional negligence cases (but not personal injury cases) (U.S. Chamber Institute for Legal Reform [2009]). While third-party financing is flourishing in the U.K., the practice does not appear yet to have crossed the English Channel to the rest of Europe.

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\(^{11}\)Some European countries have started to allow for conditional fees that are agreements under which the lawyer gets an upscale premium if the case is won and nothing if the case is lost. However, this premium is unrelated to the adjudicated amount as under contingent fees arrangements. (See Emons [2007] for a comparison between contingent and conditional fees). Success fees may also be allowed in some countries: they make the lawyer fees partly (but not solely) dependant on the success of the claim. Last, third-party financing is sometimes allowed to finance arbitration, but still not to finance litigation.

\(^{12}\)The funder’s share may be calculated from several factors: the sum of money involved; the length of time until recovery; the expected value of the plaintiff’s claim; and whether the claim settles, proceeds to trial or is appealed.

\(^{13}\)Following Shukaitis [1987], “maintenance” is defined as a situation where a person “without interest” in a suit assists a party in litigation. “Champerty” is maintenance plus an agreement to share in the proceeds of the suit.
In many European countries (as in France, Italy, Spain, Sweden, Austria or Belgium), law does not appear to prohibit third party financing\textsuperscript{14}, but the practice is rare or even non-existent. The industry of third-party financing is yet currently developing in Germany\textsuperscript{15}, but is mainly oriented to the funding of cases outside Germany.\textsuperscript{16}

In all of these countries, there are lively debates about the opportunity to introduce third-party financing. There is then a need to deeply understand the potential benefits and costs of this practice.

### 2.2 Third-party financing: the potential benefits

Through third-party financing, individuals or firms with no direct interest in a particular claim can buy at least a fraction of that claim. Then, third-party financing can be regarded as a market for buying and selling lawsuits, creating a market for the production of justice (Chen and Abrams [2011]). The main expectation is to allow credit-constrained plaintiffs to access to justice, and thus contributing to reduce litigation undersupply. Collecting data from the largest third party litigation funding firm in Australia, and other data from courts and administrative agencies, Chen and Abrams [2011] find evidence that litigation increases with third party financing (as well as court caseloads and court expenditures).

In addition, third-party financing could serve to remedy a longstanding imbalance of power that favors defendants. For instance, when an individual plaintiff files a claim against a corporate defendant, financial disparities often represent a barrier to victory for the plaintiff. Third-party financing contributes to place the litigant on a more stable financial

\textsuperscript{14}For instance, in France, law prohibits the transfer of the right of action in damages independently from the credit for damages. It has for example been decided that a capital contribution to a company cannot be of the sole right of action without the credit for damages and therefore the possibility for the company as assignee to receive the ownership of the process in case of successful legal action. Article 1597 of the French Civil Code prohibits judges, attorneys and other legal professions to acquire lawsuits, rights and credits of action which are of the jurisdiction of the tribunal where they exercise their profession. This article of the Civil Code, which provision has not changed since 1804, has been enacted officially for the purpose of preventing speculation. However, had this provision been enacted in fear of speculation over liability claims, the prohibition should not have only concerned some specific professions, but everyone striving for investing in liability claims. The real reason for this prohibition is the protection of the image of the justice in the society. Therefore, nothing prevents interpreting Article 1597 of the French Civil Code a contrario and admitting in principle the legality of the assignment of a liability claims. Case law has not had the chance to rule on the issue, but the most eminent authors seem to admit the legality of assignment of liability claims without trouble. However, it shall be acknowledged that, only after a complex analysis, one can conclude of the legality of their assignment.

\textsuperscript{15}The most representative litigation funding company is Allianz ProcessFinanz, that has funded cases including copyright, contract, labor and employment, trade, corporate, insolvency and commercial matters.

\textsuperscript{16}In 2007, only 0.4% of cases used third-party financing in Germany as for Jackson LJ Review of civil litigation costs: Preliminary Report (2009, p. 564).
footing.

Let us also note that third-party financing is sometimes referred to as a “non-recourse loan” because the lender has no claim for repayment if the suit does not eventually succeed. But the most significant difference among plaintiffs’ lenders is not in the type of loan offered but in the size and scope of investment. “Loans to individuals with tort claims are typically measured in thousands or tens of thousands of dollars, offset by damages awards that tend to peak in the low hundred thousands (...) By contrast, commercial claim finance is a more rarefied world with fewer players in the market and significantly higher stakes. The litigant on both sides are typically corporate entities, and funding can reach up to $ 15,000,000 on cases valued at $ 100,000,000 or more” (Lyon [2010]). This illustrates how third-party financing may help to overcome the cost barrier between a credit-constrained plaintiff and a defendant with larger financial resources.

Some other benefits are expected. For instance, risk adverse individuals could decline to pursue positive expected value claims, and a transfer of a claim from a risk-averse to a risk-neutral party should yield an increase in total claims pursued. Some claim holders can also be unaware that they possess a meritorious legal claim, and third-party financing provides the funders with the incentives to locate and provide information to those unaware claim holders.

Although third-party financing may lead to more litigation, it is also likely to promote settlement because there is a financial incentive for plaintiffs to resolve their cases as quickly as possible (Lyon [2010], p.597).

Let us also add there is undoubtedly a market for litigation finance. Companies\(^\text{17}\) that have begun offering such services have enjoyed favorable results. For instance, the largest firm in the Australian market is listed on the Australian stock exchange, and held a portfolio of litigation investments (as of early 2007) with a total value of A$1 billion. Unlike U.S. funding firms (which invest almost exclusively in individual personal injury cases), the Australian firms regularly invest in class actions, and the largest regularly charges about thirty percent of the net proceeds of the case plus litigation costs—a fee that roughly approximates what U.S. plaintiffs’ attorneys traditionally received in class actions. As of the end of 2006, the litigation funding industry in Australia was investing

\(^{17}\)Names in the industry are (among others) Allianz ProzesFinanz, Harbour Litigation Funding, IM Litigation Funding, Juridica Capital Management, Burford Capital Limited, Credit Suisse.
about A$20 million annually to support plaintiffs' litigation, and the industry seemed to be profitable. Juridica, based in the U.K., invests only in commercial cases and mainly in the U.S. It raised £74 million in its December 2007 initial public offering on the London Stock Exchange's small companies market and another £33.2 million with a second offering in 2009 (Beisner [2009]). Its 2010 annual report mentions that the company received proceeds totalling approximately US$ 6.6 million related to four investments that year.

The following figures illustrate the size of the portfolio (including contracts in progress and non-cash assets) of the largest litigation funding firm in Australia, as well as the achieved rates of return on investments.¹⁸

¹⁸Let us precise that the decline in the size of the portfolio observed in 2006 may be related to the High Court decision in *Campbells Cash and Carry Pty Ltd v. Fostif Pty Ltd*: a five-to-two majority of the High Court held that a third party funder may exercise significant control over the litigation, which is not regarded as an offense in states that have abolished maintenance and champerty as crimes and torts. Plaintiffs may thus have been reluctant to engage in third-party financing and lose control over their claims.
2.3 Third-party financing: the potential costs

In spite of these potential benefits, third-party financing also leads to serious concerns. One of them is that this practice raises ethical concerns, such as the possibility that funders try to control claimants’ cases, or the possibility that conflicts arise between the interests of the funders and those of the plaintiff.

These problems are all the more worrying in the context of collective actions: because the cost of control is too high for one individual claimant, free-riding occurs and the funding company can run the litigation with no check on its actions.\(^{19}\) Another concern is that

\(^{19}\text{Let us also note that third-party financing has increased the number of class actions in Australia, which is already the second most popular jurisdiction for such suits outside North America (U.S. Chamber Institute for Legal Reform [2009], p.20). However, whether the introduction of third-party financing would lead to such an increase in countries (as in the U.S.) where contingency funding has already made collective actions easier is an open question (Lyon [2010]), as well as the marginal benefit that could be expected from an increase in collective actions (Rubin [2010]).}\)
the investors may choose to finance claims only if they expect to reach a rate of return on capital similar to that of alternative projects they can invest in.

In comparison to contingent fees, third-party financing also seems to have some weaknesses. First, lawyers have obvious expertise in evaluating the meritoriousness and settlement value of litigation whereas other potential funders would need to hire lawyers to conduct this inquiry for them. Second, since the lawyer fees depend on the success of the claim under contingent fees, lawyers have few incentives to spend their time on cases that are unlikely to be successful. Conversely, because third-party litigation financing increases the overall financing available for litigation and reduces the lawyer’s own risk, the disincentives for bringing frivolous claims may be lowered. This danger may be all the more worrying as “funding companies are able to securitize their litigation loans or otherwise sell any derivative interest in them in the capital markets. In such circumstances, the financiers would have little incentives to investigate whether the claims they finance are frivolous, because the risk of loss would be spread among hundreds of thousands, if not millions, of investors” (U.S. Chamber Institute for Legal Reform [2009]).

Many other arguments show that third-party financing may increase the number of frivolous claims. For instance, since the main interest of the investors is their expected return on investments, they may be willing to finance claims with a low probability of success but a high potential amount of recovery.\(^\text{20}\) In addition, even if the investors are aware that a case is non-meritorious, they may rely on the probability that the defendant prefers settling rather than going to court. Indeed, third-party financing may create pressure on defendants to settle all but the most frivolous claims, because the plaintiff is all the more likely to have sufficient funding to prosecute claims at trial. All this justifies why third-party financing could increase the number of frivolous claims.

In the following model, we attempt to account for this danger, and to compare the three types of financing systems for litigation: self-finance, contingent fees and third-party financing. We first try to see whether these systems impact on the equilibrium settlement amounts when all cases are known to be meritorious (section 3). Then, we explore the consequences of these financing systems when cases can be meritorious or frivolous (section 4).

