Judicial Discretion in Corporate Bankruptcy

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Abstract

We study a demand and supply model of judicial discretion in corporate bankruptcy. On the supply side, we assume that bankruptcy courts may be biased for debtors or creditors, and subject to career concerns. On the demand side, we assume that debtors (and creditors) can engage in forum shopping at some cost. A key finding is that stronger creditor protection in reorganization improves judicial incentives to resolve financial distress efficiently, preventing a "race to the bottom" towards inefficient uses of judicial discretion. The comparative statics of our model shed light on a wealth of evidence on U.S. bankruptcy and yield novel predictions on how bankruptcy codes should affect firm-level outcomes.

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1 Introduction

Judicial discretion is a central feature of state-mandated bankruptcy procedures. Either directly or through the appointment of administrators, bankruptcy judges routinely shape the approval of reorganization plans and the extent of distressed financing, which in turn can crucially shape the resolution of financial distress.[1] But how does judicial discretion work? The leading view holds that under discretion judicial idiosyncrasies shape the resolution of financial distress (e.g. Weiss and Wruck 1998). It is indeed the case that bankruptcy outcomes vary enormously across bankruptcy judges, sometimes favoring debtors, some other times favoring creditors (Bris et al. 2006, Chang and Schoar 2006). However, this view cannot explain, among other things, why judicial idiosyncrasies do not average out just like pure noise. For example, as Franks and Torous (1993) put it, U.S. Chapter 11 is systematically pro-debtor because it has "strong incentives to keep the firm as a going concern even when it is worth more in liquidation".[2]

We present a simple Econ101 demand and supply model of judicial discretion that parsimoniously rationalizes why resolutions of financial distress differ across courts but do not average out within a given code, and yields an array of novel predictions on the workings of court-supervised bankruptcy procedures and their impact on firm level outcomes. One key finding is that the workings of judicial discretion are crucially shaped by creditor protection in reorganization: only when creditor protection is strong enough does judicial discretion generate a "race to the top" towards efficient resolutions of financial distress.

Prior seminal work on judicial discretion in bankruptcy (Giammarino and Nosal 1994; Bernhardt and Nosal 2004) focused on whether random judicial mistakes are desirable. We instead explicitly model judicial decision-making by recognizing that the forces of demand and supply shape the way bankruptcy judges use their discretion, as they do with market producers in traditional economic analysis. Our model hinges on two main assumptions. On the supply side, in line with Gennaioli (2005) and Gennaioli and Shleifer (2007) we assume that bankruptcy judges can be biased in

[1] For example, U.S. Chapter 11 leaves bankruptcy courts discretion on issues such as first day orders, refinancing, extensions of exclusivity, appointments of trustees, and the final approval of a reorganization plan. As Gilson (1991) puts it, Chapter 11 "effectively requires judges to set corporate operating policies". Recent estimates suggest that the price of judicial discretion in financial markets can be very large. Ayotte and Gaon (2006) find that credit spreads increased by about 30 basis points for Chapter 11-eligible securitizers immediately after a controversial judicial decision in the Chapter 11 bankruptcy of LTV Steel, in which a securitization contract was unexpectedly treated by the judge as a secured loan, and as such subject to automatic stay.

[2] Political economy theories (e.g. Skeel 2001, Bolton and Rosenthal 2002) explain the systematic pro-debtor bias of bankruptcy laws with the political preferences of legislators, but cannot explain why resolutions of financial distress vary across bankruptcy courts because they assume judicial discretion away.

favor of debtors or creditors. On the demand side, we assume that in financial distress debtors and/or creditors can choose where to file for bankruptcy ("forum shopping"), subject to some legal restrictions. This is consistent with U.S. evidence, whereby about 60% of the large Chapter 11 cases between 1980 and 2005 has been classified as forum shopping (e.g. Lo Pucki 2005, Ayotte and Skeel 2004). In our basic model we assume that only debtors can forum shop, consistent with the evidence that about 95% of large U.S. Chapter 11s filings are initiated by debtors (Lo Pucki 2005). We then consider the general case where both debtors and creditors can forum shop in Section 5.

In this setup, we investigate the role of creditor protection, parameterized as the share of reorganization proceeds that can be pledged to creditors. While we think primarily of creditor protection as the extent of violations of absolute priority (Franks and Torous 1989), this parameter can also capture private benefits of control (Aghion and Bolton 1992) or even debtors' tunneling of corporate assets during reorganization, especially in developing countries (Djankov et al. 2006).

Section 2 illustrates our static model. In this model, debtors naturally file in pro-debtor courts that over-reorganize bankrupt firms. Thus, the demand side of our model can create a systematic pro-debtor bias of the bankruptcy code, even if individual judges are on average unbiased. Section 3 then presents a dynamic version where judges also care about attracting future, large bankruptcy cases. Interestingly, under career concerns there is a pooling equilibrium where even unbiased and pro-creditor judges over-reorganize to establish a pro-debtor reputation and try to attract future filings. Thus, under career concerns the supply side of our model can *amplify* the systematic pro-debtor bias of the bankruptcy code.

Our main finding is that stronger creditor protection reduces the systematic pro-debtor bias of bankruptcy outcomes by shaping both the supply and the demand of judicial discretion. Three effects are simultaneously at work in the same direction. First, by reducing the rents earned by debtors in reorganization, higher creditor protection reduces debtors' incentive to forum shop. This *demand effect* directly reduces the systematic pro-debtor bias by dampening the sorting of cases in pro-debtor courts. Second, under career concerns an increase in creditor protection induces a *dynamic supply effect*: anticipating future lower demand, unbiased and pro-creditor judges have fewer incentives to establish a pro-debtor reputation, which also reduces pro-debtor bias today. Finally, higher creditor protection reduces debtors' rents in reorganization, in turn reducing the incentive of pro-debtor judges to over-reorganize a bankrupt firm (the *static supply effect*).

This analysis yields two implications. First, our model predicts that higher creditor protection in

reorganization should reduce the systematic pro-debtor bias of bankruptcy outcomes. By improving judicial incentives, higher creditor protection avoids a "race to the bottom" towards any inefficient use of judicial discretion. Interestingly, Section 4 shows that a similar prediction follows from an increase in legal restrictions to forum shopping. Our model thus provides two novel potential determinants of the variation of systematic bias across bankruptcy codes.

Second, our career concerns model shows that existing attempts to empirically identify the consequences of forum shopping (Lo Pucki 2005, Ayotte and Skel 2004), which hinge on comparing bankruptcy outcomes in different courts, say Chicago and Delaware, are likely to underestimate the consequences of forum shopping and the extent of pro-debtor bias because they overlook that forum shopping induces an endogenous increase in the pro-debtor stance of all courts.

Section 5 augments our basic framework by studying additional demand and supply shifters. First, we allow some courts to be faster than others. In this setup, forum shopping beneficially allows the sorting of cases into fast courts, which in turn has conflicting effects on judicial career concerns. On the one hand, the *dynamic supply effect* is amplified as fast, pro-debtor courts face an even greater future demand, at least as long as speed and unbiasedness are uncorrelated. On the other hand, since fast courts can attract cases irrespective of their liquidation policy, their willingness to cater to debtors falls, reducing the possibility for a pooling pro-debtor equilibrium to arise. More generally, forum shopping to fast courts can be beneficial under fairly general conditions. In this context, strong creditor protection and low legal restrictions to forum shopping create incentives for beneficial competition among courts, thereby generating a race to the top towards more efficient resolutions of financial distress. Second, we study the case in which even creditors can forum shop with some probability, and we show that under some conditions a systematic pro-creditor bias will follow. In this sense, our analysis shows that the party in control of the venue choice has an incentive to file in a sympathetic court, thereby generating a systematic bias. Third, we study the case in which judges observe a noisy signal of the firm's reorganization value and show that the costs of judicial bias and thus of forum shopping are greater for firms in more innovative industries, facing more uncertain future prospects.

In sum, our demand and supply model of judicial discretion provides a flexible framework to study the determinants of the workings of court-supervised bankruptcy procedures, providing predictions on the volume and composition of forum shopping, the size and direction of systematic bias, and on the variation of bankruptcy outcomes across firms. Section 6 illustrates how our model can rationalize a wealth of cross-section and time series evidence on U.S. Chapter 11.

2 The Static Model

We now present a basic demand and supply analysis of judicial discretion. An existing firm is in financial distress. The firm has current cash flow of zero, has defaulted on its debt, and has entered a formal bankruptcy procedure under court supervision.[3] To resolve financial distress, it must be decided whether the firm is reorganized or liquidated piecemeal. Here we focus on ex post outcomes in bankruptcy; Appendix 2 studies the ex ante consequences of court behavior, along with some contractual reactions to judicial discretion.

The value of the firm under piecemeal liquidation is $\lambda > 0$. The reorganization value of the firm equals ρ, a random variable taking values $\overline{\rho}$ and $\underline{\rho}$ with probability 1/2, where $\overline{\rho} > \lambda > \underline{\rho}$. As a result, liquidation is ex post efficient if and only if the reorganization value is $\underline{\rho}$. Investors are pledged the full liquidation value λ but only a fraction α of the reorganization proceeds. The remaining share $(1-\alpha)$ of the reorganization proceeds goes to the debtor. Thus, the debtor prefers reorganization to liquidation even if the latter is socially efficient because under liquidation he obtains zero while under reorganization he obtains $(1-\alpha)\rho$. Parameter α plays a key role in our analysis and can be thought of as measuring creditor protection in reorganization: if α is higher, creditors can obtain a larger share of the reorganization proceeds. Parameter α can be given several real-world interpretations. For instance, it can measure the extent to which creditors are protected against the violations of their contractual priorities in favor of the debtors, an important source of rents for debtors particularly in the bankruptcies of large, publicly listed U.S. corporations (e.g. Franks and Torous 1989, Weiss 1990).[4] Alternatively, α can measure creditor protection against tunneling (or other forms of private benefits extraction) by debtors, which is especially relevant in developing countries (Djankov et al. 2006).[5]

[3] We focus on the resolution of financial distress occurring in a state-provided, court-supervised bankruptcy procedure. As a result, we disallow the parties to do away with judicial discretion by contract, consistent with the cross-country empirical evidence of Djankov et al. (2006) that there are many legal restrictions to doing so. Even if contracts were allowed, however, Gennaioli and Rossi (2007) show that the optimal contract sometimes uses judicial discretion and that the misuse of judicial discretion is costly for the parties. Our paper can thus be viewed as specifying the nature of the costs of judicial discretion in bankruptcy.

[4] Interestingly, even if violations of priority was a choice variable in our model, so that bankruptcy courts were allowed to discretionally violate absolute priority up to a share $(1-\alpha)$ of a debtor's obligations, then we would be essentially back to the current model because pro-debtor judges would always grant the maximal violations and then distort the reorganization decision to benefit debtors. The only difference with the current model would be that pro-creditor judges would never violate absolute priority and would thus attain the first best.

[5] These interpretations of α imply different mappings of the model with reality. The "violation of priorities" interpretation does not hinge on debtors being in control, as the debtors may obtain reorganization rents through equity stakes [Gilson (1990) shows that U.S. CEOs retain substantial equity stakes in bankrupt firms (average 10%)]. The "tunneling-private benefits" interpretation requires instead that the debtor controls the bankrupt firm for at least some period. [Gilson (1990) and Hotchkiss (1995) show that U.S. CEOs' and board members' retained their

But how is it decided whether the firm is reorganized or liquidated? Our basic premise is that the bankruptcy procedure gives bankruptcy judges some discretion on this dimension.[6] In the next subsection, we present a model to study the consequences of judicial discretion for the resolution of financial distress.

2.1 The Supply Side: Bankruptcy Courts' Decision-Making

We study judicial decision-making under discretion by taking the shortcut that bankruptcy courts decide whether to reorganize or liquidate the firm.[7] Throughout our paper, we hold constant such judicial power to affect bankruptcy outcomes and study which factors affect judges' willingness to use it in one way or another. For now we assume that courts perfectly observe the firm's reorganization value ρ but might still be unwilling to do the right thing. Section 4.3 studies the more general case where courts observe a potentially noisy signal of ρ.

After observing ρ, court j maximizes a weighted sum of the debtor and creditor's utilities. The non-negative parameters $\beta_{j,c}$ and $\beta_{j,d}$ indicate the weights the court attaches to the creditor's and the debtor's welfare, respectively.[8] As a result, the court's pro-debtor[9] bias $\beta_j = \beta_{j,d}/\beta_{j,c}$ fully identifies bankruptcy court j. At any ρ, court β_j chooses the probability $x_{\beta_j}(\rho)$ with which the firm is reorganized to solve:

$$\max_{x_{\beta_j}(\rho)} \lambda\left[1 - x_{\beta_j}(\rho)\right] + \rho\left[\alpha + \beta_j(1-\alpha)\right] x_{\beta_j}(\rho) \tag{1}$$

seat after emerging from bankruptcy in about 50% of cases in the 1980s and early 1990s, Ayotte and Morrison (2007) show that such percentage has recently decreased to about 20%]. Thus, defined π as the extent to which creditors' claims are violated, ψ as the probability that a bankrupt debtor is immediately replaced, e as his equity stake, t and b as the amount of tunneling and private benefits, respectively, one can combine the two interpretations by defining $\alpha \equiv 1 - \pi e - (1-\psi)(t+b)$. Section 5 uses this decomposition of α to rationalize, in light of our model, the evolution of U.S. bankruptcy outcomes.