\(^{20}\)As Mick Smith of third party litigation funder Clunius Captial has observed: “the perception that you need strong merits is wrong - there’s a price for everything” (U.S. Chamber Institute for Legal Reform [2009], p.12).
3 Financing of Litigation when claims are meritorious

3.1 The theoretical framework

We consider a plaintiff who initiates a claim by filing a lawsuit at an initial cost \( f \). This amount includes the cost of preparing and filing a complaint and making the fact of the lawsuit known to the defendant. Once suit has been brought, this initial cost is sunk and does not affect the decision to go to trial. A settlement period follows during which the plaintiff and defendant, through their lawyers, attempt to negotiate a settlement. The lawyer costs of this period are \( R_p \) and \( R_d \) for the plaintiff and defendant, respectively. As in Miceli [1994], we assume that these costs are time costs that the lawyer incurs whether or not a settlement is reached. If a settlement is not reached, the case is either dropped or goes to trial. If it goes to trial, the plaintiff and defendant incur additional lawyer costs of \( C_p \) and \( C_d \). At trial the plaintiff receives a damage of \( D \) if the lawsuit succeeds. Our theoretical framework involves the following important assumptions:

- The expected damage exceeds the plaintiff’s filing plus lawyer costs, so that a claim is always worth being filed, even if it goes to court: \( D - C_p - R_p - f > 0 \). We make this assumption to focus on the impact of the different litigation financing systems for a claim that deserves to be filed. Then, we take for granted that the plaintiff deserves to be compensated for his injury.\(^{21}\)

- The plaintiff and the defendant incur no other costs apart the lawyer fees, and there is no disagreement between the plaintiff and the defendant over the expected judgment at trial or the costs of trial. Information about the costs and the expected damage is then symmetric.\(^{22}\)

- The market for lawyers is a competitive market: lawyers are identical in ability and their identity does not impact on the size of the damage at trial. Then, the

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\(^{21}\) In other words, our concern is not to know whether it is socially efficient or not to file a claim. As discussed in the conclusion, we follow to some extent the U.S. Supreme Court’s observation about the “great benefits” of attorney advertising in Bates (Bates v. State Bar Ariz., 433 U.S. 350, 376 (1977)) and make it applicable to our framework: “Although [it] might increase the use of the judicial machinery, we cannot accept the notion that it is always better for a person to suffer a wrong silently than to redress it by legal action”.

\(^{22}\) We deserve information asymmetries for the section 4. These asymmetries will bear on the nature of the claim (frivolous or meritorious) that is unknown to the defendant. This allows to understand the consequences of the different financing systems on the probability for frivolous claims to be filed. This section 3 only focus on meritorious claims.
plaintiff’s lawyer expects to earn zero profits, regardless of the fee arrangement. This assumption is made to isolate the impact of the fee arrangement on the disposition of a case. Then, we do not discuss whether the market for lawyers is a competitive one or not.\textsuperscript{23}

- During the settlement period, the defendant makes a take-it-or-leave-it settlement offer. The assumption of a single restrictive offer from the defendant is a restrictive one, but we abstract from this issue because our main goal is not to provide a general solution to the bargaining problem, but to see what determines the decision to settle or to go to court.

- The plaintiff and the defendant supports their own litigation costs.\textsuperscript{24}

- Last, to underline the problem of cost barriers to access to justice, we impose some cost constraints on the plaintiff to go to court. The cost to go to court for the plaintiff $C_p$ is distributed among a probability density function $z$ on $[C_{p}^{\text{min}}, C_{p}^{\text{max}}]$, with $0 < C_{p}^{\text{min}} < C_{p}^{\text{max}}$. Its value is determined before the plaintiff initiates the claim, and known by all. The variety of possible cost may reflect the variety of possible injuries the plaintiff may suffer from, and then the different types of claims he may hold (even if the claim will be meritorious in each case).

We assume that a plaintiff can self finance the initial cost to file a lawsuit $f$ and the litigation costs during the settlement $R_p$. However, he can finance the cost to go to court $C_p$ up to an amount $\bar{C}$ so that $C_{p}^{\text{min}} < \bar{C} < C_{p}^{\text{max}}$.

Then, when $C_p > \bar{C}$, the plaintiff cannot finance on his own the litigation, and then does not initiate the claim since he has no credibility to threat to go to court (unless he chooses one of the two other litigation financing). Under contingent fees arrangements, the lawyer can finance the litigation costs $R_p$ and the cost to go to court $C_p$ until an amount $\bar{C}$, with $C_{p}^{\text{max}} > \bar{C} > \bar{C}$. Last, under third-party financing, the investors may finance $R_p$ and $C_p$ with no cost constraint on $C_p$ thanks to the diversification strategy of the investors.

We make the simplifying assumption that the cost to go to court for the defendant $(C_d)$ is constant so as to focus only on the barrier to access to justice for the plaintiff.

\textsuperscript{23}For references about this debate, see Osiel [1990], Hadfield [2000], Crabdall and Winston [2011].

\textsuperscript{24}In other words, we do not consider the British rule for the allocation of the litigation costs, whereby the loser pays the legal fees of the other party.
when the cost $C_p$ is high.\textsuperscript{25} Then, in our model, the claim can be that of a corporate
defendant and an individual plaintiff.

The timing of the game is as follows:

1. An injury occurs to the plaintiff and the parties learn the cost $C_p \in [C_p^{\text{min}}, C_p^{\text{max}}]$ to
go to court for this injury.

2. The plaintiff decides to file a claim at cost $f$ or not.

3. The lawyer costs $R_p$ and $R_d$ have to be paid.

4. The settlement period occurs.

5. If the settlement fails, the plaintiff can drop or decide to go to court and pays the
lawyer costs $C_p$. The defendant’s lawyer costs to go to trial are $C_d$ (a constant).

6. The judgement is made and the plaintiff receives a damage $D$ whenever the claim is
meritorious.

In the following subsections, we examine the decision to settle or to go to trial un-
der each type of litigation financing when claims are known (by all the parties) to be
meritorious. (Possible frivolous claims will be introduced in section 4).

\section*{3.2 Equilibrium under self finance}

Let us first consider the case where the plaintiff self finances his claim, and decides alone
whether to settle, drop, or pursue a case to trial. We first determine the probability with
which the plaintiff accesses to justice (subsection 3.2.1) and then the equilibrium settlement
amount (subsection 3.2.2).

\subsection*{3.2.1 Access to justice under self-finance}

Because of the cost constraint, the plaintiff can credibly threat to go to trial only when
$C_p \leq \bar{C}$. Since the plaintiff’s cost to go to court is distributed according to the probability

\textsuperscript{25}As many other contributions on third-party financing, we explore only funding of plaintiffs’expenses
because the methods and mechanisms of plaintiff-side lending are somewhat different than those on the
defense side, and the market is significantly more developed (Lyon [2010], Molot [2009]).
density function $z$, he can afford to go to court with a probability $x_S = \int_0^C z(C_p) dC_p$. If he cannot credibly threat to go to court (with probability $(1 - x_S)\%$), the defendant is able to anticipate it and will make no offer during the settlement, so that the plaintiff prefers not to file his claim.

### 3.2.2 Equilibrium settlement amount

If the claim is filed, the requirement of sequential equilibrium implies that the game is solved by reasoning backwards from its last stage, where the plaintiff must choose between accepting the defendant’s offer $S$ or going to trial.

When going to trial, the plaintiff gets an amount $D$ of damages since his claim is meritorious. In the previous stage, i.e. in the settlement period, the defendant offers a settlement amount $S_s$ equal to the lowest amount the plaintiff will accept rather than go to trial.\(^{26}\) This amount is found by equating the marginal value of a trial for the plaintiff, $D - C_p - R_p - f$, with the value of a settlement, $S_s - R_p - f$. Thus,

$$S_s = D - C_p$$ \hspace{1cm} (1)

where $S_s$ is positive by since $D - C_p - R_p - f > 0$. Notice that neither the lawyer’s fee for the settlement period ($R_p$) nor the filing cost $f$ affect $S_s$ since they are sunk at the point the plaintiff must accept or reject the offer. In contrast, because the plaintiff avoids paying the trial fee ($C_p$) by settling, the defendant reduces his settlement offer by that amount. Given (1), the plaintiff’s net return from the suit is $D - C_p$ which just equals her expected return from going to trial. This reflects the assumption that the defendant extracts all of the surplus from the settlement.\(^{27}\)

**Result 1.** Under self-finance, some meritorious claims are not filed because of potential cost barriers. When the costs of litigation do not prevent the access to court, then parties prefer to settle than to go to court to save on additional lawyer costs.

\(^{26}\)We assume that when the plaintiff is indifferent between going to court and settling, he chooses the settlement.

\(^{27}\)The determination of the equilibrium settlement amounts in self finance and contingency fees are based on the ones developed in Miceli [1994].
3.3 Equilibrium under contingent fees arrangements

Under contingent fees arrangements, the lawyer bears the costs of litigation, and obtains a percentage of the plaintiff’s award if the lawsuit succeeds.

3.3.1 Access to justice under contingent fees arrangements

The payment scheme is then different from self-finance, as is the cost constraint since the lawyer can finance larger costs than the plaintiff. The highest amount of cost the lawyer can bear is $\bar{C} > \bar{C}$. Then, when all the meritorious claims whose costs are lower than $\bar{C}$ can be filed under contingent fees arrangements, i.e. the plaintiff accesses to court with a probability $x_{CF} = \int_{0}^{\bar{C}} z(C_p) dC_p$. Since $\bar{C} > \bar{C}$, then $x_{CF} > x_S$. This can be interpreted very intuitively: since the lawyers can support higher litigation costs than the plaintiff, the economic barrier to access to justice is lower and the plaintiff is more likely to access to justice.

3.3.2 Equilibrium settlement amount under contingent fees arrangements

When a claim is filed under contingent fees arrangement, we consider that the plaintiff still makes the decision whether to settle, drop, or pursue a case to trial. This abstracts from the possible conflict of interest between the plaintiff and attorney in making this decision: the plaintiff has still the authority, but the services of the lawyer are remunerated with a variable scheme rather than a fixed price.