[6] Several sources of judicial power can ultimately affect the way financial distress is resolved. Consider extensions of exclusivity. If the judge extends the exclusivity period where only debtors are allowed to file a reorganization plan, it is harder for the creditors to move the case forward without the debtor's consent, reducing the likelihood of liquidation. Similar reasoning applies to the appointment of a trustee and to the granting of first day orders. To be sure, judges might affect the above decisions not only by exercising their legal right to do so but also by exploiting discretion in finding facts (Gennaioli 2005; Gennaioli and Shleifer 2006), especially if the social value of alternative decisions is unverifiable and debtors and creditors disagree.

[7] Without loss of generality, in what follows we assume that each court has only one judge and therefore we use the terms "court" and "judge" interchangeably.

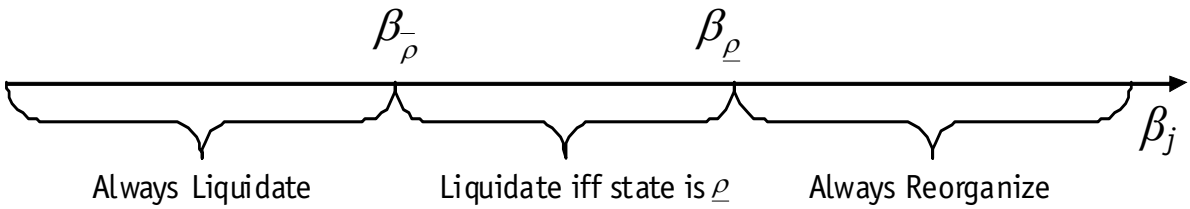
[8] Defining judicial bias with respect to the parties' welfare implies that in our model judicial bias translates directly into deviations from first-best efficiency. We do so because our main goal is to understand the positive consequences of judicial discretion, not to assess the desirability of judicial mistakes as in Berkovitch, Israel and Zender (1998), Bernhardt and Nosal (2004) and Giammarino and Nosal (1994).

[9] Strictly speaking, β_j is the judge's relative bias in favor of the debtor controlling an eventual filing decision. In closely-held firms one can interpret the bias as being pro-CEO, in widely-held firms one can interpret the bias as being either pro-CEO, pro-board of directors or pro-controlling shareholders.

Consistent with intuition, expression (1) indicates that if the firm is liquidated (i.e. $x_{\beta_j}(\rho) = 0$), then the creditor obtains λ while the debtor obtains zero. If instead the firm is reorganized (i.e. $x_{\beta_j}(\rho) = 1$) then the creditor obtains $\alpha\rho$ and the debtor obtains $(1-\alpha)\rho$. The court evaluates the desirability of such liquidation policies in both state $\underline{\rho}$ and $\overline{\rho}$ by comparing the parties' utilities under liquidation and reorganization in each state.

By solving (1) one finds that in state $\underline{\rho}$ court j reorganizes the firm (i.e. $x_{\beta_j}(\underline{\rho}) = 1$) if and only if $\beta_j \geq \beta_{\underline{\rho}} \equiv \frac{\lambda - \underline{\rho}\alpha}{(1-\alpha)\underline{\rho}}$, while in state $\overline{\rho}$ court j reorganizes the firm (i.e. $x_{\beta_j}(\overline{\rho}) = 1$) if and only if $\beta_j \geq \beta_{\overline{\rho}} \equiv \frac{\lambda - \overline{\rho}\alpha}{(1-\alpha)\overline{\rho}}$. Intuitively, a judge with higher β_j is more likely to reorganize irrespective of ρ so as to allow the debtor to extract reorganization rents. At the same time, liquidation is more likely at $\underline{\rho}$, i.e. $\beta_{\underline{\rho}} \geq \beta_{\overline{\rho}}$ because judges are less willing to rule for the debtor if reorganization imposes a large loss on the creditor. Figure 1 below illustrates the adjudication policies for different judges as a function of their bias β_j.

Figure 1 - Discretion and Bias



For intermediate values of judicial bias (i.e. for $\beta \in \left[\beta_{\overline{\rho}}, \beta_{\underline{\rho}}\right]$), judges have the incentive to take the efficient decision, that is to liquidate in state $\underline{\rho}$ and to reorganize in state $\overline{\rho}$. By contrast, highly biased judges will always cater towards their preferred party, irrespective of the firm's reorganization value: pro-debtor judges with $\beta_j \geq \beta_{\underline{\rho}}$ always reorganize, pro-creditor judges with $\beta_j \leq \beta_{\overline{\rho}}$ always liquidate.

In state ρ a court with bias β reorganizes a firm with probability $x_\beta(\rho) \equiv I\left(\beta > \beta_\rho\right)$, where $I(.)$ is the indicator function. The firm is liquidated with probability $1 - x_{\boldsymbol{\beta}}(\rho)$. The probability of reorganization increases in the firm's reorganization value ρ. It is immediate to find that:

Proposition 1 *A higher β increases the probability of reorganization and reduces repayment. Ex post efficiency increases as β approaches 1 from below and then decreases as β moves beyond 1.*

Intuitively, more pro-debtor courts (i.e. with larger β) are more likely to reorganize all firms,

including those with poor prospects. In addition, β reduces expected repayment to creditors because the most pro-creditor courts fully focus on maximizing creditor repayment. Concerning ex post welfare, if the bankruptcy court is unbiased, it efficiently reorganizes the firm in state $\overline{\rho}$ and liquidates it in state $\underline{\rho}$. If instead the court is biased ($\beta \neq 1$), then ex post efficiency falls as pro-debtor judges reorganize too often, while pro-creditor judges liquidate too often.[10]

A straightforward consequence of judicial discretion is thus to allow judicial biases to affect the resolution of financial distress. As we shall discuss in Section 6, the supply side of our model is consistent with a wealth of evidence on the variation of several bankruptcy outcomes across U.S. courts (e.g. Chang and Schoar 2006, Bris, Welch, and Zhu 2006). A drawback of the current model is that it cannot explain the kind of systematic biases in the resolution of financial distress prevailing under different bankruptcy codes and documented by bankruptcy scholars (Skeel 2001, Franks and Torous 1989, 1993). Typically, some courts will be unbiased, some will be pro-debtor and some pro-creditor. Thus, if cases are randomly allocated across courts, judicial discretion would mainly cause idiosyncratic variation of bankruptcy outcomes and not a systematic bias.

We formalize this argument by fully characterizing the supply side of our model. Assume that there is a measure 1 of bankruptcy courts distributed in $\left[\underline{\beta}, \overline{\beta}\right]$, where $\underline{\beta} \leq \beta_{\overline{\rho}} < \beta_{\underline{\rho}} \leq \overline{\beta}$, with c.d.f. $B(\beta)$. To underscore the interplay of supply and demand, a useful benchmark for our analysis is a distribution where the average reorganization outcome is unbiased [i.e. where $E_{\beta,\rho}\left[x_{\beta}\left(\rho\right)\right] = 1/2$], but our results go through under more general assumptions. In words, some courts always reorganize, others always liquidate, the rest takes the efficient decision, but courts are on average unbiased. We now show that adding a demand side to our model can generate a systematic bias in the resolution of financial distress over and beyond the idiosyncrasies of individual judges.

2.2 The Demand Side: Debtors' Forum Shopping

The demand side of our model relies on the assumption that firms can self-select into their preferred bankruptcy courts ("forum shopping").[11] In this Section, we provide a sharp illustration of the

[10] For now we focus on the outcomes of court proceedings, but Appendix 3 shows that judicial bias is still costly even if we allow the parties to enter into private workouts. Intuitively, even if the workout succeeds, judicial bias constitutes an out-of-equilibrium threat allowing debtors to renegotiate on favorable terms with creditors, reducing repayment.

[11] Although most bankrupcy codes contain provisions aimed at restricting "forum shopping", substantial flexibility still exists, especially for large companies. For example, the U.S. bankruptcy venue statute recognizes four connections between a debtor and his bankruptcy court. The court must either be: (1) at the "domicile or residence" of the

workings of our model by assuming that debtors directly choose the bankruptcy venue ex post, but Section 5.2 shows that our demand and supply analysis easily extends to the case where also creditors can forum shop.[12] The assumption that debtors forum shop is realistic: 94% of all large U.S. Chapter 11 cases from 1980 to 2005 (678 out of 722) were initiated by debtors, and 57% (411 out of 722) have been classified as "forum shopping" (Lo Pucki 2005).[13] Forum shopping is also increasingly pervasive in Europe (Enriques and Gelter 2006), and around the world, especially among multinational firms (Rasmussen 2007, Guzman 2000).

We assume that upon observing the reorganization value of his firm debtor i can choose where to file by bearing a forum shopping cost c_i that is uniformly distributed in $[0, c]$. Empirically, a higher c captures a bankruptcy code placing stricter legal restrictions to forum shopping. We study the allocation of cases to bankruptcy courts by leaving aside the issues potentially arising from court congestion, but our main results continue to hold if courts can attract at least some cases from other courts.

Initially, each debtor is randomly allocated to his "natural" bankruptcy venue $\beta_0 \in \left[\underline{\beta}, \overline{\beta}\right]$. At such court, the expected payoff of a debtor with reorganization value ρ is equal to $(1-\alpha)\,\rho x_{\beta_0}(\rho)$, namely the debtor's reorganization rents times the probability that reorganization takes place. If the debtor engages in forum shopping, then he files in a more pro-debtor court β with $x_{\beta}(\rho) > x_{\beta_0}(\rho)$, as there is no incentive for him to file in a court that is equally or less favorable than the natural one. In particular, debtors would naturally want to forum shop in courts that surely reorganize, i.e. courts with $\beta \geq \beta_{\underline{\rho}}$. Once forum shopping is considered, judicial discretion naturally implies that debtors seek relief from creditors by strategically filing in a favorable bankruptcy courts.

At any given ρ, debtor i forum shops if $c_i \leq (1-\alpha)\,\rho\left[1 - x_{\beta_0}(\rho)\right]$ and sticks to court β_0 other-

debtor, (2) at the debtor's "principal place of business", (3) at the location of the debtor's principal assets, or (4) where the bankruptcy case of an affiliate is already pending. In practice, companies have been able to get around the filing restrictions in different ways. For example, LoPucki and Whitford (1991) find that in the 1980s large pre-bankrupt firms from all over the U.S. began transferring their headquarters in small offices in Manhattan to be able to file at the New York court.

[12] Debtors' filing power may come from two sources. First, the U.S. bankruptcy code stipulates that both debtors and creditors can file for bankruptcy, although creditors have to meet stronger standards, e.g. §301, 303. Second, debtors are likely to enjoy a first mover advantage in filing for bankruptcy because they are informed before and more accurately than their creditors about their firms' financial problems. [Jensen and Meckling (1976) stress that such first mover advantage may jeopardize creditors' claims by allowing debtors to engage in asset substitution.] Crucially, even if creditors challenge the venue choice, it is the debtor-chosen court to have the final say, often resulting in the pro-debtor court retaining the case.

[13] See LoPucki's data at http://lopucki.law.ucla.edu/index.htm. Forum shopping is widespread in various other areas of the law, too. For example, White (2006) finds that when asbestos lawsuits are filed in six particularly favorable jurisdictions, plaintiffs' expected returns from trial increase by $800,000 to nearly $4 million. See Proposition 3 for an argument as to why these (and similar) estimates may underestimate the impact of forum shopping.

wise. The debtor engages in forum shopping whenever the cost is less than the benefit of doing so. Thus, the share of firms forum shopping at β_0 is equal to $f_{\rho,\beta_0}(\alpha, c) \equiv \min\left\{1, \frac{(1-\alpha)\rho}{c}\left[1 - x_{\beta_0}(\rho)\right]\right\}$. Intuitively, debtors endowed with a relatively less favorable natural bankruptcy venue (i.e. with lower β_0) are more eager to forum shop to very pro-debtor courts.

This consideration has immediate implications for the systematic bias of bankruptcy outcomes. In particular, the aggregate share of reorganizations in our model is equal to:

$$\int_{\underline{\beta}}^{\overline{\beta}} E_\rho\left\{f_{\rho,\beta_0}(\alpha, c) + \left[1 - f_{\rho,\beta_0}(\alpha, c)\right] x_{\beta_0}(\rho)\right\} dB(\beta_0), \tag{2}$$

The above expression takes into account the fact that for debtors sticking with their natural venue [which occurs with frequency $1 - f_{\rho,\beta_0}(\alpha, c)$] the firm is reorganized with probability $x_{\beta_0}(\rho)$, while for debtors forum shopping to pro-debtor courts [which occurs with frequency $f_{\rho,\beta_0}(\alpha, c)$] the firm is reorganized with probability one.

In this context, it is natural to characterize the systematic bias of bankruptcy outcomes induced by forum shopping as the difference between expression (2) and the aggregate share of rerganizations $E_{\beta,\rho}[x_\beta(\rho)]$ obtained under random allocation of firms to bankruptcy courts. Forum shopping then generates a systematic pro-debtor (resp. pro-creditor) bias when the difference is positive (resp. negative). When the difference is zero, forum shopping does not generate any systematic bias. It is thus straightforward to find:

Proposition 2 *When debtors file for bankruptcy, forum shopping creates a systematic pro-debtor bias even if bankruptcy judges are on average unbiased.*

By promoting forum shopping by debtors, judicial discretion in bankruptcy should, ceteris paribus, be associated with an increase in the aggregate bias in the resolution of financial distress.[14] In this sense, our demand and supply framework can reconcile judicial discretion with the systematic biases of court-supervised bankruptcy procedures, not only with idiosyncratic variation across courts.

This result is the starting point of our analysis. In Section 4 we show that this demand and supply framework yields several interesting comparative statics results, which in Section 6 we argue

[14] Looking at the entire population of courts and firms, the aggregate reorganization policy is unbiased if $E_{\beta,\rho}[x_\beta(\rho)] = 1/2$ (as 1/2 is the total share of reorganizations in the first best). It is immediate to check that for this to be the case it must hold that $\Pr(\beta \leq \beta_{\overline{\rho}}) = \Pr(\beta \geq \beta_{\underline{\rho}})$, namely the number of pro-creditor courts must be equal to the number of pro-debtor courts.

can parsimoniously rationalize a wealth of evidence on the resolution of financial distress in the U.S. and elsewhere. Before moving to those comparative statics, we present a dynamic version of our model where we derive a dynamic supply effect that accounts for additional empirical facts.

3 The Supply of Bias under Career Concerns

Besides shaping the demand for biased adjudication, debtors' forum shopping may also affect its supply by affecting the incentives of courts to use their discretion in a pro-debtor manner. To see how this works, assume that bankruptcy courts benefit not only from trying current cases, but also from attracting future ones. A court attracting many filings may be viewed as more prestigious, it may allow the judge to choose the "best" case and obtain for example more coverage in the press, but it may also affect more mundane incentives such as increase the revenue of local bankruptcy lawyers as well as the judge's probability of re-election (Lo Pucki 2005). In a survey of bankruptcy judges, Cole (2002) finds that "almost all of the judges suggested that there is a level of prestige and satisfaction that attaches to hearing and deciding important cases. Big Chapter 11 cases are interesting as well as prestigious."

In such a world, judges have an incentive to use their discretion to establish a favorable reputation and thus attract future cases, very much like in Holmström's (1999) career concern model. Formally, assume that there are two periods and debtors do not observe the court' intrinsic pro-debtor bias but only the policy vector $x_{1,\beta_j} \equiv \left[x_{1,\beta_j}(\overline{\rho}), x_{1,\beta_j}(\underline{\rho})\right]$ that results from adjudicating a large number of cases simultaneously in period 1. Among all cases adjudicated by court β_j in period 1, $x_{1,\beta_j}(\overline{\rho})$ [resp. $x_{1,\beta_j}(\underline{\rho})$] represents the total share of firms with reorganization value $\overline{\rho}$ (resp. $\underline{\rho}$) that court β_j decided to reorganize.[15] After observing x_{1,β_j}, debtors update their priors and form a posterior expectation of the court's second-period adjudication $E\left(x_{2,\beta_j} \middle| x_{1,\beta_j}\right)$. Based on these inferences, in the second period debtors decide where to file, judges choose x_{2,β_j} and the game ends. Given this timing, at $t = 2$ each court will play its statically optimal strategy of Section 2. We assume that future filings affect the judge's utility as in (1), and that judges discount the future by a factor $\gamma \leq 1$. While parsimonious, this last assumption is not important. Our main results would go through also under the assumption that judges' utility from trying future cases is

[15] We are implicitly assuming that the reorganization value of an individual firm is observed by all firms. This is consistent with the idea of footnote 6 that judicial discretion arises from the unverifiability of ρ. In other words, although observable by everybody, ρ cannot be verified objectively. As a result, its assessment is left to the discretion and potential bias of the courts.

fixed and independent from the court's adjudication policy.

For ease of exposition, suppose that there are three types of judges: one third is pro-creditor with a certain bias $\beta \leq \beta_{\overline{\rho}}$, one third is unbiased with $\beta = 1$, the rest is pro-debtor with $\beta \geq \beta_{\underline{\rho}}$. There is a population of measure one of failed debtors and a share 1/3 of them is naturally allocated to each court type. Do pro-debtor, pro-creditor and unbiased courts have an incentive to always reorganize so as to mimic pro-debtor courts and avoid losing future cases? To answer this question we characterize whether and under which conditions there may exist a pure strategy equilibrium where in the first period some or all judges pool by adjudicating in a pro-debtor fashion [i.e. by setting $x(\overline{\rho}) = x(\underline{\rho}) = 1$]. To do so we restrict our attention to the pure strategy equilibria that can be sustained under the following family of out-of-equilibrium beliefs:

Out-of-Equilibrium-Beliefs: if strategy $x(\overline{\rho}) = x(\underline{\rho}) = 1$ is not played in equilibrium and a judge deviates to it, then that judge is believed to be pro-debtor. If a judge deviates to any other out-of-equilibrium strategy, then that judge is believed to be pro-creditor.

Besides allowing us to show in the starkest way how forum shopping can create an incentive for unbiased or pro-creditor judges to establish a pro-debtor reputation, this family of out-of-equilibrium beliefs turns out to sustain a number of interesting equilibria[16]**:**

Proposition 3 *There exists a threshold $\gamma(\alpha, c)$ increasing in α and c and strictly smaller than one for some (α, c) such that, for $\gamma > \gamma(\alpha, c)$ there exists a unique equilibrium where all courts pool by reorganizing all firms in the first period. If instead $\gamma \leq \gamma(\alpha, c)$ the equilibrium can be one of three types. For intermediate γ there may exist a semi-separating equilibrium where pro-debtor courts always reorganize in the first period while unbiased courts either pool with pro debtor courts or they pool with pro-creditor ones. For low γ there exists a separating equilibrium where no systematic pro-debtor bias arises and each court plays its statically optimal strategy.*

The proof is in Appendix 1.[17] Under judicial discretion debtors' forum shopping may be a

[16] Given that in this game there are four pure strategies and three types of players, the number of possible equilibrium profiles equals $4^3 = 64$. It is clearly beyond the scope of this paper to evaluate whether and when all of these profiles can be sustained as equilibria under all possible out-of-equilibrium beliefs. In our current analysis, the assumption that a court always reorganizing is believed to be pro-debtor helps drastically reduce the number of possible equilibria. Moreover, the proof of Proposition 3 shows that such assumption can be often justified with refinement arguments based on equilibrium dominance. We also believe that one could obtain similar results under different out-of-equilibrium beliefs. For example, in a previous draft we showed that one could obtain similar results by additionally assuming that a judge playing $\left[x(\underline{\rho}) = 0, x(\overline{\rho}) = 1\right]$ is believed to be unbiased. Of course, there might also be "perverse" equilibria where all judges have an incentive to behave in a somewhat pro-creditor manner. For instance, a pooling pro-creditor equilibrium where all judges adjudicate according to $\left[x_1(\overline{\rho}) = 0, x_1(\underline{\rho}) = 0\right]$ could be sustained by out-of-equilibrium beliefs whereby only judges adjudicating in favor of creditors at $t = 1$ are believed to be pro-debtor. We do not feel the latter type of equilibria to be very realistic.

[17] In the Appendix we show that there might be three possible semi-separating equilibria. In the first, pro-debtor

sufficient condition to trigger a pro-debtor adjudication, irrespective of a court's intrinsic preferences for the debtor or the creditor. The intuition is that now even unbiased or pro-creditor courts have an incentive to adjudicate in a pro-debtor manner to establish a reputation for being pro-debtor and thus attract future cases, especially if attracting future cases is valuable (i.e. if γ high).

To illustrate this effect, consider first the debtors' out-of-equilibrium beliefs we used to prove Proposition 3. In a pooling pro-debtor equilibrium a court liquidating some firms is believed to be pro-creditor. Consider now the dilemma faced in the first period by an unbiased court. Under the stated out-of-equilibrium beliefs, the best deviation for such a court would be to play its statically optimal strategy $x_1(\underline{\rho}) = 0$, $x_1(\overline{\rho}) = 1$. Of course, deviating to such policy entails a loss of future filings because the court is believed to be pro-creditor. It turns out that an unbiased judge prefers to behave in a pro-debtor rather than in an unbiased manner provided:

$$\gamma \left[\lambda f_{\underline{\rho}}(\alpha, c) + \overline{\rho} f_{\overline{\rho}}(\alpha, c) \right] \geq \lambda - \underline{\rho} \tag{3}$$

The left hand side of (3) is the future discounted payoff the unbiased court derives from adjudicating in a pro-debtor manner. Such payoff obtains from liquidating in period 2 a measure $f_{\underline{\rho}}(\alpha, c)$ of firms with poor prospects and from reorganizing a measure $f_{\overline{\rho}}(\alpha, c)$ of firms with good prospects. Indeed, those firms will leave if the court deviates, signalling of being pro-creditor. The right hand side of (3) is the static cost for the unbiased court of reorganizing firms with poor prospects. If forum shopping is sufficiently widespread and the judge is sufficiently patient, then he will prefer to pool with the other pro-debtor courts rather than to separate but lose future cases. The proof shows that a similar reasoning holds with respect to a pro-creditor court.

The proposition makes clear that such a pooling pro-debtor equilibrium is sustained when courts are sufficiently patient. As courts' patience falls, the benefit of attracting future filings falls and pro-creditor and unbiased judges start separating themselves from pro-debtor ones. In one possible equilibrium configuration, separation is partial, with unbiased courts still adjudicating in a pro-debtor manner. In the other possible configurations separation is full.

Besides stressing the role of judicial career concerns, the general insight of this analysis is that debtors' forum shopping can generate a systematic pro-debtor bias even absent any courts'

and unbiased courts pool by reorganizing all firms in the first period, while pro-creditor courts always liquidate. In the second and third ones, pro-creditor and unbiased courts pool in the first period by either liquidating all firms or by playing the unbiased strategy, while pro-debtor courts always reorganize. While the separating equilibrium always exists, and the pooling equilibrium always exists for sufficiently low α and c, for some parameter values some semi-separating equilibria may not exist for every α and c - see Appendix 1 for details.

idiosyncratic pro-debtor preferences. Thus, under judicial discretion forum shopping may generate a systematic pro-debtor bias not only by sorting – on the demand side – cases into pro-debtor courts, but also by giving – on the supply side – judges the incentive to use their discretion in a pro-debtor manner. As we shall discuss in Section 6, this finding has important implications for the empirical literature on bankruptcy because it suggests that empirical comparison of bankruptcy outcomes across courts may fail to empirically identify the extent of the systematic bias induced by judicial discretion.

4 Comparative Statics and Welfare

We now study the impact of creditor protection α, legal restrictions to forum shopping c and other parameters on the equilibrium supply and demand of judicial discretion in both our static and dynamic models. Section 4.1 focuses on forum shopping, Section 4.2 on the systematic bias of bankruptcy outcomes, and Section 4.3 on social welfare.

4.1 Creditor Protection, Filing Restrictions and Forum Shopping

We start by studying the determinants of the demand for biased adjudication. By deriving the expression for $f_{\rho,\beta_0}(\alpha, c)$ it is immediate to find:

Corollary 1 *In the static model forum shopping by debtors falls in α and c. In the career concerns model, however, increases in α and c shifting the equilibrium from pooling to separating cause a discontinuous increase in forum shopping in the second period. In the career concerns model second period forum shopping (weakly) falls in γ.*

Intuitively, the demand for pro-debtor courts depends negatively on both the strictness of filing rules c and on the strength of creditor protection in reorganization α, as both parameters reduce the debtors' net benefit from forum shopping. As a result, in the static model increases in α and c reduce observed forum shopping. While the demand effects of α and c also hold within the separating equilibrium in the career concerns model, they do not imply that also in our dynamic setup increases in α and c always reduce forum shopping. In contrast, increases in α and c triggering a shift from the pooling to the separating equilibrium will reduce observed forum shopping. An immediate implication of Proposition 3, this result is due to a feedback between the supply and demand side of the model: if α and c are so high that $\gamma \leq \gamma(\alpha, c)$, then debtors have little incentives

to forum shop and courts will separate at $t = 1$, in turn inducing more forum shopping at $t = 2$. If instead α and c are so low that $\gamma > \gamma(\alpha, c)$, then debtors have strong incentives to forum shop and courts pool at $t = 1$, with no forum shopping taking place in equilibrium at $t = 2$. In other words, if α and c are low, forum shopping is potentially very strong. This leads to completely homogeneous judicial behavior today which in turn avoids any forum shopping in the future. Thus, although an increase in creditor protection and legal restrictions often reduce forum shopping, in general the effect is ambiguous.

Finally, in the career concerns model forum shopping also depends on judges' discount rate γ. When judges attach a large value to attracting future cases, then a pooling equilibrium is likely to arise at $t = 1$, which in turn reduces the amount of observed forum shopping at $t = 2$.