Last, we consider that the percentage rate differs depending on whether the case settles or goes to trial. We denote $\beta_S \in (0, 1)$ the rate the lawyer get when the claim is settled, and $\beta_t \in (0, 1)$ the share he gets when the case go to trial.\footnote{The rate the lawyer gets is not the same if the case is settled or goes to court. The American Bar Association (ABA) Model Rules of Professional Conduct adopted by the ABA House of Delegates in 1983 states that “a contingent fee agreement (...) shall state the method by which the fee is to be determined, including the percentage (...) that shall accrue to the lawyer in the event of settlement, trial or appeal” (Rule 1.5). Emons [2000] (p.21) mentions that “in a typical tort case in the United States, the plaintiff’s attorney (...) gets one third if the case is settled without trial, 40% if the plaintiffs wins a trial, and 50% if a judgement for the plaintiff is affirmed on appeal.”}

The expected payoff of the plaintiff when going to trial is then $(1 - \beta_t) D$. By denoting $S_{CF}$ his expected return when accepting a settlement, the condition for the equilibrium
settlement amount becomes:

\[(1 - \beta_s)S_{CF} = (1 - \beta_t)D\]  \hfill (2)

At equilibrium, the condition for zero profit for the lawyers operating in a competitive market allows to determine the percentage of recovery they get. The net payoff of a lawyer in case of settlement is \(\beta_s S_{CF} - R_p\) so that \(\beta_s = \frac{R_p}{S_{CF}}\). In the same way, a lawyer gets \(\beta_t D - R_p - C_p\) when going to trial, so that \(\beta_t = \frac{C_p + R_p}{D}\). Then,

\[(2) \iff S_{CF} = \beta_s \times S_{CF} + D - \beta_t D \]
\[= R_p + D - C_p - R_p = D - C_p\]

When comparing \(S_S\) and \(S_{CF}\), it comes that \(S_S = S_{CF}\): the equilibrium settlement amount does not change with the payment structure of the lawyer.

**Result 2.** Under contingent fees arrangements, the probability for an injured plaintiff to access to justice is higher than under self-finance (but is not equal to one), and the equilibrium settlement amount is the same than under self-finance litigation.

### 3.4 Equilibrium under Third-Party Financing

Let us first analyse the conditions under which the investors accept to finance the meritorious claim of the plaintiff, and then the outcome of the claim.

#### 3.4.1 Access to justice under third-party financing

Let us assume that investors finance the plaintiff’s claim. By denoting \(\gamma_t\) the percentage of the damage asked by the investors to accept to finance the claim, then the investors agree to finance if the rate of return on their investment is equal to the the rate of return they could earn in an alternative investment of equivalent risk. This reflects the fact that capital is costly because investors have alternative projects.\(^{29}\) By denoting \(k \geq 0\) this rate,

\(^{29}\)Note that in this case, \(\beta_T\) is hypothetical since no case goes to trial. However, it must be defined in theory so that \(S_{CF}\) can be derived.

\(^{30}\)Without providing technical details that would be beyond the scope of this paper, the investors determine the rate of return they require by comparing the investment in litigation to other comparable investments with similar risk profiles to determine the “market” cost of capital. It is commonly equated using the CAPM (capital asset pricing market) formula.
the investors agree to finance the claim if:

$$\frac{\gamma_t D - R_p - C_p}{R_p + C_p} = k$$

(3)

(3) can be interpreted as the participation constraint of the investors, and $k$ can be interpreted as the rate of return on capital of an outside option for their investments.\footnote{This implies that $k$ is at least equal to the non-risk rate on the financial market. More broadly, because the investors require a rate of return on investment equals to $k$, this makes third-party financing (third-party financing) a more costly litigation financing system than the others. An alternative justification for the additional costs to use third-party financing could be that the investors are not directly involved in the claim, nor do they have the lawyer’s expertise to learn rapidly about the claim. Then, they spend resources to investigate on the claim, which creates some additional costs for the investors that have to be covered.}

(3) can be rewritten to determine $\gamma_T$, the share of the recovery asked by the investors:

$$\gamma_T = \frac{(k + 1)(C_p + R_p)}{D}$$

(4)

However, for the plaintiff to agree to sign an agreement with the investors, his remaining share of the recovery has to be high enough to allow him to cover his cost to file a claim $f$, i.e. if:

$$(1 - \gamma_T)D - f \geq 0 \iff \gamma_T \leq \frac{D - f}{D} \iff \gamma_T \leq 1 - \frac{f}{D}$$

Since from (4) $\gamma_T = \frac{(k + 1)(C_p + R_p)}{D}$ this implies that the investors finance the claim only if:

$$D - (k + 1)(R_p + C_p) - f \geq 0$$

(5)

From (5), only meritorious claims that are profitable enough can be financed under third-party financing. Then, we can determine the probability $x_T(k)$ with which the plaintiff is financed under third-party financing:

$$D - (k + 1)(C_p + R_p) - f \geq 0 \iff \frac{D - f}{k + 1} - R_p \geq C_p$$

By denoting $C(k) = \frac{D - f}{k + 1} - R_p$, then third-party financing allows to finance a plaintiff when his claim entails a cost to go to court $C_p \leq C(k)$. In other words, under third-party financing, the plaintiff is financed with a probability $x_T(k) = \int_0^{C(k)} z(C_p)dC_p$ where $k \geq 0$
denotes the required rate of return on capital for the investors.

Since \( \frac{\partial C(k)}{\partial k} < 0 \), then the higher the required rate of return on capital is, the lower the maximum cost \( \hat{C}(k) \) the investors accept to finance is.

Since \( \frac{\partial x_T(k)}{\partial k} \leq 0 \), it also implies that the probability to access to justice under third-party financing decreases with \( k \). It is then worth noticing that the investors have \textit{a priori} no cost constraint but because of their requirement for profitability, they select only the most profitable claims. This entails an endogenous cost constraint on the claims they are likely to finance.

Let us also note that when \( k \to 0 \), then (5) \( \to D - C_p - R_p - f \geq 0 \), so that the plaintiff is financed under third-party financing, whatever the cost \( C_p \in [C_p^{\text{min}};C_p^{\text{max}}] \) associated to his claim, \textit{i.e.} \( x_T = 1 \). However, third-party financing does not always increase the number of meritorious claims that are filed compared to contingent fees. Indeed, when \( k \to \infty \), then \( \hat{C}(k) \to -R_p < 0 \), so that no claim is financed under third-party financing.

As a consequence, since \( x_T(.) \) is a decreasing function, \( \exists \hat{k} \), so that \( \forall k \in (0, \hat{k}), x_T(k) \geq x_{CF} \) and \( \forall k > \hat{k}, x_T(k) < x_{CF} \).

To sum up, the merit of a claim is not sufficient to be financed by third parties: even if there are no cost barriers as under self finance or contingent fees arrangements, third-party financing implies a “profitability” barrier that restricts the number of claims that can be filed. Then, this litigation financing does not necessarily enlarge the number of cases that accesses to justice. Let us now determine whether third-party financing improves the settlement conditions.

### 3.4.2 The equilibrium settlement amount under third-party financing

Whenever the claim is enough profitable, the investors finance it and they exert some influence on the decision to settle or to go to court. They accept the settlement decision if it allows them to get at least the same rate on capital than they could have by bringing the case to court. By denoting \( \gamma_S \) the share of the settlement amount the investors require, we can define \( \gamma_S \) as follows:

\[
\frac{\gamma SS_T - R_p}{R_p} = k \iff \gamma SS_T = (k + 1)R_p
\]  

(6)
Then, the decision made by the plaintiff will be validated by the investors whenever $\gamma_S S_T = (k + 1) R_p$.\footnote{It seems that both investors and the plaintiff have to agree to settle or to go to court (cf. footnote 18 about the share of the control in third-party financing). In our model, the determination of the percentage of the recovery that the investors get allows to make sure that the settlement is equivalent for them to the situation where they go to court: the expected rate of return on their investments is still $k$.} Knowing this condition, the plaintiff accepts the settlement if he gets at least as much as he can get by going to trial:

\[(1 - \gamma_S) S_T = (1 - \gamma_T) D \]
\[\Leftrightarrow S_T = \gamma_S S_T + (1 - \gamma_T) D\]

From (4) and (6)
\[S_T = (k + 1) R_p + (D - (k + 1)(C_p + R_p))\]

\[\Leftrightarrow S_T = S_T(k) = D - (k + 1)C_p\] (7)

Then, when $k = 0$, then $S_T(0) = S_{CF} = S_S$.

Yet, whenever $k > 0$, then $S_T(k) \leq S_S = S_{CF}$. This comes from the fact that by accepting to settle, the investors avoid to invest $C_p$ at the following period and can use their outside option with a rate of return on capital $k$. In other words, the rate $k$ is the rate of return on capital the investors can get with their outside option, so that this rate can be assimilated to an opportunity cost for them. The investors may agree to accept a relatively lower settlement amount because they avoid to finance $C_p$ at the following period, and use this amount of money on alternative financial projects with a rate of return $k$. By ranking the settlement amounts, we get:

\[S_T(k) \leq S_s = S_{CF}\] (8)

Then, $\forall k \in (0, \hat{k})$, third-party financing leads to a lower settlement amount than under contingent fees, but to a higher probability that the claim can be brought to court ($x_T(k) \geq x_{CF}$). However, $\forall k > \hat{k}$, third-party financing is less efficient than contingent fees: it leads to a lower equilibrium settlement ($S_T(k) < S_{CF}$) amount and to a lower probability that the claim is financed ($x_T(k) < x_{CF}$).

**Result 3.** Under third-party financing, the required rate to return on capital ($k$) de-
terminates the probability with which the plaintiff may access to court and the equilibrium settlement amount. Moreover, \( \exists k > 0 \) so that \( \forall k \geq k \) third-party financing performs lower than contingent fees.

Given results 1; 2 and 3, we can establish the following proposition:

**Proposition 1.** There is no litigation financing system that allows to finance all types of meritorious claims a plaintiff may hold. The higher the rate of return on capital is, the less likely third-party financing outperforms contingent fees, since the equilibrium settlement amount under third-party financing and the probability to finance a claim becomes all the lower.

## 4 Financing of Litigation when claims can be meritorious or frivolous

Let us now consider a situation where the defendant cannot observe whether the claim of the plaintiff is meritorious or frivolous. Then, the plaintiff can be truly injured or not. For instance, an individual may be involved in an accident but sustained no injuries. Another example is a products liability case in which injury is undisputed, but the plaintiff is not entitled to damages if he was contributorily negligent in using the product (Katz [1990]). We assume that the judges do not make any mistake: they allow for damages only for meritorious claims, and are able to detect frivolous claims that get no damage. There is then no value to pursue a claim to trial for an uninjured plaintiff. However, it may be profitable for him to file suit in hopes of obtaining a settlement.\(^{33}\)

The timing of the game becomes as follows:

1. A plaintiff can randomly be injured or not in an accident, and the cost \( C_p \) to go to court for such an injury (\( C_p \in [C_p^{\text{min}}; C_p^{\text{max}}] \)) is revealed.\(^{34}\)

\(^{33}\)As defined in the introduction, we consider a frivolous claim as that of an uninjured plaintiff obtaining payment to which he is not entitled to, during the settlement period. We do not address suits in which the prospect of judicial error or jury confusion at trial permits a plaintiff to obtain a compensation that is undeserved according to some external normative standards. Neither do we address suits that turn out \( \textit{ex post} \) to have little basis in law but that \( \textit{ex ante} \) seemed plausible.