Our model can also yield insights on which firms are to be expected to forum shop depending on their reorganization value. Should we expect the best or the worst firms to forum shop in equilibrium? Answering this question is key for attempts to estimate empirically the reorganization ability of judges, as self-selection of firms into bankruptcy courts may be a potential source of bias. For simplicity, assume that $\overline{\rho} < c$, so that the fraction of firms engaging in forum shopping is always strictly smaller than 1. Then, total forum shopping includes both an overall share $[(1-\alpha)\overline{\rho}/c] \Pr\left(\beta \leq \beta_{\overline{\rho}}\right)$ of profitable firms and an overall share $\left[(1-\alpha)\,\underline{\rho}/c\right] \Pr(\beta < \beta_{\underline{\rho}})$ of unprofitable firms. These expressions show that two conflicting effects are at work. On the one hand, forum shopping incentives increase in the debtors' rents from control, so one should expect the *most* profitable firms to forum shop (the demand effect). On the other hand, forum shopping incentives increase in the likelihood that the firm is liquidated under its natural venue, so one should expect the *least* profitable firms to forum shop (the supply effect). The set of bankruptcy filings disproportionately consists of firms with poor prospects if and only if the supply effect dominates. To see this, assume that there is an equal share x of pro-debtor and pro-creditor courts. Then unprofitable firms forum shop more often when:

$$x \leq \frac{\underline{\rho}}{\underline{\rho} + \overline{\rho}} \tag{4}$$

Intuitively, if only few courts are biased, then the most profitable firms will be reorganized even in their natural venue. As a result, the supply effect dominates because unprofitable firms will still have strong incentives to forum shop away from a near-certain liquidation under unbiased courts. If instead many courts are biased, then the opposite is true because the least profitable firms

now stand a chance to be reorganized under their natural venue. As a result, the demand effect dominates as profitable firms will disproportionately try to forum shop away from a near-certain liquidation under pro-creditor courts.

This discussion suggests that attempts to estimate the reorganization ability of courts should properly control for the above mentioned demand and supply effects. For example, if the pre-eminent courts such as Delaware disproportionately attract firms with poor prospects, then the costs of pro-debtor bias are likely to be vastly *exaggerated* because the firms managed by these courts are not a representative sample of the population of distressed firms.[18] The opposite is true if profitable firms disproportionately engage in forum shopping.

4.2 Judicial Incentives and Creditor Protection

Consider now the determinants of the systematic bias of bankruptcy outcomes. The previous analysis implies:

Proposition 4 *In both the static and the career concern models, the systematic pro-debtor bias of bankruptcy falls in α. The systematic pro-debtor bias falls also in c.*

Crucially, creditor protection in reorganization improves the workings of judicial discretion.[19] Before proving why this is the case, it is worth stressing that our result does not hinge on artificially assuming that creditor protection reduces judicial discretion. Throughout our analysis we hold the extent of judicial discretion constant by assuming that the judge controls the reorganization v. liquidation decision. In our model higher creditor protection only reduces the ability of judges to redistribute resources in favor of debtors by reorganizing bankrupt firms, thereby affecting the *incentives* of judges to use their discretion in a pro-reorganization or pro-liquidation manner.

This result combines two *supply effects* and one *demand effect*. The first *dynamic supply effect* arises in the career concerns model, where higher α makes it more likely that a separating equilibrium with no systematic bias arises as opposed to a pooling equilibrium where all judges behave in a pro-debtor fashion. The intuition is that, anticipating lower future demand, unbiased judges have fewer incentives to establish a pro-debtor reputation, thereby reducing systematic bias.

[18] This is especially the case if the liquidation value is itself stochastic but perfectly correlated with the reorganization value (e.g. if $\underline{\rho} < \underline{\lambda} = \lambda(\underline{\rho}) < \lambda(\overline{\rho}) = \overline{\lambda} < \overline{\rho}$). In this case, evaluating the social costs of over-reorganization by using the estimated average liquidation value $\left(\underline{\lambda} + \overline{\lambda}\right)/2$ may severely overestimate such costs because it does not take the selection of bad firms into account.

[19] In the context of the career concerns model, the above proposition clearly focuses on the systematic bias emerging at $t = 1$, given that only such systematic bias is affected by the career concerns of bankruptcy judges.

But even within separating equilibria (or for that matter in the static model), higher α reduces systematic bias. On the *demand* side, higher creditor protection reduces debtors' incentive to forum shop, which in turn directly reduces the systematic pro-debtor bias by dampening the sorting of cases in pro-debtor courts. On the *supply* side, higher creditor protection also exerts a direct effect on adjudication by rendering even highly pro-debtor judges less willing to over-reorganize a bankrupt firm. This *static suppy effect* can be gauged by noticing that an increase in α increases $\beta_{\underline{\rho}}$ and decreases $\beta_{\overline{\rho}}$, thereby expanding the region where judges implement the first best. Because with high creditor protection debtors end up getting very little anyway, there is little or no reason even for highly pro-debtor courts to significantly distort the decision whether to reorganize or liquidate the firm. In the limit where $\alpha = 1$ this effect is so strong that all courts behave like unbiased ones. At this point, courts' preferences for debtors or creditors no longer affect their resolution of financial distress, which becomes fully efficient.

To see the latter effects, notice that the systematic pro-debtor bias equals

$$\int_{\underline{\beta}}^{\beta_{\overline{\rho}}} E_\rho \left[f_{\rho,\beta_0}(\alpha, c) \right] dB(\beta_0) + (1/2) \int_{\beta_{\overline{\rho}}}^{\beta_{\underline{\rho}}} f_{\underline{\rho},\beta_0}(\alpha, c)\, dB(\beta_0)$$

This measure of pro-debtor bias reflects the extent of reorganizations following forum shopping by debtors towards pro-debtor judges, as compared with the extent of reorganizations that would occur under a random allocation of firms to judges. The derivative of systematic bias with respect to α is thus equal to:

$$\int_{\underline{\beta}}^{\overline{\beta}} E_\rho \left\{ \left[1 - x_{\beta_0}(\rho) \right] \frac{d}{d\alpha} f_{\rho,\beta_0}(\alpha, c) \right\} dB(\beta_0) + \frac{1}{2} E_\rho \left[f_{\rho,\beta_{\overline{\rho}}}(\alpha, c) \right] \frac{d}{d\alpha} \beta_{\overline{\rho}} < 0 \tag{5}$$

The formula takes into account that $f_{\underline{\rho},\beta_{\underline{\rho}}}(\alpha, c) = 0$ (namely, debtors always stick with court $\beta_{\underline{\rho}}$, the least pro-debtor one among those always reorganizing). The first term of the above expression is negative because forum shopping (weakly) falls when creditor protection increases. This is the *demand effect*. But also the second term is negative because higher creditor protection reduces the threshold $\beta_{\overline{\rho}}$, as fewer judges are willing to act in a pro-debtor manner. This is the *static supply* effect.

In sum, creditor protection in reorganization prevents a "race to the bottom" whereby judicial discretion generates a pro-debtor bias in the resolution of financial distress. When creditor protection is low, forum shopping by debtors is widespread and judges have strong incentives to distort

the resolution of financial distress. When creditor protection is high, debtors' forum shopping falls and judges' incentives become more aligned with social efficiency. Proposition 4 also shows that similar effects are associated with increases in the legal restrictions on forum shopping c. A higher c reduces forum shopping, dampening both debtors' demand for biased adjudication and judges' incentives to establish a pro-debtor reputation.

More generally, our demand and supply analysis shows that under judicial discretion, creditor protection in reorganization and legal restrictions to forum shopping may be crucial determinants of observed differences in the resolution of financial distress under different codes or over time under the same code. To the best of our knowledge, this hypothesis has not been articulated before. In Section 6 we argue that this hypothesis may help rationalize a wealth of empirical evidence on bankruptcy outcomes in the U.S.

4.3 Welfare Analysis

We now derive some welfare properties of our model. We focus on ex post welfare and leave ex ante issues to Appendix 2. To simplify the algebra, from now on we assume:

Assumption 1: $c > \overline{\rho}$.

This (reasonable) assumption implies that, at every reorganization value ρ and at any natural venue β_0, there are some firms for which it is too costly to forum shop. It is then easy to find:

Corollary 2 *Ex post social welfare increases in c and α for every $B(\beta)$ if and only if $\lambda - E(\rho) \geq Var(\rho)/E(\rho)$. Ex post social welfare tends to $E_{\beta,\rho}\{\lambda + x_\beta(\rho)(\rho - \lambda)\}$ as $c \to \infty$ and to $(\lambda + \overline{\rho})/2$ as $\alpha \to 1$.*

The proof is in the Appendix. This result has two implications. First, forum shopping by debtors is detrimental when the social losses of over-reorganization are sufficiently large. Thus, if λ is sufficiently larger than $E(\rho)$, increases in c and α improve welfare. The intuition is that in this case the set of firms that will forum shop ex post can be expected to be disproportionately firms with poor prospects trying to escape certain liquidation in their natural venue. Thus, it is welfare maximizing to increase creditor protection, or even to forbid forum shopping altogether. Second, increasing creditor protection α is more effective than increasing restrictions to forum shopping c. This result is due to the *static supply effect*: a higher α reduces, ceteris paribus, the extent to which judges distort the reorganization v. liquidation decision. If creditor protection is highest (i.e. $\alpha = 1$), all judges have an incentive to adjudicate in an unbiased manner, thereby yielding

a first-best efficient resolution of financial distress. Parameter c does not trigger this effect as it affect judges' incentives only indirectly, via forum shopping. Thus, if forum shopping is forbidden altogether (i.e. if $c \to \infty$), some firms will be stuck in biased courts and thus society will bear the costs of judicial idiosyncrasies. Of course, this conclusion would not be so stark in a model where creditor protection has potentially negative effects on welfare. However, besides our specific modelling assumption, the broad point of this result is that increasing legal restrictions to forum shopping may not be the most effective way to improve the workings of judicial discretion because such restrictions could also prevent some beneficial forum shopping from taking place. The next section formalizes this last point.

5 Additional Demand and Supply Shifters

We now study three extensions to our basic setup. Section 5.1 studies the effect of forum shopping when judges differ also in speed, not only in bias. Section 5.2 studies the case where also creditors, not only debtors, may be able to forum shop with positive probability. Section 5.3 studies the case where judges perceive a noisy signal of the firm's reorganization value. In Section 6 we will discuss how the demand and supply shifters of Sections 4 and 5 can help account for the empirical evidence on U.S. bankruptcy outcomes.

5.1 Courts' Speed and Potential Benefits of Forum Shopping

Besides differing in bias, suppose that courts differ also in their speed, which proxies for the deadweight costs of their decision-making. A court can be slow or fast. A slow court delays the resolution of financial distress, generating for the parties only $\eta\lambda$ in case of liquidation and $\eta\rho$ in case of reorganization [the debtor still retains a share $(1-\alpha)$ of reorganization proceeds], where $\eta < 1$ captures the depreciation of firms' assets occurring during bankruptcy. A fast court resolves financial distress quickly, yielding to the parties the same payoffs as in Section 2.1.

Relative to the previous model, forum shopping can now arise both towards courts with the same bias but different speed levels and towards courts with different biases and speed levels. Suppose that there are three types of judges – pro creditor, pro-debtor and unbiased – and that a fraction φ of courts is fast while the rest is slow. We assume that speed is uncorrelated with bias, as there is no particular reason to assume otherwise.[20]

[20] Our main results (especially those obtained under symmetric information) continue to hold if unbiased judges

Consider the full information version of this model. Call $\eta_0 \in \{\eta, 1\}$ the speed of the natural venue. For algebraic simplicity set $\eta = 0$. Then, a debtor whose firm has reorganization value ρ forum shops to fast, pro-debtor courts if $x \leq (1-\alpha)\rho\left[1-\eta_0 x_{\beta_0}(\rho)\right]$. Thus, the share of firms forum shopping from (β_0, δ_0) equals $f_{\rho,\beta_0,\eta_0} \equiv \min\left\{1, \frac{(1-\alpha)\rho}{c}\left[1-\eta_0 x_{\beta_0}(\rho)\right]\right\}$. It is easy to find:

Proposition 5 *Forum shopping creates a systematic pro-debtor bias which falls in c. Social welfare increases in α but falls in c, even if $\lambda - E(\rho) \geq Var(\rho)/E(\rho)$. Full ex post efficiency is attained at $\alpha = 1$ and $c = 0$.*

The proof is in the Appendix. A systematic pro-debtor bias continues to arise, as debtors now forum shop to fast, pro-debtor courts, not to unbiased ones.[21] Accordingly, the systematic pro-debtor bias falls in c. More interestingly, Proposition 5 shows that when courts differ in speed and not only in bias, forum shopping is beneficial (the proof shows that this is especially the case if the proportion of fast judges is not very large). Indeed, if many courts are slow, forum shopping to fast courts reduces social deadweight costs, thereby improving welfare. One consequence of this idea is that now attaining ex post efficiency requires both strong creditor protection – which reduces courts' pro-debtor bias – and perfect forum shopping, which minimizes deadweight costs. This result stands in sharp contrast with Corollary 2: provided creditors are protected enough in reorganization, when courts also differ in their ability forum shopping does not generate bias but is instead *needed* to attain a first-best resolution of financial distress! In this sense, we confirm that creditor protection is likely to be more effective than legal restrictions to forum shopping: provided creditor protection is large enough, competition among bankruptcy courts to attract more filings can generate a "race to the top" towards more efficient resolutions of financial distress.[22]

Consider now the career concern version of this model where debtors are uninformed about the biases of different courts but perfectly informed about their speed. Does heterogeneity in speed reduce or increase the possibility to attain a pooling equilibrium where all courts adjudicate in a pro-debtor fashion? We obtain:

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tend to be faster than the others.