\(^{34}\)We assume that there is only one possible injury during the accident that occurs, so that an uninjured plaintiff can try to misrepresent as a victim of this injury, but not as a victim of a different injury, whose cost would be different that the value of \( C_p \).
2. The plaintiff chooses whether to file a claim at cost \( f \) or not.

3. The lawyer’s costs \( R_p \) and \( R_d \) are paid.

4. The settlement period occurs.

5. If the settlement fails, parties can drop or pay \( C_p \) and \( C_d \) to go to trial.

6. The judgment is made and the information is revealed: only meritorious claims get the damage \( D \).

We focus in this section on the number of frivolous suits filed and the consequences on settlement under each type of litigation financing \( i \in \{ S; CF; T \} \). The assumptions are the same as in the previous section, except that the defendant does not know whether the case is meritorious or frivolous.\(^{35}\) Yet, the lawyer and the investors observe it. The lawyers accept to finance a case only if they can expect at least zero profits, and the investors finance the claim if they expect a rate of return on capital \( k \geq 0 \). Moreover, whether frivolous or not, the plaintiff has the same cost constraint to finance \( C_p \) as that described in the previous section.

Then, in this section, a plaintiff can be either truly injured or not. In each case, he can decide to file a suit or not. We introduce the following notations:

- \( \alpha \in (0, 1) \) is the initial probability with which a plaintiff is truly injured. This probability is exogenous, and does not change as regards to the financing system.

- \( x_i \in (0, 1) \) is the probability with which a plaintiff can afford to go to court under financing system \( i \in \{ S; CF; T \} \), i.e. the probability that the cost \( C_p \in [C_{p\text{min}}; C_{p\text{max}}] \) is such that it can be financed under financing system \( i \). Because of the cost constraint of the plaintiff, this fraction is relative to the financing system as shown in the previous section. The defendant observes \( C_p \) and knows whether the claim can be credibly financed or not (i.e. the defendant knows the budget constraint of the

\(^{35}\)As in Katz [1990] (p.8), we abstract from the fact that in an actual lawsuit the defendant may wish to spend resources to investigate the claim’s validity, for example by paying for a medical examination or by engaging in civil discovery. Instead, we consider that complete information is likely to be prohibitively costly, so that one can interpret the defendant’s probability estimate as that remaining after optimal investigation. In the same way, we assume that an injured plaintiff cannot credibly communicate the validity of his claim to the defendant before trial.
plaintiff and the cost $C_p$ to go to court for him). What he cannot observe is only an individual plaintiff’s type (i.e. whether the plaintiff is truly injured or not). As a consequence, whether the plaintiff is truly injured or not, he can credibly threat to go to court with a probability $x_i$.

- $\theta_i \in (0, 1)$ is the probability with which an uninjured plaintiff files suit under financing system $i$. The uninjured plaintiff decides to file a claim if he can afford to do so (so that $\theta_i \leq x_i$), and if he anticipates that the defendant will prefer to settle rather than to bring the case to court.

Figure 1 summarizes how the probabilities $\alpha, \theta_i$ and $x_i$ are linked.

Figure 2: The plaintiff’s characteristics

The zones in grey in figure 1 represent the probability with which a plaintiff files a claim: if he is truly injured (with probability $\alpha$), he files a claim as soon as he can afford to do so (with probability $x_i$), because he knows that he is entitled to $D$ by going to court. If he is uninjured (with probability $(1 - \alpha)$), he files a claim if he can credibly do so (with probability $x_i$), and if he expects a positive return from the decision of the defendant to settle (with probability $\theta_i$), since he will get no compensation by going to trial. The equilibrium we present will determine the value $\theta_i$.

From figure 1, we can note that the plaintiff files a claim with probability $x_i \alpha + (1 - \alpha) x_i \theta_i$.

- $\alpha_i^* = \frac{x_i \alpha}{\alpha x_i + (1 - \alpha) x_i \theta_i} = \frac{\alpha}{\alpha + \theta_i (1 - \alpha)}$ according to the Bayes’ rule. Then,
\( \alpha_i^* \geq \alpha \) \hspace{1cm} (9)

- \( \psi_i \in (0, 1) \) is the probability that a case filed is settled under financing system \( i \).

The defendant’s strategy is to choose to settle or to go to trial, and is then represented by the variable \( \psi_i \). An uninjured’s plaintiff has to determine whether to file suit or not, and is then represented by the variable \( \theta_i \). A truly injured plaintiff always files suit, since he is certain to get \( D \) by going to court.

Then, the equilibrium we use is a sequential equilibrium where \( \theta_i^* \) and \( \psi_i^* \) represent the best responses of the uninjured plaintiff and of the defendant.

### 4.1 Equilibrium under self finance

#### 4.1.1 The strategy of the defendant

When a claim is filed, the defendant does not know whether the claim is frivolous or not, and he has three strategies:

1. He can either offer the lowest amount an injured plaintiff will accept not to go to court, i.e. \( S_S \) as defined in subsection 3.2. Whether the plaintiff is truly injured or not, he will accept the offer. The total cost of this strategy for the defendant is \( S_S + R_d = D - C_p + R_d \).

2. The defendant can propose \( S_S^F = \epsilon \) (with \( \epsilon \) being a low positive value, \( \epsilon \approx 0 \)) so that only an uninjured plaintiff accepts.\(^{36}\) However, a truly injured plaintiff will refuse and will prefer to go to court. The total expected cost of this strategy is \( (1 - \alpha^*)\epsilon + \alpha^*(D + C_d) + R_d \), since there is a probability \( (1 - \alpha^*) \) that the plaintiff is uninjured and accepts the settlement offer, and a probability \( \alpha^* \) that the claim is meritorious, so that the defendant spends costs \( C_d \) to go to court and pays the damage \( D \).

\(^{36}\)If he does not accept, he will get zero since he will not go to court, knowing that he will get nothing since his claim is frivolous.
3. Last, the defendant can make no offer during the settlement period (SS = 0). In this case, if the plaintiff is uninjured, he drops off the case, and he goes to court only if he is truly injured. The total cost of this strategy for the defendant is \( \alpha_S^*(D + C_d) + R_d \).

The defendant will choose the lowest cost strategy. Making an offer \( SS = \epsilon \) (the second strategy) is always more costly than making no offer (the third strategy), since in both cases, the defendant has to finance the cost to go to court if the claim is meritorious and pays in addition \( \epsilon \) if the plaintiff is uninjured (\( SS = \epsilon \)). The defendant has then to choose between the first and the third strategy, i.e. offering \( SS = D - C_p \) or making no offer and going to court with an expected cost of \( \alpha_S^*(D + C_d) + R_d \).

Then, the defendant has better settle when the total expected cost under settlement is lower than the total cost when going to court, i.e. when:

\[
D - C_p + R_d \leq \alpha_S^*(D + C_d) + R_d
\]

The threshold value of \( \alpha_S^* \) allowing to separate the two strategies of the defendant is given by \( \bar{\alpha}_S^* = \frac{D - C_p}{D + C_d} \). When \( \alpha_S^* \geq \bar{\alpha}_S^* \), then it is cheaper for the defendant to settle rather than to go to court. This can be interpreted as follows: the probability that a plaintiff (that has filed a claim) is truly injured is so high that it will be too costly for the defendant to go to trial. Symmetrically, the defendant goes to trial when \( \alpha_S^* \leq \bar{\alpha}_S^* \): the probability that a plaintiff (that has filed a claim) is truly injured is low enough so that is is cheaper to go to court rather than to settle.

4.1.2 The strategy of the plaintiff

Let us now detail the strategy of the plaintiff. Two cases have to be distinguished \( \alpha \geq \bar{\alpha}_S^* \) and \( \alpha < \bar{\alpha}_S^* \).

- When \( \alpha \geq \bar{\alpha}_S^* \), the probability that a plaintiff is truly injured (\( \alpha \)) is higher than the threshold above which the settlement strategy is less costly for the defendant (\( \bar{\alpha}_S^* \)). Then, from (9), \( \alpha_S^* \geq \alpha \geq \bar{\alpha}_S^* \), which implies that the defendant prefers to settle. The consequence is that the plaintiff (whether truly injured or not) always files a claim, \( \theta_S^* = 1 \), since he anticipates the settlement that allows him to get a compensation.
Then, the probability that a case filed is settled becomes \( \alpha_S^* = \frac{\alpha}{\alpha + \theta_s(1-\alpha)} = \alpha \). The equilibrium is a pure strategy equilibrium: the plaintiff always files a suit \( (\theta_S^* = 1) \), and the defendant always settles \( (\psi_S^* = 1) \).

The probability that a plaintiff is truly injured is so high that the defendant prefers to settle rather than to go to trial. However, at equilibrium, if the plaintiff is uninjured (which happens with a low probability), he earns a rent.

- Let us now consider the case where \( \alpha < \tilde{\alpha}_S \). Since from (9), \( \alpha_S^* \geq \alpha \), this does not allow to compare \( \tilde{\alpha}_S \) and \( \alpha_S^* \), and then to learn the defendant’s strategy between settling or going to court. Let us examine the two possible strategies of the defendant and show that no pure strategies equilibrium exists.

  - First, if the defendant decides to settle, then the plaintiff (whether truly injured or not) files a suit, so that \( \theta_S^* = 1 \) and \( \alpha_S^* = \alpha_S \). Then, \( \alpha_S = \alpha_S^* \leq \tilde{\alpha}_S \): it would have been cheaper for the defendant to go to court rather than to settle.

  - Let us now examine what happens if the defendant always decides to go to court. Then, \( \theta_S = 0 \) and \( \alpha_S^* = 1 \) since only a truly injured plaintiff files a suit.

In this situation, we go back to the results found in section 2: it is cheaper for the defendant to settle when the claim that is filed is meritorious.

Then, the only equilibrium is a mixed strategy equilibrium where the defendant settles with some probability and goes to trial with some other probability, and an uninjured plaintiff files a suit with some probability. To characterize this equilibrium, we find \( \theta_S^* \) and \( \psi_S^* \) so that the defendant is indifferent between settling and going to trial, and an uninjured plaintiff is indifferent between filing or not filing.

Let us now determine the values \( \theta_S^* \) and \( \psi_S^* \).