[21] Notice that qualitatively similar results hold for $\eta > 0$. In particular, although in that case forum shopping would not always be beneficial, the proof of Proposition 5 shows that one would generally expect forum shopping to be beneficial provided the total proportion of slow courts φ is sufficiently large. With $\eta > 0$, even assuming perfect correlation between speed and (lack of) bias, that is only fast courts are unbiased and viceversa, there would still be debtors willing to forum shop to slow but favorable courts because when the firm has reorganization value $\underline{\rho}$ the debtor always prefers a slow reorganization rather than a fast liquidation.

[22] In the context of our model with exogenous differences in speed, by "race-to-the-top" we mean the (incentives of the) parties to file in fast courts, not that courts select their speed.

Proposition 6 *Suppose that the fraction of fast courts is $\varphi = 1/2$. Then, there exists a $\gamma^*(\alpha, c)$ such that fast courts always reorganize in the first period for $\gamma \geq \gamma^*(\alpha, c)$. Such pooling equilibrium is more likely to arise than in the career concern model where all judges are fast (i.e. where $\eta = 1$ or $\varphi = 0$) if and only if $(1-\alpha)/c$ is sufficiently small. Slow courts always play their statically optimal policy.*

Relative to the model of Section 3.2, heterogeneity in courts' speed creates some forum shopping also in the "pro-debtor" pooling equilibrium (both in the first and second period), from slow to fast bankruptcy venues. This effect implies that slow courts will lose cases irrespective of their adjudication. As a result, they will always follow their statically optimal strategies in equilibrium. Forum shopping to fast courts however creates an incentive for unbiased and pro-creditor fast courts to deviate from the "pro-debtor" equilibrium and play their static optimum, as their speed would enable them to attract cases anyway. However, there is also a countervailing effect: because more debtors (even those who ended up in a pro-debtor but slow court) will now engage in forum shopping, there is a stronger incentive for courts to pool because they can attract more cases in the future. In other words, when only some courts are fast the *dynamic supply effect* is stronger. Proposition 6 shows that this last effect turns out to dominate when α and/or c are sufficiently large so that forum shopping is not too strong. When forum shopping is very strong, instead, fast courts will obtain many cases in the first period due to their higher speed and thus will have a large incentive to adjudicate in a statically optimal manner. This model therefore suggests that when courts differ in an observable dimension such as speed here, excessive forum shopping may induce the courts to separate rather than to pool. Furthermore, our model suggests that the introduction of more competent (or less competent) courts in the population may actually enhance the possibility for a pooling, pro-debtor equilibrium to emerge.[23]

[23] As Proposition 6 shows, we proved this result for $\delta = 0$ and $\varphi = 1/2$. It is much harder to solve for the pooling equilibrium under more general conditions, particularly because for $\delta > 0$ the number of incentive constraints increases substantially. Nevertheless, there appear to be reasons to believe that also the case where $\delta > 0$ should naturally go in the same direction as Proposition 6. Indeed, if $\delta > 0$ debtors have less to gain from forum shopping to fast courts, so that even slow courts may hope to attract cases by signalling their pro-debtor stance. In turn, this effect reduces the incentive of fast courts to deviate from the pooling equilibrium.

5.2 Forum Shopping by Debtors and Creditors

We now augment the model of Section 2 by assuming that with probability p the debtor controls the bankruptcy venue choice while with probability $1-p$ the creditor is in control, where $p \in (0,1)$.[24] When debtors are in control we already know that at natural venue β_0 the share of firms with reorganization value ρ forum shopping to pro-debtor courts is $f^d_{\rho,\beta_0} \equiv \min\left\{1, \frac{(1-\alpha)\rho}{c_d}\left[1 - x_{\beta_0}(\rho)\right]\right\}$, where d stands for "debtor". If instead the creditor is in control he will, if anything, forum shop to pro-creditor courts.[25] If the distribution of forum shopping costs is the same for creditors and debtors, the share of creditors forum shopping is $f^k_{\rho,\beta_0} \equiv \min\left\{1, \max\left[\frac{\lambda-\alpha\rho}{c_k} x_{\beta_0}(\rho), 0\right]\right\}$, where k stands for "creditor". Notice that we assumed that creditors' and debtors' forum shopping costs are drawn from potentially different uniform distributions. In particular, debtors' forum shopping cost is on average lower than the creditors' if and only if $c_d < c_k$. We then find:

Proposition 7 *With $p > 0$, forum shopping allocates firms to both pro-creditor and pro-debtor judges. There exists a threshold p^* such that forum shopping creates a systematic pro-debtor bias if and only if $p \geq p^*$, where p^* falls in c_k/c_d. The systematic (pro-creditor or pro-debtor) bias falls in $c_k + c_d$.*

The proof is in the Appendix. When also creditors can forum shop we will observe many cases being distributed among very pro-creditor and very pro-debtor courts. Such an allocation will cause not only the reorganization of unprofitable businesses but also the liquidation of many viable firms. In turn, the first outcome is more likely to prevail, and thus the systematic bias is more likely to be pro-debtor, the higher is the probability p that the debtor is in control.[26]

It is useful at this point to focus on the case $\alpha \leq \lambda/\overline{\rho}$ (the Appendix shows that similar results obtain for $\alpha > \lambda/\overline{\rho}$), whereby the probability threshold equals:

[24] Notice that creditor filing *does not* imply the possibility of a creditors' run but only represents the possibility for them to decide on the bankruptcy venue. In our model, what rules out creditors' runs is the fact that we assume the existence of a state-mandated bankruptcy procedure. Put differently, creditor runs on the firm's assets could only occur in the absence of such procedure (Hart 1995, 2000).

[25] Recently, the issue of creditor control and creditor forum shopping has been central in the European Union. For example Bank of America filed for the Parmalat bankruptcy in Ireland, on the grounds that Parmalat's subsidiary Eurofood was incorporated there (McCahery 2006). Creditor control has also been central in recent years in Chapter 11 - an issue to which we turn in Section 6.

[26] Although we do not formally study the career concern model under the assumption that also creditors can forum shop, it is reasonable to expect that for high p reputational forces will push towards a pro-debtor pooling equilibrium, while the opposite is likely to occur at low p. For p close to $1/2$ (and for c_k close to c_d), in equilibrium pro-debtor and pro-creditor courts are likely to separate while unbiased courts will choose between pooling with the former or the latter, depending on both the relative demand faced by these courts as well as on the average attractiveness of liquidation relative to reorganization (i.e. on whether $E(\rho) \lesseqgtr \lambda$).

$$p^* = \frac{E_{\beta,\rho}(f^k_{\rho,\beta})}{E_{\beta,\rho}(f^d_{\rho,\beta} + f^k_{\rho,\beta})}, \tag{6}$$

Expression (6) intuitively shows that whether the systematic bias turns out to be pro-debtor or pro-creditor crucially depends on the relative extent to which debtors, as opposed to creditors, forum shop on average. In particular, for a given probability p of debtor control, the systematic bias is more likely to be pro-debtor as long as debtors on average engage more in forum shopping than creditors. This observation highlights the potential role of differences in the cost of forum shopping. For it is the party for which forum shopping is cheaper that drives the demand for biased courts and thus systematic bias, not necessarily the party more often controlling the bankruptcy venue decision. For example, the systematic bias could still be pro-debtor even if p is small, provided c_k/c_d is sufficiently large.[27]

5.3 Estimation Uncertainty

We now consider what happens if bankruptcy proceedings produce a noisy estimate of the firm's reorganization value. This extension allows us to obtain empirical predictions on how the resolution of financial distress should vary across firms. The idea is that mature firms with more stable cash flows should generate less uncertainty about their reorganization value than younger, innovative, "growth" firms with more volatile cash flows. The court now observes a noisy signal r of the firm's reorganization value, where r is normally distributed with mean ρ and variance θ^2. We call θ "estimation uncertainty" because it measures the noise with which outsiders (i.e. courts) assess the firm's reorganization value.[28] After observing r, the court chooses the probability $x(r)$ with which the firm is reorganized to maximize:

$$\max_{x(r)} \; E_{\rho|r} \left\{ \lambda \left[1 - x\left(r\right) \right] + \rho \left[\alpha + \beta_j \left(1 - \alpha \right) \right] x\left(r\right) | r, \theta \right\} \tag{7}$$

As in the basic model, the court maximizes a weighted sum of the parties' payoffs but now this objective is averaged using the conditional distribution of ρ with respect to r. It is easy to find

[27] Empirically, one reason for expecting c_k/c_d to be large is that it is likely to be easier for the debtor to transfer his headquarters near his favorite court to be able to claim that such court is the natural venue. This arguments are of course magnified in the presence of multiple creditors who can potentially disagree on their own favorite court.

[28] While one may interpret θ also as a measure of the court's experience with similar implications, in what follows we stress the estimation uncertainty interpretation because it generates testable predictions for firm level resolutions of financial distress.

that court j reorganizes the firm (i.e. sets $x(r) = 1$) if and only if $r \geq r_{\beta_j}$, where:

$$r_{\beta_j} = E(\rho) - \frac{\theta^2}{\overline{\rho} - \underline{\rho}} \ln \frac{\beta_j (1-\alpha) \overline{\rho} + (\alpha \overline{\rho} - \lambda)}{(\lambda - \alpha \underline{\rho}) - \beta_j (1-\alpha) \underline{\rho}} \tag{8}$$

Estimation uncertainty is relevant only if $\frac{\beta_j(1-\alpha)\overline{\rho}+(\alpha\overline{\rho}-\lambda)}{(\lambda-\alpha\underline{\rho})-\beta_j(1-\alpha)\underline{\rho}} \in (0, \infty)$, which is the case if $\beta_j \in (\beta_{\min}, \beta_{\max})$ where $\beta_{\min} < 1 < \beta_{\max}$ are two suitable thresholds. Court j reorganizes a firm worth ρ with probability $\Pr(r > r_j | \rho)$. Since $r \rightsquigarrow N(\rho, \theta^2)$, such probability is equal to $x_{\beta_j}(\rho) = 1 - \Phi\left(\frac{r_{\beta_j} - \rho}{\theta}\right)$, where $\Phi(.)$ is the standard normal c.d.f. As in Section 2, the probability of reorganization increases in β_j and in ρ.

Assume for algebraic simplicity that the ex post social cost of over- and under-liquidation are equal, i.e. $\overline{\rho} - \lambda = \lambda - \underline{\rho}$. Then, the impact of θ on the reorganization policy depends on judicial bias β_j. In particular, we obtain:

Proposition 8 *A higher θ increases the probability of reorganization if and only if $\beta_j > 1$. A higher θ reduces repayment if $\beta_j > 1$.*

The proof is in the Appendix. Estimation uncertainty θ magnifies the role of bias. Courts cater even more to their own preferences when a firm's reorganization value is more noisy. The intuition is that in highly uncertain environments (when θ is large) courts are aware of making many mistakes and prefer to cater to their own bias than to err against their preferred party. Thus, a higher θ induces more liquidations if the court is pro-creditor ($\beta_j < 1$) and more reorganizations if the court is pro-debtor ($\beta_j > 1$). As a result, repayment is also lower, especially with pro-debtor courts. Section 6.2 discusses the empirical implications of this finding for the cross section of firms.

6 Discussion of Empirical Evidence on U.S. Chapter 11

A rapidly growing empirical literature documents the importance of individual judges in shaping the resolution of financial distress in U.S. Chapter 11. For example, it has been shown that judicial idiosyncrasies (e.g. Weiss and Wruck 1998), judges' identity (e.g. Chang and Schoar 2006) and bankruptcy venue (Bris, Welch, and Zhu 2006) matter for outcomes such as extensions of exclusivity, probability of reorganization, repayment to creditors and violations of priority. The supply side of our model of judicial discretion is obviously consistent with these findings.[29] That

[29] Our model also yields the prediction, consistent with evidence from Chang and Schoar (2006) that a higher β_j also increases the probability of a bankruptcy re-filing, i.e. the probability that a recently reorganized firm files

is, the simple presence of idiosyncratic judicial biases for the debtor or the creditor is sufficient to rationalize these facts.

Adding a demand side to our model then helps rationalize also the kind of systematic biases in the resolution of financial distress prevailing under different bankruptcy codes and documented by bankruptcy scholars (Skeel 2001, Franks and Torous 1989, 1993). The mechanism leading judicial discretion to produce such a systematic bias in our model is forum shopping by debtors. Consistent with our model, not only is forum shopping widespread in the U.S., but in the 1980s it mainly rewarded the New York district, where judge Burton R. Lifland and his colleagues were known to be strongly pro-debtor. Forbes magazine described Judge Lifland "A Bankrupt's Best Friend," [Forbes, April 1, 1991, pp. 99-102, see also Weiss and Wruck (1998)]. The New York court alone attracted 32% of the Chapter 11 cases in the 1980s (LoPucki and Whitford 1991, Lo Pucki 2005). More recently, the Delaware court took over, attracting 43% (31 out of 72) of large bankruptcies between 1993 and 1996 (LoPucki and Whitford 1991, LoPucki and Doherty 2002). Some scholars argue that the Delaware court is itself pro-debtor (e.g. Lo Pucki 2005)[30], others instead stress that the Delaware court mainly attracted firms thanks to its ability to handle complex cases effectively (Ayotte and Skeel 2004).