Under self finance, a plaintiff is indifferent between filing or not if:

\[
\psi_S^* S - R_p - f = 0 \iff \psi_S^* = \frac{R_p + f}{S} = \frac{R_p + f}{D - C_p}
\]

where \( \psi_S^* \) represents the probability that the defendant chooses to settle at equilibrium.
The defendant is indifferent between settling and going to court if $\alpha^*_S = \bar{\alpha}^*_S$:

$$\frac{\alpha}{\alpha + \theta_S(1 - \alpha)} = \frac{D - C_p}{D + C_d}$$

$$\Leftrightarrow \theta^*_S = \frac{\alpha(C_p + C_d)}{(1 - \alpha)(D - C_p)}$$

where $\theta_S^*$ represents the probability that an uninjured plaintiff file a claim under self-finance at equilibrium.

In this equilibrium, the probability that a plaintiff is uninjured is so high that the defendant prefers to go to court than to settle, and thus drives the profit of the uninjured plaintiff to zero.

This equilibrium is unique and stable under an adjustment process: if an uninjured plaintiff files a claim too frequently, the defendant will refuse to settle, which is likely to diminish the incentives of an uninjured plaintiff to bring suit. If an uninjured plaintiff files a claim with a low probability, the defendant chooses to settle, which increases the incentives of the uninjured plaintiff to bring suit.

**Result 4.** Under self-finance, a plaintiff can credibly go to court with a probability $x_S\%$.

When $\alpha \geq \bar{\alpha}^*_S = \frac{D - C_p}{D + C_d}$, a pure strategy equilibrium exists: $\psi^*_S = \theta^*_S = 1$.

When $\alpha < \bar{\alpha}^*_S$, there is no pure strategy equilibrium but a mixed strategy equilibrium defined as follows:

$$\psi^*_S = \frac{R_p + f}{D - C_p}; \theta^*_S = \frac{\alpha(C_p + C_d)}{(1 - \alpha)(D - C_p)}$$

### 4.2 Equilibrium under contingent fees arrangements

#### 4.2.1 The financing of frivolous claims

The lawyer observes whether the case is meritorious or not. If the case is meritorious, the lawyer asks a share $\beta_S$ of the gains in case of settlement and $\beta_T$ in case of trial, as defined in section 3.2. However, if the case is frivolous, the expected profit of the lawyer will be $\psi_{CF}^* \beta_S S_{CF} - R_p$, where $\psi_{CF}$ is the probability that the defendant will settle under a contingent fee.\(^{37}\)

The zero-profit condition under perfect competition implies that:

\(^{37}\)Let us note that $\psi_{CF} > 0$ is a necessary condition for the attorney to accept the case. Moreover, contrary to Miceli [1994], we assume that the lawyer fees (in case of settlement) are different when the
\[ \beta_S^F = \frac{R_p}{\psi_{CF}S_{CF}} \]  \hspace{1cm} (10)

The rate as defined by (10) is applied for frivolous claims. We assume that the rates defined between the lawyer and the plaintiff are not observable to outsiders, else the plaintiff’s type could be found by observing the rate asked by the lawyer under settlement.

### 4.2.2 The equilibrium strategies

If the defendant refuses to settle, then the plaintiff decides to go to trial only if he is truly injured (and agrees to give a percentage \( \beta_T \) of the recovery to the lawyer), and the plaintiff drops off the case if he is uninjured. As in the previous case, the defendant has three strategies: (i) he can choose to settle for \( S_{CF} \) so that the plaintiff always accepts (whatever his type), (ii) he can settle for \( S_{CF}^* = \epsilon \) so that the plaintiff accepts only if he is uninjured (i.e. with probability \( 1 - \alpha_{CF}^* \)), while if he is truly injured (with probability \( \alpha_{CF}^* \)), he prefers to go to court. The total expected cost for the defendant is then \( \epsilon(1 - \alpha_{CF}^*) + \alpha_{CF}^*(D + C_d) \), or (iii) he can make no offer during the settlement period and go to court if he is truly injured (with a cost \( \alpha_{CF}^*(D + C_d) \)).

The second strategy is dominated by the third, so that the defendant has to choose between settling for \( S_{CF} \) or going to court.

By going to court, the expected cost is \( \alpha_{CF}^*(D + C_d) + R_d \), while the expected cost to settle is \( S_{CF} + R_d \). Then, the defendant is indifferent between these two options, if:

\[ \alpha_{CF}^* (D + C_d) + R_d = S_{CF} + R_d \]

\( \Leftrightarrow \) \[ \alpha_{CF}^* = \frac{S_{CF}}{D + C_d} = \frac{D - C_p}{D + C_d} \]

When \( \alpha_{CF}^* \geq \alpha_{CF}^* \), then the defendant prefers settling rather than going to court. 

---

.. superscript::\(^{38}\)

\( \beta_S^F \) is here larger than the rate asked when all the claims are meritorious. This can be explained by the fact that a frivolous case is more risky and the lawyer has to be compensated when the defendant makes no offer and the case must be dropped.
When $\alpha^*_{CF} < \alpha^*_{CF}$, the defendant makes no offer and goes to trial, because the probability that the plaintiff is truly injured is too low and it would be too costly to settle rather than to go to court to see whether the plaintiff is truly injured.

Then, as under self finance, two types of equilibria arise according to the value of $\alpha$:

- When $\alpha \geq \alpha^*_{CF}$, then the defendant chooses to settle with the plaintiff that files a suit. The plaintiffs files a claim, whatever his type. A pure strategy equilibrium exists, defined as follows: $\alpha^*_{CF} = \frac{D - C_p}{D + C_d}$; $\theta^*_{CF} = \psi^*_{CF} = 1$.

- When $\alpha < \alpha^*_{CF}$, the only equilibrium is a mixed strategy equilibrium. The uninjured plaintiff is indifferent between filing or not filing if

$$
\psi_{CF}(1 - \beta^E_S)S_{CF} - f = 0 \Leftrightarrow \psi_{CF}S_{CF} - R_p = f \text{ from (10)} \Leftrightarrow \psi^*_{CF} = \frac{f + R_p}{D - C_p}
$$

where $\psi^*_{CF}$ represents the probability that the defendant chooses to settle at equilibrium under contingent fees arrangements.

The defendant is indifferent between settling and going to trial if:

$$
\alpha^*_{CF} = \alpha^*_{CF} \Leftrightarrow \frac{\alpha}{\alpha + (1 - \alpha)\theta_{CF}} = \frac{D - C_p}{D + C_d}
$$

$$
\Leftrightarrow \theta^*_{CF} = \left( \frac{\alpha}{1 - \alpha} \right) \left( \frac{C_p + C_d}{D - C_p} \right) \text{ (11)}
$$

where $\theta^*_{CF}$ represents the probability that an uninjured plaintiff opens a claim at equilibrium, under contingent fees arrangements.

Let us note that $\theta^*_{S} = \theta^*_{CF}$, $\psi^*_{S} = \psi^*_{CF}$, and $\bar{\alpha}^*_{CF} = \bar{\alpha}^*_{S}$. The probabilities with which an uninjured plaintiff files a claim and that the claim is settled are the same under contingent fees and self-finance. However, since $x_S \leq x_{CF}$, these probabilities are applied on a larger scale.
**Result 5.** Under contingent fees arrangements, a plaintiff can afford to go to court with a probability $x_{CF} \%$:

When $\alpha \geq \alpha_{CF}^{*} = \frac{D-C_p}{D+C_d}$, a pure strategy equilibrium exists, $\theta_{CF} = \psi_{CF} = 1$.

When $\alpha < \alpha_{CF}^{*}$, there is only a mixed strategy equilibrium such that:

$$\psi_{CF} = \frac{f + R_p}{D - C_p}, \theta_{CF} = \frac{(1-\alpha)}{(D-C_p)}[(C_p + C_d)]$$

### 4.3 Equilibrium under Third-Party Financing

#### 4.3.1 The financing of frivolous claims

The investors observe whether the plaintiff is truly injured or not. As described in subsection 3.3, the shares of the recovery asked by the investors are $\gamma_S$ and $\gamma_T$ for claims that are meritorious. However, when the claim is frivolous, no damage will be obtained if the case goes to court, and the investors only accept to finance the settlement if the net rate of return on their investment is equal to $k$:

$$\gamma_S^F \psi_T S_T - R_p = k \quad (12)$$

This allows to determine the share ($\gamma_S^F$) of the recovery required by the investors:

$$ (12) \Leftrightarrow \gamma_S^F = \frac{(k + 1) R_p}{\psi_T S_T} \quad (13)$$

The plaintiff accepts to be financed by the investors if his remaining gain $(1 - \gamma_S^F) \psi_T S_T$ allows to cover the cost $f$ to file a claim:

$$ (1 - \gamma_S^F) \psi_T S_T - f \geq 0 \Leftrightarrow 1 - \frac{f}{\psi_T S_T} \geq \gamma_S^F$$

$$ \Rightarrow \psi_T S_T - (k + 1) R_p - f \geq 0$$

We will show that at equilibrium, this condition is always fulfilled. Then, as soon as the investors can credibly finance a frivolous claim (*i.e.* a claim whose corresponding cost to go to court would be $C_p \leq C(k)$), they are willing to finance it. However, as previously, even
if an uninjured plaintiff can afford to go to court, he opens a claim only if he anticipates that the defendant will settle rather than go to trial. The equilibrium strategies describe this situation.

4.3.2 The equilibrium strategies

The defendant has to choose between settling for $S_T$ so that the plaintiff accepts (whatever his type), or making no offer so that he goes to court only if the plaintiff is truly injured. When the probability that the plaintiff is truly injured is high, the defendant prefers to settle rather than to go to court. When the probability that a plaintiff is low, the equilibrium is a mixed strategy equilibrium. The defendant is indifferent between settling or going to trial if:

$$\alpha^* = \frac{D - (k + 1)C_d}{D + C_d}$$ (14)

$$\bar{\alpha}^* = \frac{D - (k + 1)C_p}{D + C_d}$$ (15)

Then, symmetrically to the previous cases, whenever $\alpha \geq \bar{\alpha}^*$, a pure strategy equilibrium exists, so that $\theta^* = \psi^* = 1$. In other words, the probability that a plaintiff is truly injured is so high that the defendant always prefers to settle than to go to court. The plaintiff (whether truly injured or not) files a claim, but the probability that he is truly injured remains high enough for the settlement strategy to be the most appropriate strategy for the defendant.