Our demand and supply framework can contribute to this empirical debate with two observations. First, the empirical methodology used in this debate (which directly compares bankruptcy outcomes in New York and Delaware with those in other U.S. courts) may be unsuited to detect the systematic bias created by forum shopping. Papers in this literature tipically regress various bankruptcy outcomes (reorganization probabilities, recovery rates, and so on) on a dummy that equals one for Delaware filings, and other controls (LoPucki 2005, Ayotte and Skeel 2004; see also Elul and Subramanian 2002, White 2006). The debate is then often on whether the coefficient on the dummy for Delaware is positive and significant, in which case it is argued that forum shopping matters for bankruptcy outcomes. However, as shown in Section 3, such cross-courts comparisons

again for bankruptcy. However, the interpretation given to re-filing depends on specific assumptions. For example, if in reorganization corporate debt is restructured to a face value of $\alpha\overline{\rho}$, the debtor is doomed to default and file for bankruptcy again, because he cannot repay more than $\alpha\underline{\rho}$. In this case, re-filing is a symptom of over-reorganization, consistent with Lo Pucki and Kalin (2001). On the other hand, if in state $\overline{\rho}$ there is uncertainty about the future reorganization value (which can either be very high or very low but with average value $\overline{\rho}$), then re-filing will again be inevitable but not symptomatic of inefficiency, consistent with Ayotte and Skeel (2004).

[30] LoPucki stresses that one dimension along which the Delaware and other courts have been particularly pro-debtor is the appointment of a trustee. Although §1104 of the U.S. code states that "the court shall order the appointment of a trustee for cause, including fraud, dishonesty, incompetence, or gross mismanagement of the affairs of the debtor by current management, either before or after the commencement of the case," substantial flexibility is left to judges to determine whether those conditions apply. However, U.S. courts have almost never appointed trustees, not even in such famous bankruptcy cases of corporate fraud as Enron, Worldcom, Global Crossing and Adelphia.

fail to account for judicial incentives and thus for the uniform increase in courts' pro-debtor stance triggered by debtors' forum shopping. In other words, the coefficient on Delaware may well be zero, but that does not necessarily imply that forum shopping does not affect bankruptcy outcomes.

Second, our model of Section 5.1 illustrates the role of judicial competence in shaping the dynamics of forum shopping. At one level, our model suggests that the increasingly important role of Delaware may be due to an over-time trend in the complexity and/or sophistication of firms' debt structures, increasing firms' incentive to file in more competent courts. It may well be the case that the Delaware court is faster and more effective at dealing with conflicts among multiple creditors (Ayotte and Skeel 2004). However the model of Section 5.1 shows that – unless a court's expertise and its unbiasedness are positively correlated – this selection of firms into more competent courts does not necessarily imply a reduction in systematic pro-debtor bias. Indeed, Proposition 6 suggests that the ability of more competent bankruptcy courts such as Delaware to attract bankruptcy cases in the 1990s may have actually boosted the incentives of these courts to act in a pro-debtor manner by increasing their potential future demand. Our model instead suggests that a systematic pro-debtor bias should be more sensitive to shifts in variables such as creditor control of the bankruptcy venue, managerial turnover in bankruptcy and violations of priority.

6.1 Recent Developments of U.S. Bankruptcy

Our demand and supply model can also shed light on two recent changes in the pro-debtor bias of U.S. bankruptcy outcomes. First, Skeel (2001) documents a marked increase in pro-debtor bias after the introduction of the 1978 Bankruptcy Code. Second, Baird and Rasmussen (2003) document a marked reduction in the pro-debtor bias of U.S. bankruptcy courts around year 2001.

Consider the first fact. Skeel (2001) argues that political economy considerations were paramount in the passage of a strongly pro-debtor Bankruptcy Code in 1978, generating a systematic pro-debtor bias due to such features as the automatic stay and debtor-in-possession financing. Although this and other interpretations are possible, there is also additional evidence consistent with the mechanisms of our model. For example, while under the previous 1938 Code (Chandler Act) failed managers were automatically dismissed upon filing and replaced by a trustee, the 1978 Bankruptcy Code increased judicial discretion on the appointment of trustees, as well as on the scope of the automatic stay and of debtor-in-possession financing. Furthermore, the 1978 Code changed the rules on venue choice, increasing the options available to debtors relative to before. For example, only after the 1978 Code could a debtor file in its state of incorporation. Therefore, the 1978 Code

can be viewed as promoting both an increase in judicial discretion and a reduction in filing restrictions to forum shopping, which our model suggests should both increase the debtors' incentives to forum shop. Consistent with our model, a striking surge in forum shopping took place shortly after the introduction of the 1978 Bankruptcy Code. Indeed, we are not aware of any account of forum shopping before the early 1980s, and our model offers one explanation for this stylized fact.

Turning to the second fact, it has been argued that the pro-debtor stance of U.S. bankruptcy courts has decreased substantially since 2001. For example, Chapter 11 seems to no longer provide a safe harbor for failed managers, as 80% of CEOs are replaced within two years of the bankruptcy filing (Ayotte and Morrison 2007), and liquidations appear to be far more common after 2001 than in the past (Adler et al. 2006). Interestingly, also judicial attitudes seem to have changed, as judges have become more likely to approve liquidation of bankrupt firms, thereby inducing a zero return to pre-bankruptcy shareholders (Adler et al. 2006).

Puzzlingly, this marked shift in the workings of Chapter 11 has occurred in the absence of any statutory changes to the bankruptcy code (e.g. Adler, Capkun and Weiss 2006). What can thus explain the change of systematic bias over time? Our model can rationalize both this change in judicial attitudes and the change in bankruptcy outcomes as being the result of demand and supply forces, and in particular as the result of an increase in creditors' control in bankruptcy. Indeed, several scholars (e.g. Skeel 2001, Baird and Rasmussen 2003, Ayotte and Morrison 2007) document that creditors are now in control of the reorganization process.[31] On the one hand, greater creditor control may imply a greater ability to select the bankruptcy venue (akin to a smaller p in the context of Section 5.2). On the other hand, greater creditor control may imply a greater ability to replace financially distressed managers in bankruptcy and lower deviations from absolute priority, which translates directly to a higher α in the context of our model. It is indeed the case that managerial turnover in Chapter 11 has increased sharply, from around 50% in the 1980s (Gilson 1990) and 1990s (Hotchkiss 1995), to about 80% in recent years (Ayotte and Morrison 2007), and that very few recent reorganization plans deviate from absolute priority (Ayotte and Morrison 2007). Consistent with the evidence, our model suggests that both of the above changes would reduce the systematic pro-debtor bias of bankruptcy by reducing judges' incentive to act in a pro-debtor manner, and also by reducing the ability and the incentives of debtors to forum shop

[31] Interestingly, this change has occurred without substantial changes to the extent of judicial discretion, although with the possible exception of DIP financing (Ayotte and Morrison 2007, Adler et al. 2006), implying that natural candidates for explaining these changes are the incentives of judges to use their discretion.

(although without necessarily reducing observed forum shopping).

6.2 Additional Firm Level Predictions

Our model of judicial discretion also delivers additional testable predictions on firm level outcomes. Although some of these predictions are shared with alternative theories, it is still interesting to see that our parsimonious framework can generate so many implications consistent with the empirical evidence on debt finance and resolutions of financial distress across firms.

Section 5.3 delivers the novel prediction that the identity of bankruptcy judges should especially matter for innovative and more volatile industries where uncertainty about the firm's prospects is greater. Ceteris paribus, this also implies that forum shopping should be especially widespread in those industries where having the right judge is of the essence for debtors. Additionally, and turning to ex ante issues, Section 5.3 implies that the cost of debt finance should be especially large for firms in innovative and volatile industries, which should therefore be associated with a greater use of equity finance. This prediction of our model is shared with the traditional view that innovative industries are more likely to use equity to avoid debt overhang problems (Myers 1977). However, this view is incomplete, because Chapter 11 is precisely a mechanism to allow bankrupt firms to raise DIP financing and undertake positive NPV projects. Our model thus provides a rationale for why Chapter 11 may be more costly for more innovative and volatile firms: judicial discretion may be a prohibitively costly mechanism to resolve financial distress for firms with uncertain prospects.

More standard firm-level predictions of our model concern the capital structure, which should heavily rely on equity (which is perhaps subject to less pro-debtor enforcement) so as to avoid the costs of judicial discretion in bankruptcy.[32] Thus, judicial discretion and debtors' forum shopping may be responsible for the puzzling observation that debt levels in U.S. corporations are usually thought to be much lower than would be expected given the large tax benefits of issuing debt as opposed to equity (Graham 2000, Warner 1977, Parrino and Weisbach 1999). A more direct, formal test of this conjecture would however require a cross-sectional comparison of firm-level leverage across a large number of countries and over a long time series.[33] Another empirical prediction of

[32] This effect may be due to the different dynamics of forum shopping for equity contracts. For example, a firm's incorporation decision might be a credible way for managers to commit to a court maximizing the value of equity. In contrast to debt, where the bankruptcy venue is chosen ex post, this would create a beneficial competition among judges to properly enforce equity contracts.

[33] For example, a rapid glance at the Federal Reserve Bulletin statistics does show that the percentage of debt among the total new securities issued by U.S. non-financial, non-real-estate corporations experienced a dramatic and

our model concerns private workouts, as under forum shopping creditors have a strong incentive to make concessions to debtors so as to avoid that financial distress is resolved by a very pro-debtor judge. Thus, our model helps explain why U.S. creditors typically try to avoid Chapter 11 via private negotiations and workouts (Gilson, John and Lang 1990), despite the fact that such workouts are very costly in practice because they lead to asset sales at below market prices (Asquith, Gertner and Scharfstein 1994).[34]

7 Conclusions

We have presented a supply and demand model of judicial discretion in corporate bankruptcy that parsimoniously explains a wealth of empirical evidence on resolutions of financial distress and firm-level outcomes, and also yields novel predictions on the workings of court-supervised bankruptcy procedures. One key result is that stronger creditor protection improves judicial incentives, promoting a "race to the top" in court competition towards the most efficient uses of judicial discretion.

Clearly, drawing normative implications is beyond the scope of our paper. Indeed, one normative message of our model is that bankruptcy reforms that do not explicitly take into account judicial incentives may be doomed to fail. However, it is not obvious what is in practice the best way to do so. For example, it has been argued that parties should be allowed to specify the bankruptcy venue already in the debt contract (e.g. Schwartz 1997). Our model clearly shows that while this provision may beneficially reduce the demand for biased adjudication and systematic bias, such reform is unlikely to directly improve the supply of unbiased adjudication; if the number of unbiased courts is not very large, some cases will inevitably end up in pro-creditor or pro-debtor courts, undermining efficiency. In other words, contracting about the bankruptcy venue is likely to dampen the costs of systematic bias but might not be able to avoid those of judicial idiosyncrasies. While its relative effectiveness may be debated, however, our model does suggest that allowing the parties to contract about the bankruptcy venue ex ante may be an effective way to trigger a race to the top towards more efficient resolutions of financial distress.

steady decline from the mid-'70s (82% in 1974) to the beginning of the '80s (52% in 1983). Of course, this and similar evidence can only be suggestive, as any time series observation based on aggregate yearly data such as this one is necessarily going to be plagued by such issues as low power, simultaneity of many macroeconomic events, and so on.

[34] Our model can also shed light on the timing of bankruptcy filings because, consistent with Bernhardt and Nosal (2004), pro-debtor bias promotes early bankruptcy filings by discouraging entrepreneurs to hide financial distress for fear of being ousted by creditors. The formal proof is available upon request.

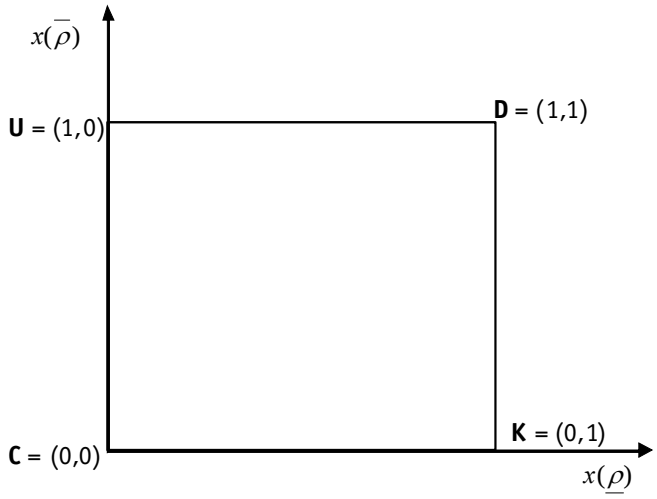
Perhaps the most effective reform proposal emerging from our analysis would be to improve creditor protection in reorganization, as shown in Section 4. This reform would reduce the demand of biased adjudication and the firms' incentives to forum shop, thereby dampening systematic bias. Unlike other reforms however, such as for example increasing legal restrictions to forum shopping, increasing creditor protection would also reduce the costs of judicial idiosyncrasies. There are several ways in which creditor protection could be increased in practice.[35] Here, consistent with recent U.S. evidence, we wish to stress the possibility of increasing creditor protection with flexible contractual instruments allowing creditors to exert more control in bankruptcy. The possibility of using those instruments is however often limited in many countries, because of legal restrictions to doing so (Djankov et al. 2006). In this respect, and in line with Gennaioli and Rossi (2008), one way to interpret our results is that we provide additional arguments in favor of increasing freedom of contract in the resolution of financial distress. In the current context, contracts would complement rather than substitute formal bankruptcy procedures by improving the workings of judicial discretion.