When $\alpha < \bar{\alpha}^*$, i.e. when the probability that a plaintiff is truly injured is low, there is only a mixed strategy equilibrium. The best strategy is for defendant to go to trial with some probability $\psi_T$ and for the uninjured plaintiff to file a claim with some probability $\theta_T$. This equilibrium implies that the uninjured plaintiff is indifferent between filing or not filing, i.e. \[\psi_T = f + (k + 1)R_p \]

Since $\psi_T = \frac{f + (k + 1)R_p}{S_T}$, then the previous condition for the investors to finance the claim ($\psi_T S_T - (k + 1)R_p - f \geq 0$) is always fulfilled at equilibrium.
\[ \psi_T(1 - \gamma_S)S_T - f = 0 \Leftrightarrow \psi_T(S_T - \frac{(k + 1)R_p}{\psi_T}) = f \]

\[ \Leftrightarrow \psi^*_T = \frac{f + (k + 1)R_p}{D - (k + 1)C_p} \]

The defendant is indifferent between settling and going to trial if \( \alpha^* = \tilde{\alpha}^*_T \). This implies:

\[ \frac{\alpha}{\alpha + (1 - \alpha)\theta_T} = \frac{D - (k + 1)C_p}{D + C_d} \]

\[ \Leftrightarrow \alpha(D + C_d) = [D - (k + 1)C_p] \alpha + (1 - \alpha)[D - (k + 1)C_p] \theta_T \]

\[ \theta^*_T = \left(\frac{\alpha}{1 - \alpha}\right) \left[\frac{(k + 1)C_p + C_d}{D - (k + 1)C_p}\right] \quad (16) \]

**Result 6.** External investors may agree to finance a frivolous plaintiff. When \( \alpha \geq \tilde{\alpha}^*_T \), a pure strategy equilibrium exists, so that \( \tilde{\alpha}^*_T = \frac{D - (k + 1)C_p}{D + C_d} \), and \( \theta^*_T = \psi^*_T = 1 \). When \( \alpha < \tilde{\alpha}^*_T \), we observe a mixed strategy equilibrium, defined as follows:

\[ \psi^*_T = \frac{f + (k + 1)R_p}{D - (k + 1)C_p} \]

\[ \theta^*_T = \left(\frac{\alpha}{1 - \alpha}\right) \left[\frac{(k + 1)C_p + C_d}{D - (k + 1)C_p}\right] \]

**4.4 Comparison of equilibria**

We compare here the thresholds separating pure and mixed strategies (\( \tilde{\alpha}^*_T \)), the probabilities that the case filed and settled (\( \psi^*_T \)), and the probabilities that an uninjured plaintiff files a claim under each type of litigation financing (\( \theta^*_T \)). This comparison allows to show that third-party financing leads to the highest probability of cases that are settled (even when these cases are frivolous), and to the highest probability that an uninjured plaintiff files a claim.
4.4.1 Comparison of the thresholds $\bar{\alpha}^*_i$

Let us compare the different threshold $\bar{\alpha}^*_i$ separating pure and mixed strategies.

$$\bar{\alpha}^*_S = \alpha^*_C F = \frac{D - C_p}{D + C_d}$$

$$\bar{\alpha}^*_T = \frac{D - (k + 1)(C_p)}{D + C_d}$$

Then, it comes that $\bar{\alpha}^*_S = \alpha^*_C F \geq \bar{\alpha}^*_T$. third-party financing leads to a lower threshold: the proportion of pure strategies equilibria where all claims (whether meritorious or frivolous) settle is then higher. Figure 2 summarizes the types of equilibrium strategies under the different financing systems, as a function of $\alpha$.

![Figure 3: The equilibrium strategies](image)

**Figure 3: The equilibrium strategies**

- $\alpha < \bar{\alpha}^*_T$
- $\bar{\alpha}^*_T \leq \alpha \leq \bar{\alpha}^*_C F$
- $\bar{\alpha}^*_C F < \alpha$

Only mixed strategies

| Mixed strategies for SF and CF | Only pure strategies for TPF |

4.4.2 Comparison of the probabilities that a case is settled

Let us now compare the fraction $\psi^*$ of cases filed that settle under mixed strategies, *i.e.* when the defendant’s best strategy is sometimes to go to trial and sometimes to settle. These probabilities are:

$$\psi^*_S = \frac{R_p + f}{D - C_p} = \psi^*_C F$$

$$\psi^*_T = \frac{f + R_p(k + 1)}{D - (k + 1)C_p}$$

Then, when $k = 0$, $\psi^*_T = \psi^*_S = \psi^*_C F$; and when $k > 0$, $\psi^*_T > \psi^*_S = \psi^*_C F$: third-party financing leads to a higher probability that a defendant chooses to settle compared to self-
finance or contingent fees arrangements.\textsuperscript{40} This can be interpreted as follows: since the equilibrium settlement amount is lower under third-party financing than under alternative financing systems, this creates higher incentives for the defendant to decide to settle rather than to go to court.

\section*{4.4.3 Comparison of the probability that an uninjured plaintiff files a suit}

In this subsection, we compare the probabilities that an uninjured plaintiff files suit in mixed strategies.

\[
\begin{align*}
\theta^*_S &= \theta^*_F = \frac{\alpha(C_p + C_d)}{(1 - \alpha)(D - C_p)} \\
\theta^*_T &= \left( \frac{\alpha}{(1 - \alpha)} \right) \left( \frac{(k + 1)(C_p + C_d)}{(D - (k + 1)C_p)} \right)
\end{align*}
\]

Then, when \( k = 0 \), then \( \theta^*_T = \theta^*_S = \theta^*_F \), while when \( k > 0 \), \( \theta^*_T > \theta^*_S = \theta^*_F \). Third-party financing leads to a higher probability that an uninjured plaintiff files a claim: since the probability that the defendant decides to settle is higher, this creates higher incentives for an uninjured plaintiff to file a claim, with the hopes of obtaining gains through settlement.

\textbf{Proposition 2.}

\textit{When \( k = 0 \), the probability that an uninjured plaintiff files a claim and that the defendant settles is the same whatever the litigation financing system. Yet, when \( k > 0 \), an uninjured plaintiff files a claim and is awarded a compensation with a higher probability under third-party financing than under self-finance or contingency fees.}

\section{5 Efficiency of third-party financing}

In this section, we try to evaluate the conditions under which third-party financing is preferable to the other financing systems. We focus on two criteria to compare these different financing systems: the probability that a truly injured plaintiff accesses to court...\textsuperscript{40}This result seems consistent with the empirical evidence provided by Chen and Abrams [2011]: they found a marked decrease in the average number of appearances each party made before the court in jurisdictions, and interpret it to indicate a corresponding increase in out-of-court resolution between the parties, i.e. settlement.
compared to an uninjured plaintiff (subsection 5.1) and the total litigation costs spent under each financing system (subsection 5.2).

5.1 Third-party financing: a trade-off between larger access and quality of the claims?

From proposition 1, under third-party financing, a truly injured plaintiff may access to court with a higher probability. However, from proposition 2, third-party financing also raises the probability that the defendant settles and that an uninjured plaintiff opens a file. In this subsection, we try to evaluate the net effect of third party financing compared to the other litigation financing systems, by highlighting the trade-off between the benefits (i.e. a larger access to justice for truly injured plaintiffs) and the costs (a higher probability that an uninjured plaintiff files a suit).

Since the equilibrium strategies change according to the value of $\alpha$ (as shown in figure 2), we distinguish below three cases.

5.1.1 Trade off when $\alpha \geq \alpha_{CF}^{\hat{\alpha}}$

From figure 2, when $\alpha \geq \alpha_{CF}^{\hat{\alpha}}$, only pure strategies occur at equilibrium, whatever the financing system. Let us denote $NB_i$, with $i \in \{S; CF; T\}$, the difference between the benefit (the probability that a truly unjured plaintiff accesses to court, $\alpha x_i$) and the cost (the probability that an uninjured plaintiff opens a file and settles under financing system $i$, i.e. $((1 - \alpha) x_i)$). Then, the net benefit function of a financing system $i$ is:

$$NB_i = \alpha x_i - (1 - \alpha) x_i = x_i(2\alpha - 1)$$

The benefits of the financing system $i$ outweights its costs if $NB_i \geq 0$, i.e. if $\alpha \geq \frac{1}{2}$: the probability that a plaintiff is truly injured is higher than the probability than he is uninjured. We will keep this assumption ($\alpha \geq \frac{1}{2}$) until the end of the model.

- From subsection 3.4.1, $\forall k \in (0, \hat{k})$, $x_T(k) \geq x_{CF}$, then $NB_T \geq NB_{CF} \geq NB_S$: third-party financing appears as preferable to the other litigation financing systems.
- $\forall k > \hat{k}$, $x_T(k) \leq x_{CF}$, then $NB_{CF} \geq NB_T$ and $NB_{CF} \geq NB_S$: contingent fees arrangements appear as preferable to the other litigation financing systems.
Consequently, even when $\alpha$ is high (there is a high probability that a plaintiff is truly injured), third-party financing does not always outperform contingent fees arrangements because of the profitability constraint required by the investors to finance a claim. Third-party financing outperforms contingency fees only if the rate of return on capital is relatively low, i.e. $k \leq \hat{k}$.

5.1.2 Trade off when $\frac{1}{2} \leq \alpha_T^* \leq \alpha \leq \alpha_S^* = \alpha_{CF}^*$

This situation only appears when $k > 0$ since it requires that $\alpha_T^* \neq \alpha_S^*$. Because of the mixed strategies under contingent fees and self finance, the net benefit function of self finance and contingency fees becomes:

$$\forall i \in \{S; CF\}, NB_i = \alpha x_i - (1 - \alpha)x_i\theta_i^*\psi_i^* = x_i(\alpha - (1 - \alpha)\theta_{CF}^*\psi_{CF}^*)$$

Contingent fees arrangements are preferable to self-finance since $NB_{CF} \geq NB_S$ because $x_{CF} \geq x_S$.\textsuperscript{41} Contingency fees perform better than self-finance. Moreover, proof n°1 in the appendix shows that $\exists k_1 \leq \hat{k}$ so that $\forall k \in (0, k_1)$, third-party financing performs better than contingent fees arrangements. This can be explained as follows: when $k$ is “low enough” ($k \leq k_1$), third-party financing increases largely the access to court ($x_T(k) \to 1$ as $k \to 0$), while the increase in the probability that an injured plaintiff opens a file is relatively low. However, as $k$ increases, the probability that an uninjured plaintiff opens a file becomes higher (since $\theta_T'(k) > 0$), while the access to court is more restrictive (since $x_T'(k) < 0$): when $k$ is high enough ($k \geq k_1$), contingent fees perform better than third-party financing.