[35] One example would be automatic removal of failed managers. Not only would this improve judicial incentives by reducing debtors' payoff from forum shopping, but it may also reduce the supply of biased adjudication, because pro-debtor judges might be less sympathetic to financial distress experts than to failed managers who devoted time and effort to rescue their firms. Interestingly, recent market-based developments line up with this idea, such as for example the increasing use of turnaround specialists (Byers, Lee, Martin and Parrino 2007) in the reorganization of financially distressed firms.

Appendix 1. Proofs

Proof of Proposition 3. Let us now study the equilibria that can arise in the career concern version of our model with respect to first period adjudication (in the second period courts follow their static optimum). To do so, consider Figure 2 below, which represents the courts' strategy space in the first period:

Figure 2 - The Courts' Pure Strategies



The vertical and horizontal axes respectively measure the proportion of firms with value $\overline{\rho}$ and $\underline{\rho}$ reorganized by a court. Point D represents pro-debtor courts' statically optimal strategy, point C represents that of pro-creditor courts, point U that of unbiased courts, point K represents a "crazy" policy liquidating firms with $\rho = \overline{\rho}$ and reorganizing firms with $\rho = \underline{\rho}$. These four points represent the pure strategies available to a court. We focus on pure strategy equilibria, namely on equilibria were courts' first period strategies are distributed among points U, D, C and K. For brevity, we will often describe the action of a court of type $j = cr, de, un$ (where cr stands for pro-creditor, de for pro-debtor while un for unbiased) by the symbol X_j. We then define an equilibrium as a profile (X_{cr}, X_{de}, X_{un}) where $X_j \in \{D, C, U, K\}$.

Any equilibrium configuration requires a specification of the associated out-of-equilibrium beliefs. Such beliefs link each out-of-equilibrium strategy in Figure 2 to a potentially different distribution over courts' type. Given the overwhelming number of possible out-of-equilibrium beliefs in this game, our analysis focuses on the subset of beliefs such that a deviating court is believed to be pro-debtor if it plays D and pro-creditor otherwise. We later show that this belief structure is

"reasonable" in the sense that playing D is often equilibrium dominated for pro-creditor (and even unbiased) judges. Throughout we assume that unbiased judges have $\beta = 1$. In this proof, we first study when specific equilibria can arise and then evaluate the global properties of the equilibrium set, with particular reference to the uniqueness of the pooling equilibrium of Proposition 3. Let us now start by considering the main equilibria of the model. We begin with Pooling equilibria, continue with semi-separating equilibria and finish with separating equilibria. We first study some equilibria and later discuss why the equilibria we neglected cannot exist.

1. Pooling Equilibria

1.1) $X_{cr} = X_{de} = X_{un} = D$**.** This is the most interesting equilibrium from the standpoint of our paper, namely the pooling equilibrium where all courts play D, i.e. adjudicate in a pro-debtor manner. Under the assumed beliefs' structure, any court deviating from this equilibrium strategy is believed to be pro-creditor. A court pooling obtains n cases in periods 1 and 2, gaining a per-case discounted utility flow (i.e. a total utility flow divided by n):

$$V_j^{pooling} \equiv \begin{cases} E(\rho)\,\overline{\delta}\,(1+\gamma) & \text{if } j = \text{ pro-debtor} \\ E(\rho) + \gamma\,(\lambda+\overline{\rho})/2 & \text{if } j = \text{ unbiased} \\ E(\rho)\,\underline{\delta} + \gamma\lambda & \text{if } j = \text{ pro-creditor} \end{cases}$$

where $\overline{\delta} \equiv [\alpha + \beta_{de}(1-\alpha)]$ and $\underline{\delta} \equiv [\alpha + \beta_{cr}(1-\alpha)]$. Call $f_{\underline{\rho}}(\alpha, c) \equiv \min\left[1, \frac{(1-\alpha)\underline{\rho}}{3c}\right]$ and $f_{\overline{\rho}}(\alpha, c) \equiv \min\left[1, \frac{2(1-\alpha)\overline{\rho}}{3c}\right]$ [$f_\rho(\alpha, c)$ decreases in c and α]. An unbiased court deviating to U loses a share $f_\rho(\alpha, c)$ of ρ firms, obtaining $(\lambda+\overline{\rho})/2 + \gamma\left\{\lambda\left[1 - f_{\underline{\rho}}(\alpha, c)\right] + \overline{\rho}\left[1 - f_{\overline{\rho}}(\alpha, c)\right]\right\}/2$. A pro-creditor court deviating to C loses the same shares, obtaining $\lambda\left\{1 + \gamma\left[2 - f_{\underline{\rho}}(\alpha, c) - f_{\overline{\rho}}(\alpha, c)\right]/2\right\}$. Because at the assumed out-of-equilibrium beliefs these are the most profitable deviations, an equilibrium where all courts play D in the first period exists provided:

$$E(\rho) + \gamma\,(\lambda+\overline{\rho})/2 \geq (\lambda+\overline{\rho})/2 + \gamma\left\{\lambda\left[1 - f_{\underline{\rho}}(\alpha, c)\right] + \overline{\rho}\left[1 - f_{\overline{\rho}}(\alpha, c)\right]\right\}/2 \tag{9}$$

$$E(\rho)\,\underline{\delta} + \gamma\lambda \geq \lambda\left\{1 + \gamma\left[2 - f_{\underline{\rho}}(\alpha, c) - f_{\overline{\rho}}(\alpha, c)\right]/2\right\} \tag{10}$$

By (9) an unbiased court prefers to pool rather than to be as perceived pro-creditor. By (10) a pro-creditor courts prefers to be perceived as pro-debtor than as pro-creditor. Both conditions are

equivalent to:

$$\gamma \geq (\lambda - \underline{\rho}) / \left[\lambda f_{\underline{\rho}}(\alpha, c) + \overline{\rho} f_{\overline{\rho}}(\alpha, c)\right] \tag{11}$$

$$\gamma \geq 2\left[\lambda - E(\rho)\,\underline{\delta}\right] / \lambda \left[f_{\underline{\rho}}(\alpha, c) + f_{\overline{\rho}}(\alpha, c)\right] \tag{12}$$

Intuitively, a pooling equilibrium can only arise if courts weigh the future sufficiently. Both conditions are harder to meet if α and c are larger, as lower future forum shopping reduces the incentives of unbiased and pro-creditor courts to mimic pro-debtor ones [moreover, since in (12) $\beta_j < 1$, also the denominator of (12) increases in α]. To see when a pooling equilibrium exists, suppose that $\alpha = c = 0$. In this case, forum shopping is maximal [i.e. $f_{\underline{\rho}}(\alpha, c) = f_{\overline{\rho}}(\alpha, c) = 1$] and conditions (11) and (12) are met for $\gamma \geq (\lambda - \underline{\rho}) / (\lambda + \overline{\rho})$ and $\gamma \geq \left[\lambda - E(\rho)\,\underline{\delta}\right] / \lambda$. Notice that $(\lambda - \underline{\rho}) < (\lambda + \overline{\rho})$ and $\left[\lambda - E(\rho)\,\underline{\delta}\right] < \lambda$, implying that there always exists a discount factor $\gamma < 1$ satisfying conditions (11) and (12) if $\alpha = c = 0$. If instead $\alpha = 1$, and/or $c = \infty$, then $f_{\rho}(\alpha, c) = 0$ and there exists no γ satisfying the conditions for a pooling equilibrium. By continuity of $f_{\rho}(\alpha, c)$, one can define a threshold z such that for $(1 - \alpha) / c \leq z$ there is a threshold $\gamma(\alpha, c) < 1$ and the pooling pro-debtor equilibrium can be sustained if and only if $\gamma \geq \gamma(\alpha, c)$. Notice that $\gamma(\alpha, c)$ increases (weakly) in both α and c.

2. Semi-separating Equilibria.

2.1. $X_{cr} = C$; $X_{de} = X_{un} = D$. Thus, unbiased and pro-debtor judges pool in D while pro-creditor judges play C. Call $f_{\underline{\rho}}^{UD} \equiv \min\left[1, \frac{(1-\alpha)\underline{\rho}}{2c}\right]$. In this equilibrium a share of $f_{\underline{\rho}}^{UD}$ firms with $\rho = \underline{\rho}$ and a share $f_{\overline{\rho}}^{UD} = \min\left[1, \frac{(1-\alpha)\overline{\rho}}{c}\right]$ of firms with $\rho = \overline{\rho}$ leave pro-creditor courts in the second period and relocate to pro-debtor and unbiased courts. Such forum shopping is equally shared among pro-debtor and unbiased courts. In equilibrium each court obtains:

$$V_j^{semiUD} \equiv \begin{cases} E(\rho)\,\overline{\delta} + \gamma\left[\overline{\rho}(1 + f_{\overline{\rho}}^{UD}/2) + \underline{\rho}(1 + f_{\underline{\rho}}^{UD}/2)\right]\overline{\delta}/2 & \text{if } j = \text{ pro-debtor} \\ E(\rho) + \gamma\left[\lambda(1 + f_{\underline{\rho}}^{UD}/2) + \overline{\rho}(1 + f_{\overline{\rho}}^{UD}/2)\right]/2 & \text{if } j = \text{ unbiased} \\ \lambda + \gamma\lambda(2 - f_{\underline{\rho}}^{UD} - f_{\overline{\rho}}^{UD})/2 & \text{if } j = \text{ pro-creditor} \end{cases}$$

Clearly, a pro-debtor court never finds it profitable to deviate. If an unbiased court adjudicates according to U (the most profitable deviation) it also loses cases, obtaining $(\lambda + \overline{\rho})/2 + \gamma\left[\overline{\rho}(1 - f_{\overline{\rho}}^{UD}) + \lambda(1 - f_{\underline{\rho}}^{UD})\right]/2$. A pro-creditor court deviating to D instead gains cases, obtain-

ing $E(\rho)\,\underline{\delta} + \gamma\lambda(2 + f_{\overline{\rho}}^{UD}/2 + f_{\underline{\rho}}^{UD}/2)/2$. Thus, this equilibrium exists when:

$$\gamma \geq (2/3)(\lambda - \underline{\rho}) / \left[\lambda f_{\underline{\rho}}^{UD} + \overline{\rho} f_{\overline{\rho}}^{UD}\right] \tag{13}$$

$$\gamma \leq (2/3)\left[\lambda - E(\rho)\,\underline{\delta}\right] / \lambda(f_{\overline{\rho}}^{UD}/2 + f_{\underline{\rho}}^{UD}/2) \tag{14}$$

The first inequality implies that unbiased judges optimally play D, the second that pro-creditor judges play C. Intuitively, this equilibrium exists when γ is intermediate. Also, notice that greater forum shopping (i.e. lower α and c) makes both conditions above harder to meet. Finally, notice that for $\underline{\delta}\overline{\rho} < \underline{\rho}$ the first threshold is always smaller than the second threshold and therefore both of the above conditions can be met at the same time.