5.1.3 Trade off when $\frac{1}{2} \leq \alpha \leq \alpha_T^*$

In this situation, the probability that a plaintiff is truly injured is relatively low, and all equilibria are of mixed strategies. The net benefit function of third-party financing is\textsuperscript{42}:

$$NB_T(k) = \alpha x_T(k) - (1 - \alpha)x_T(k)\theta_T^*\psi_T^*$$

Under this condition, let us note that $\frac{\partial NB_T(k)}{\partial k} \leq 0$: the higher $k$ is, the lower the net

\textsuperscript{41} This requires that the financing system $i$ is efficient, i.e. $NB_i \geq 0$. This is true when $(\alpha - (1 - \alpha)\theta_{CF}^*\psi_{CF}^*) \geq 0$. This condition is always fulfilled for $\alpha \geq \frac{1}{2}$.

\textsuperscript{42} Let us mention that $NB_T(k) \geq 0$ for $\alpha \geq \frac{1}{2}$. 37
benefit of third-party financing is, as shown in proof n°2 in the appendix.

Proof n°3 show that \( \exists k_2 \) (with \( k_2 \leq \hat{k} \)) so that \( \forall k \in (0, k_2) \), third-party financing outperforms contingency fees, by making access to court easier for a truly injured plaintiff than for an uninjured one.

### 5.1.4 Relative performance of third-party financing

The following table summarizes our results:

<table>
<thead>
<tr>
<th>Probability that a plaintiff is truly injured</th>
<th>High so that ( \alpha \geq \alpha_{CF}^- )</th>
<th>Intermediate so that ( \alpha_{T}^- \leq \alpha \leq \alpha_{CF}^- )</th>
<th>Low so that ( \alpha \leq \alpha_{T}^- )</th>
</tr>
</thead>
<tbody>
<tr>
<td>third-party financing outperforms if</td>
<td>( k \leq \hat{k} )</td>
<td>( k \leq k_1 ) with ( k_1 \leq \hat{k} )</td>
<td>( k \leq k_2 ) with ( k_1 \leq k_2 \leq \hat{k} )</td>
</tr>
</tbody>
</table>

The higher the rate of return on capital the investors require, the lower the settlement amount is (result 3), and then the more willing the defendant is to settle (proposition 2), which raises the incentives of the uninjured plaintiff to file a claim. Then, for third-party financing to outperform the other litigation financing mechanisms, the rate of return on capital \( (k) \) has to be relatively “low”, and all the lower than the probability that a plaintiff is truly injured is high.

We also note that the condition on the low level of \( k \) is stronger when the probability that a plaintiff is truly injured is at an intermediate level rather than a low level \( (k_2 \geq k_1 \) as shown in proof n°4). This can be explained as follows: the intermediate level is the one for which there are mixed strategies under contingent fees and self-finance, while strategies are pure under third-party financing. In other words, third-party financing is all the more damaging as the defendant always decides to settle while under the other litigation financing systems the defendant settles with some probability and goes to court otherwise, which allows to discover the true nature of the plaintiff. Hence, the different equilibrium strategies creates an additional disadvantage for third-party financing, which becomes more efficient only for very low values of \( k \).

When the probability that a plaintiff is truly injured is low \( (\alpha \leq \alpha_{T}^-) \), then all equilibrium
strategies are mixed, which makes the condition for third-party financing to outperform the other financing systems less strict \( (k_2 \geq k_1) \).

**Proposition 3.** third-party financing is all the more unlikely to create more benefits than costs compared to contingency fees than:
- The expected rate of return on investment \( (k) \) is high
- The probability that a plaintiff is truly injured is at an intermediate or low level.

5.2 Comparison of total litigation costs

In this subsection, we use another efficiency criterium to compare the different financing systems: we focus on the overall litigation costs under each system. These costs depend on the number of suits filed, and of the settlement rate. As in the previous subsection, we distinguish three cases according to the value of \( \alpha \) since it entails different strategies from the agents.

5.2.1 Litigation costs when \( \alpha \geq \alpha_S^T = \alpha_{CF}^T \)

When the probability that a plaintiff is truly injured is high, there are only pure-strategies equilibria: the defendant always settles and the uninjured plaintiff always decides to file a suit, whatever the financing system. Total litigation costs (TC) are therefore \( f + R_p + R_d \), and are spent when the plaintiff can afford to go to court, so that:

\[
TC_i = x_i(R_p + R_d + f)
\]

When \( k < \hat{k} \), \( x_T(k) \geq x_{CF} \) so that third-party financing leads to higher total litigation costs, mainly because it raises the probability for a plaintiff to access to court.

5.2.2 Litigation costs when \( \alpha_T^F \leq \alpha \leq \alpha_S^T = \alpha_{CF}^T \)

When the probability that a plaintiff is truly injured is at an intermediate level, strategies become mixed under contingent fees and self-finance. In this case, the probability that a suit is filed thus \( x_i(\alpha + (1 - \alpha)\theta_i^*) \) (with \( i \in \{S; CF\} \)), and the probability that the case goes to court is \( x_i(\alpha + (1 - \alpha)\theta_i^*)(1 - \psi_i^*) \). Whenever a suit is filed, the total costs are \( (f + R_p + R_d) \), and the additional costs when the case goes to court are \( (C_p + C_d) \). Total litigation costs are thus:
\[
\forall i \in \{S; CF\}, TC_i = x_i(\alpha + (1 - \alpha)\theta_i^*)(R_p + R_d + f) + (1 - \psi_i^*)(C_p + C_d)
\]

These total litigation costs are increasing in \(x_i\) and \(\theta_i^*\): the higher the probability that a plaintiff accesses to court and the higher the probability that an uninjured plaintiff opens a file are, the higher the total litigation costs are. However, these costs are decreasing in \(\psi_i^*\): the higher the probability that the defendant settles, the lower the total litigation costs are, since the parties do not go to court where they would have spent the additional costs \((C_p + C_d)\).

Under third-party financing, the strategies are still pure (as in the previous case), so that \(TC_T = x_T(k)(R_p + R_d + f)\). From the previous subsection, third-party financing outperforms the other financing systems when \(k \in (0, k_1)\). Proof n°5 shows that \(\forall k \in (0, k^C)\), with \(k^C < k_1\), third-party financing leads to higher costs than contingent fees, mainly because it increases the probability to access to justice. However, as \(k\) increases, this probability is decreasing, and so the total litigation costs. They become lower than the level of costs reached under contingent fees when \(k \geq k^C\).

5.2.3 Litigation costs when \(\bar{\alpha}_T^* \leq \alpha\)

In this case, all strategies are mixed, so that \(\forall i \in \{S; CF; T\}\):

\[
TC_i = x_i(\alpha + (1 - \alpha)\theta_i^*)(R_p + R_d + f) + (1 - \psi_i^*)(C_p + C_d)
\]

It is straightforward to show that \(TC_{CF} \geq TC_S\). When \(k = 0\), then \(x_T(0) = 1\), \(\psi_T^* = \psi_{CF}^*\), and \(\theta_T^* = \theta_{CF}^*\), so that \(TC_T \geq TC_{CF}\): third-party financing leads to the highest total litigation costs, mainly because it makes access to justice easier. However, when \(k\) increases:

- \(x_i(k)\) decreases so that the total litigation costs become lower,
- \(\theta^*(k)\) increases so that the total litigation costs also increase,
- and \(\psi_T^*(k)\) increases which lowers the total litigation costs

As a consequence, the lower \(k\) is, the higher the total litigation costs are under third-
party financing.

From subsection 5.1 and subsection 5.2:

**Proposition 4.** *When the rate of return on capital required by the investors is low, third-party financing is more likely to benefit to a truly injured plaintiff than an uninjured one, but leads to higher total litigation costs compared to the other financing systems.*

6 Conclusion

In this paper, we compare three litigation financing systems by taking into two effects: the access to justice and the probability that an uninjured plaintiff files a claim. Our results show that third-party financing outperforms the other litigation financing systems only when the required rate of return on investment is zero, since it enlarges the access to courts and does not impact on the equilibrium settlement amount. Otherwise, it does not necessarily outperform contingent fees arrangements, especially when the probability that a plaintiff is truly injured is at an intermediate or low level, and/or the expected rate of return on investments asked by the external investors is relatively high.

Our results highlight that the higher the rate of return on capital is, *(i)* the lower the probability that a plaintiff accesses to court is, *(ii)* the lower the equilibrium settlement amount is, *(iii)* the higher the incentives of the defendant to settle are, and as a consequence *(iv)* the higher the probability that an uninjured plaintiff files a claim is, since this plaintiff anticipates that the defendant is more willing to settle under third-party financing than under other litigation financing systems. Moreover, we show that the total litigation costs are all the higher under third-party financing as the rate of return on capital required by the investors is low.

Then, our results may explain why some legislators are reluctant to introduce such a practice. They do not induce that third-party financing should be banned, but simply that its consequences are highly dependent on the rate of return on capital the investors require. When this rate is high, third-party financing does not necessarily enlarge the access to justice for a plaintiff, nor the equilibrium settlement amount, and may even increase the probability that an uninjured plaintiff files a claim. Then, the virtues of third-party financing have to be carefully considered.
It is worth emphasizing, however, that our analysis could be deepened in several ways. For instance, we consider litigation costs mainly as lawyer costs. However, in practice, additional external costs may appear (Rubin [2010]). For instance, defendants may support additional opportunity costs of time and efforts. These include time spent in searching files for documents in response to document requests, time spent in preparation for depositions and testimony, and time spent in testimony itself. One could also argue that the attention of the managers will be diverted from profit making endeavors to the lawsuit. Reputational costs are also under silent in our model. Our conclusion about the increase in the incentives of an uninjured plaintiff to file a claim could be softened if we introduce potential reputational costs of supporting frivolous litigation for third-party funders. The risk for the funders is to be associated with nuisance suits, and its involvement in a particular case could undercut the plaintiff’s bargaining power to the extent that it suggests the claim is without merit. However, such an analysis also calls for strong assumptions, in particular as regards to the structure of information between players in a repeated setting.

Let us also add that we do not discuss in our model the question of the optimal number of litigation. We take for granted that the plaintiff deserves to be compensated, and that this compensation is higher than the total amount of costs required to get it $(\forall C_p \in [C_{p_{\min}}; C_{p_{\max}}], D - R_p - C_p - f > 0)$. As a consequence, we do not discuss whether the increase in the probability to access to justice under third-party financing is socially efficient or not. It is sometimes argued that the additional lawsuits that would occur as a result of third party financing would have more social costs than social benefits (Rubin [2010]). This point deserves further research.\footnote{A complete analysis of this question would require a complex model taking also into account the social benefit of the change in behavior brought about through the threat of easier access to court thanks to third party financing.}

Another extension could be to consider that the amount of money the parties have at disposal to finance their claims may influence the size of the damage, or the probability to win the case. This should call for a model where both parties (i.e. the plaintiff and the defendant) could benefit from contingency fees or third-party funders. Then, not only could the litigation costs of the plaintiffs vary, but also that of the defendant ($C_d$). However, this analysis is beyond the scope of this paper, where our primary concern is the access to justice for truly injured plaintiffs and the number of frivolous claims that settled in each type of litigation financing system.
Our model does not also deal with the problem of product liability system, when it is the result of a series of legal changes brought about through litigation (as in the U.S.). Lawyers acting through their associations may coordinate information, choose and sequence lawsuits in such a way as to create precedents favorable to expansion of law. While some lawyers have contributed to changing the legal rules, some others have been rather “free-riders” by benefitting from these changes without contributing. Third-party funders are likely to be involved in many cases as a method of diversification. This means that they will be able to internalize more of the effects of legal changes than could individual law firms, and so will contribute more to financing litigation leading to policy changes. The danger is that third-party financing could lead to increase the number of inefficient precedents (Rubin [2010]). We intend to take into account these additional effects in further researches.

Appendix

Proof n°1:

Let us show that \( \exists k_1 \leq \hat{k} \) so that \( \forall k \in (0, k_1) \), third-party financing performs better than contingent fees arrangements.

\[
NB_T \geq NB_{CF} \iff (2\alpha - 1)x_T(k) \geq x_{CF}[^{\alpha - (1 - \alpha)\theta_{CF}^*\psi_{CF}^*}]
\]
\[
\Leftrightarrow x_T(k) \geq \frac{1}{(2\alpha - 1)} x_{CF}[^{\alpha - (1 - \alpha)\theta_{CF}^*\psi_{CF}^*}]
\]

For third-party financing to outperform contingent fees, the increase in the probability that a plaintiff accesses to justice under third-party financing \( (x_T(k)) \) has to be high enough compared to this probability under contingent fees. More precisely, \( x_T(k) \) has to be higher than \( \frac{1}{(2\alpha - 1)} x_{CF}[^{\alpha - (1 - \alpha)\theta_{CF}^*\psi_{CF}^*}] \) for third-party financing to be preferable to contingent fees. We denote \( x_1 \) this level so that \( x_1 = \frac{1}{(2\alpha - 1)} x_{CF}[^{\alpha - (1 - \alpha)\theta_{CF}^*\psi_{CF}^*}] \).
We can show that $x_1 \geq x_{CF}$:

$$\theta^*_C F \psi^*_C F \leq 1 \Rightarrow (1 - \alpha)\theta^*_C F \psi^*_C F \leq (1 - \alpha)$$

$$\Rightarrow -(1 - \alpha)\theta^*_C F \psi^*_C F \geq \alpha - 1$$

$$\Rightarrow \frac{\alpha - (1 - \alpha)\theta^*_C F \psi^*_C F}{2\alpha - 1} \geq 1 \Rightarrow x_1 \geq x_{CF}$$

Let us denote $k_1$ the rate of return on capital so that $x_T(k_1) = x_1$. Since $x_T(.)$ is a decreasing function, then $k_1 \leq \hat{k}$. Third-party financing outperforms contingency fees if $k \leq k_1 \leq \hat{k}$, which represents a stronger condition than in the previous case when $\alpha \geq \alpha^*_{CF}$.

Proof n°2:
Let us show that $\frac{\partial NB_T(k)}{\partial k} \leq 0$. Let us first note $U_T(k) = \theta_T(k)\psi_T(k)$. Then, $U'_T(k) = \theta'_T(k)\psi_T(k) + \theta_T(k)\psi'_T(k) \geq 0$ with:

$$\theta'_T(k) = \left(\frac{\alpha}{1 - \alpha}\right)\frac{C_p(D - (k + 1)C_p) + ((k + 1)C_p + C_d)C_p}{(D - (k + 1)C_p)^2} \geq 0$$

$$\psi'_T(k) = \frac{R_p(D - (k + 1)C_p) + (f + R_p(k + 1))C_p}{(D - (k + 1)C_p)^2} \geq 0$$

Then, $\frac{\partial NB_T(k)}{\partial k} = x'_T(k)(\alpha - (1 - \alpha)U_T(k)) - (1 - \alpha)x_T(k)U'_T(k)$

Since $\alpha - (1 - \alpha)\theta'_T \psi'_T \geq 0$, then $\alpha - (1 - \alpha)U_T(k) \geq 0$. Because $x'_T(k) \leq 0$, then $\frac{\partial NB_T(k)}{\partial k} \leq 0$.

Proof n°3:
When $\alpha$ is low, third-party financing outperforms contingent fees if:

$$NB_T(k) \geq NB_{CF} \Leftrightarrow x_T(k)[\alpha - (1 - \alpha)\theta^*_T(k)\psi^*_T(k)] \geq x_{CF}[\alpha - (1 - \alpha)\theta^*_C F \psi^*_C F]$$

$$x_T(k) \geq x_{CF} \frac{(\alpha - (1 - \alpha)\theta^*_C F \psi^*_C F)}{\alpha - (1 - \alpha)\theta^*_T(k)\psi^*_T(k)}$$

Then, the probability that a plaintiff accesses to justice has to be high enough for
third-party financing to outperform contingent fees: \( x_T(k) \) has to be higher than \( x_2 \) with \( x_2 = x_{CF} \frac{(\alpha - (1 - \alpha)\theta^*_T \psi^*_T)}{\alpha - (1 - \alpha)\theta^*_T(k)\psi^*_T(k)} \). Moreover, we can show that \( x_{CF} \leq x_2 \):

\[
\theta^*_T \psi^*_T \geq \theta^*_{CF} \psi^*_{CF}
\]

\[
\Rightarrow \alpha - (1 - \alpha)\theta^*_T \psi^*_T \leq \alpha - (1 - \alpha)\theta^*_T(k)\psi^*_T(k)
\]

\[
\Rightarrow x_{CF} \leq x_2
\]

By denoting \( k_2 \) so that \( x(k_2) = x_2 \), we can deduce that \( k \geq k_2 \) since \( x_T(.) \) is decreasing in \( k \). Then, third-party financing outperforms contingency fees if \( x_T(k) \geq x_T(k_2) = x_2 \Leftrightarrow k \leq k_2 \).

**Proof n°4**

To show that \( k_2 \geq k_1 \), we first demonstrate that \( x_2 \leq x_1 \), by showing that \( \frac{1}{\alpha - (1 - \alpha)\theta^*_T(k)\psi^*_T(k)} \geq \frac{1}{2\alpha - 1} \)

To reach this goal, let us demonstrate that \( 2\alpha - 1 < \alpha - (1 - \alpha)\theta^*_T \psi^*_T \), so that

\[
\frac{1}{\alpha - (1 - \alpha)\theta^*_T(k)\psi^*_T(k)} \leq \frac{1}{2\alpha - 1}
\]

\[
2\alpha - 1 < \alpha - (1 - \alpha)\theta^*_T \psi^*_T
\]

\[
\Leftrightarrow \alpha - 1 < -(1 - \alpha)\theta^*_T \psi^*_T
\]

\[
\Leftrightarrow 1 - \alpha > (1 - \alpha)\theta^*_T \psi^*_T
\]

\[
\Leftrightarrow 1 > \theta^*_T \psi^*_T \text{ which is true since } \psi^*_T; \theta^*_T \in (0, 1)
\]

**Proof n°5:**

Since \( x_{CF} \geq x_S \), it is straightforward that contingent fees leads to higher total litigation costs than self-finance. Let us now show the conditions under which the total litigation costs are higher under third-party financing than contingent fees:
\[ TC_T \geq TC_{CF} \iff x_T(k) \geq x_{CF}(\alpha + (1 - \alpha)\theta_{CF}^*)(1 + \frac{(1 - \psi_{CF}^*)(C_p + C_d)}{R_p + R_d + f}) \]

Let us denote \( x^C \) this level, so that \( x^C = x_{CF}(\alpha + (1 - \alpha)\theta_{CF}^*)(1 + \frac{(1 - \psi_{CF}^*)(C_p + C_d)}{R_p + R_d + f}) \). When the probability that the plaintiff is truly injured is at an intermediate level, third-party financing outperforms contingent fees when:

\[ x_T(k) \geq x_{CF}(\frac{1}{2\alpha - 1})(\alpha - (1 - \alpha)\theta_{CF}^*\psi_{CF}^*) = x_1 \]

Since \( 1 + \frac{(1 - \psi_{CF}^*)(C_p + C_d)}{R_p + R_d + f} \geq 1 \) and \( \frac{1}{2\alpha - 1} \geq 1 \), then

\begin{align*}
(\alpha + (1 - \alpha)\theta_{CF}^*)(1 + \frac{(1 - \psi_{CF}^*)(C_p + C_d)}{R_p + R_d + f})(2\alpha - 1) &\geq \alpha - (1 - \alpha)\theta_{CF}^*\psi_{CF}^* \\
\iff (\alpha + (1 - \alpha)\theta_{CF}^*)(1 + \frac{(1 - \psi_{CF}^*)(C_p + C_d)}{R_p + R_d + f}) &\geq \frac{1}{2\alpha - 1}(\alpha - (1 - \alpha)\theta_{CF}^*\psi_{CF}^*) \\
\iff x^C &\geq x_1
\end{align*}

By denoting \( k^C \) the rate of return on capital so that \( x_T(k^C) = x^C \), then \( k^C \leq k_1 \) since \( x_T(.) \) is decreasing.

Then, third-party financing outperforms contingent fees when \( k \in (0, k_1) \) but leads to higher litigation costs when \( (0, k^C) \), with \( k^C \leq k_1 \).

References


16(2):329–349.


U.S. Chamber Institute for Legal Reform (2009). Third party financing: Ethical and legal 
ramifications in collective actions. Technical report.