2.2. $X_{cr} = X_{de} = D$; $X_{un} = U$. Thus, pro-creditor and pro-debtor judges pool in D while unbiased judges play U. Call $f_{\overline{\rho}}^{CD} \equiv \min\left[1, \frac{(1-\alpha)\overline{\rho}}{2c}\right]$. Then, after the first period, pro-debtor and pro-creditor courts lose a share $f_{\overline{\rho}}^{CD}$ of firms with $\rho = \overline{\rho}$ while unbiased courts lose a share $f_{\underline{\rho}}^{UD}$ of firms with $\rho = \underline{\rho}$. A court deviating to C loses a share $f_{\underline{\rho}}^{UD}$ of firms with $\rho = \underline{\rho}$ and a share $f_{\overline{\rho}}^{UD}$ of firms with $\rho = \overline{\rho}$. In equilibrium, each court obtains:

$$V_j^{semiCD} \equiv \begin{cases} E(\rho)\,\overline{\delta} + \gamma\left[\overline{\rho}(1 - f_{\overline{\rho}}^{CD}) + \underline{\rho}(1 + f_{\underline{\rho}}^{UD}/2)\right]\overline{\delta}/2 & \text{if } j = \text{ pro-debtor} \\ (\overline{\rho} + \lambda)/2 + \gamma\left[\lambda(1 - f_{\underline{\rho}}^{UD}) + \overline{\rho}(1 + 2f_{\overline{\rho}}^{CD})\right]/2 & \text{if } j = \text{ unbiased} \\ E(\rho)\,\underline{\delta} + \gamma\lambda(2 - f_{\overline{\rho}}^{CD} + f_{\underline{\rho}}^{UD}/2)/2 & \text{if } j = \text{ pro-creditor} \end{cases}$$

It is easy to check that an unbiased court never deviates to D (this court's most profitable deviation). A pro-debtor court deviating to U (this court's most profitable deviation) obtains $(\overline{\rho}\overline{\delta} + \lambda)/2 + \gamma\left[\underline{\rho}(1 - f_{\underline{\rho}}^{UD}) + \overline{\rho}(1 + 2f_{\overline{\rho}}^{CD})\right]\overline{\delta}/2$. A pro-creditor court deviating to U or C obtains $(\overline{\rho}\underline{\delta} + \lambda)/2 + \gamma\lambda(2 - f_{\underline{\rho}}^{UD} + 2f_{\overline{\rho}}^{CD})/2$ and $\lambda + \gamma\lambda(2 - f_{\underline{\rho}}^{UD} - 2f_{\overline{\rho}}^{UD})/2$, respectively. The condition such that a pro-creditor court prefers to play D rather than deviate to U can be written as:

$$\gamma 3\lambda(-f_{\overline{\rho}}^{CD} + f_{\underline{\rho}}^{UD}/2) \geq (\lambda - \underline{\rho}\underline{\delta}) \tag{15}$$

It is immediate to see that since $f_{\overline{\rho}}^{CD} \geq f_{\underline{\rho}}^{UD}/2$ and that for pro-creditor courts $\lambda - \underline{\rho}\underline{\delta} \geq 0$, condition (15) is never met. Because pro creditor courts gain both statically and dynamically from deviating, this equilibrium cannot exist. Notice also, and this is important for discarding other potential equilibria, that because $\overline{\rho} f_{\overline{\rho}}^{CD} \geq \underline{\rho} f_{\underline{\rho}}^{UD}/2$ pro-debtor courts dynamically benefit from deviating to the unbiased courts' strategy. As a result, an equilibrium where pro-debtor and pro-creditor courts

pool cannot exist if the former can statically gain from deviating.

2.3 $X_{cr} = X_{un} = D$; $X_{de} = K$. Thus, pro-creditor and unbiased judges pool in D while pro-debtor judges play the "crazy" strategy $K \equiv \left[x(\underline{\rho}) = 1, x(\overline{\rho}) = 0\right]$, namely reorganize in $\underline{\rho}$ and liquidate in $\overline{\rho}$. Pro-creditor and unbiased courts each lose shares $f_{\underline{\rho}}^{K} = \min\left[1, \frac{(1-\alpha)\underline{\rho}}{c}\right]$ and $f_{\overline{\rho}}^{CD}$ of firms with low and high reorganization value, respectively. All those firms then file in pro-debtor courts implying that in equilibrium each court obtains:

$$V_j^{semiCU} \equiv \begin{cases} (\underline{\rho}\overline{\delta} + \lambda)/2 + \gamma\left[\overline{\rho}(1 + 2f_{\overline{\rho}}^{CD}) + \underline{\rho}(1 + 2f_{\underline{\rho}}^{K})\right]\overline{\delta}/2 & \text{if } j = \text{ pro-debtor} \\ E(\rho) + \gamma\left[\lambda(1 - f_{\underline{\rho}}^{K}) + \overline{\rho}(1 - f_{\overline{\rho}}^{CD})\right]/2 & \text{if } j = \text{ unbiased} \\ E(\rho)\,\underline{\delta} + \gamma\lambda(2 - f_{\underline{\rho}}^{K} - f_{\overline{\rho}}^{CD})/2 & \text{if } j = \text{ pro-creditor} \end{cases}$$

If a pro-debtor court deviates to D it obtains $E(\rho)\,\overline{\delta} + \gamma\left[\underline{\rho}(1 - f_{\underline{\rho}}^{K}) + \overline{\rho}(1 - f_{\overline{\rho}}^{CD})\right]\overline{\delta}/2$. If an unbiased court deviates to K it obtains $(\lambda + \underline{\rho})/2 + \gamma\left[\overline{\rho}(1 + 2f_{\overline{\rho}}^{CD}) + \lambda(1 + 2f_{\underline{\rho}}^{K})\right]/2$. A pro-creditor court deviating to K or C instead obtains $(\underline{\rho}\underline{\delta} + \lambda)/2 + \gamma\lambda(1 + f_{\overline{\rho}}^{CD} + f_{\underline{\rho}}^{K})$ or $\lambda + \gamma\lambda(2 - f_{\underline{\rho}}^{K} - f_{\overline{\rho}}^{K})/2$, respectively. Consider now two necessary conditions for this equilibrium to exist:

$$\gamma \geq \left(\overline{\rho}\overline{\delta} - \lambda\right)/3(\overline{\rho}f_{\overline{\rho}}^{CD} + \underline{\rho}f_{\underline{\rho}}^{K})\overline{\delta} \tag{16}$$

$$\gamma \leq \left(\overline{\rho} - \lambda\right)/3(\overline{\rho}f_{\overline{\rho}}^{CD} + \lambda f_{\underline{\rho}}^{K}) \tag{17}$$

Inequality (16) implies that pro-debtor courts are better off playing K than deviating to D, while inequality (17) implies that unbiased judges prefer to play D rather than deviate to K. After some algebra, one can find that there exists no γ satisfying both conditions provided $\overline{\rho}(\overline{\delta} - 1)f_{\overline{\rho}}^{CD} + (\underline{\rho}\overline{\delta} - \lambda)f_{\underline{\rho}}^{K} \geq 0$, which is always the case because for pro-debtor judges $\overline{\delta} - 1 \geq 0$ and $\underline{\rho}\overline{\delta} - \lambda \geq 0$. Thus, this equilibrium does not exist.

2.4 $X_{cr} = X_{de} = D$; $X_{un} = K$. Thus, pro-creditor and pro-debtor judges pool in D while unbiased judges play the "crazy" strategy K. This equilibrium is similar to equilibrium **2.2**, except that here unbiased judges play K rather than U. However, it is immediate to see that, because pro-creditor judges always prefer liquidation to reorganization (that is, $\lambda - \overline{\rho}\underline{\delta} > 0$), they obtain a static benefit by deviating to K. But then, since the analysis of equilibrium **2.2** established that they also obtain a dynamic benefit by acting as unbiased, then this equilibrium cannot exist.

2.5 $X_{cr} = X_{de} = K$; $X_{un} = D$. Thus, pro-creditor and pro-debtor judges pool in K while unbiased judges play D. Pro-debtor and pro-creditor courts lose a share $f_{\overline{\rho}}^{CD}$ of firms with $\rho = \overline{\rho}$ while unbiased courts lose a share $f_{\underline{\rho}}^{UD}$ of firms with $\rho = \underline{\rho}$. A court deviating to C loses a share

$f_\rho^{UD}$of firms with ρ. In equilibrium, each court obtains:

$$V_j^{semiCD} \equiv \begin{cases} (\underline{\rho}\overline{\delta}+\lambda)/2+\gamma\left[\overline{\rho}(1-f_{\overline{\rho}}^{CD})+\underline{\rho}(1+f_{\underline{\rho}}^{UD}/2)\right]\overline{\delta}/2 & \text{if } j= \text{ pro-debtor} \\ E(\rho)+\gamma\left[\lambda(1-f_{\underline{\rho}}^{UD})+\overline{\rho}(1+2f_{\overline{\rho}}^{CD})\right]/2 & \text{if } j= \text{ unbiased} \\ (\underline{\rho}\underline{\delta}+\lambda)/2+\gamma\lambda(2-f_{\overline{\rho}}^{CD}+f_{\underline{\rho}}^{UD}/2)/2 & \text{if } j= \text{ pro-creditor} \end{cases}$$

An unbiased court deviating to K and C obtains $(\underline{\rho}+\lambda)/2+\gamma\left[\overline{\rho}(1-f_{\overline{\rho}}^{CD})+\lambda(1+f_{\underline{\rho}}^{UD}/2)\right]/2$ and $\lambda+\gamma\left[\overline{\rho}(1-f_{\overline{\rho}}^{UD})+\lambda(1+f_{\underline{\rho}}^{UD})\right]/2$, respectively. A pro-debtor court deviating to D obtains $E(\rho)\overline{\delta}+\gamma\left[\underline{\rho}(1-f_{\underline{\rho}}^{UD})+\overline{\rho}(1+2f_{\overline{\rho}}^{CD})\right]\overline{\delta}/2$. A pro-creditor court deviating to D or C obtains $E(\rho)\underline{\delta}+\gamma\lambda(2-f_{\underline{\rho}}^{UD}+2f_{\overline{\rho}}^{CD})/2$ and $\lambda+\gamma\lambda(2-f_{\underline{\rho}}^{UD}-f_{\overline{\rho}}^{UD})/2$, respectively. The condition ensuring that pro-debtor courts prefer to play K rather than deviate to D can be written as:

$$\gamma 3\left[-\overline{\rho}f_{\overline{\rho}}^{CD}+\underline{\rho}f_{\underline{\rho}}^{UD}/2\right]\overline{\delta}\geq(\overline{\rho}\overline{\delta}-\lambda)$$

It is immediate to see that since $f_{\overline{\rho}}^{CD}\geq f_{\underline{\rho}}^{UD}/2$ and that for pro-debtor courts $\overline{\rho}\overline{\delta}-\lambda\geq 0$, the above condition is never met. As a result, this equilibrium cannot exist.

2.6 $X_{cr}=X_{un}=C$; $X_{de}=D$**.** Thus, pro-creditor and unbiased judges pool in C while pro-debtor judges play D. Pro-creditor and unbiased courts each lose shares $f_{\underline{\rho}}^{CD}=\min\left[1,\frac{(1-\alpha)\underline{\rho}}{c}\right]$ and $f_{\overline{\rho}}^{CD}=\min\left[1,\frac{(1-\alpha)\overline{\rho}}{2c}\right]$ of firms with low and high reorganization value, respectively. All those firms then file in pro-debtor courts implying that in equilibrium each court obtains:

$$V_j^{semiDC} \equiv \begin{cases} E(\rho)\overline{\delta}+\gamma\left[\overline{\rho}(1+2f_{\overline{\rho}}^{CD})+\underline{\rho}(1+2f_{\underline{\rho}}^{CD})\right]\overline{\delta}/2 & \text{if } j= \text{ pro-debtor} \\ \lambda+\gamma\left[\lambda(1-f_{\underline{\rho}}^{CD})+\overline{\rho}(1-f_{\overline{\rho}}^{CD})\right]/2 & \text{if } j= \text{ unbiased} \\ \lambda+\gamma\lambda(2-f_{\underline{\rho}}^{CD}-f_{\overline{\rho}}^{CD})/2 & \text{if } j= \text{ pro-creditor} \end{cases}$$

If an unbiased court deviates to D or U it obtains $E(\rho)+\gamma\left[\overline{\rho}(1+2f_{\overline{\rho}}^{CD})+\lambda(1+2f_{\underline{\rho}}^{CD})\right]/2$ or $(\lambda+\overline{\rho})/2+\gamma\left[\lambda(1-f_{\underline{\rho}}^{CD})+\overline{\rho}(1-f_{\overline{\rho}}^{UD})\right]/2$, respectively. A pro-creditor court deviating to D obtains $E(\rho)\underline{\delta}+\gamma\lambda(1+f_{\overline{\rho}}^{CD}+f_{\underline{\rho}}^{CD})$. This is therefore an equilibrium provided:

$$\gamma \leq 2\left[\lambda-E(\rho)\right]/3(\overline{\rho}f_{\overline{\rho}}^{CD}+\lambda f_{\underline{\rho}}^{CD}) \quad (18)$$

$$\gamma \geq (\overline{\rho}-\lambda)/\overline{\rho}(f_{\overline{\rho}}^{UD}-f_{\overline{\rho}}^{CD}) \quad (19)$$

$$\gamma \leq 2\left[\lambda-E(\rho)\underline{\delta}\right]/3\lambda(f_{\overline{\rho}}^{CD}+f_{\underline{\rho}}^{CD}) \quad (20)$$

It is immediate to see that this equilibrium exists (i.e. the above conditions are mutually compatible) only if $\lambda > [3\overline{\rho} + E(\rho)]/4$. As a result, this equilibrium for instance does not exist when $\lambda = E(\rho)$. For $\lambda > [3\overline{\rho} + E(\rho)]/4$ this is a feasible equilibrium configuration, at least provided $(f_{\overline{\rho}}^{UD} - f_{\overline{\rho}}^{CD})$ is large enough.

2.7 $X_{cr} = X_{un} = U$; $X_{de} = D$**.** Thus, pro-creditor and unbiased judges pool in U while pro-debtor judges play D. Pro-creditor and unbiased courts each lose shares $f_{\underline{\rho}}^{CD} = \min\left[1, \frac{(1-\alpha)\underline{\rho}}{c}\right]$ and $f_{\overline{\rho}}^{CD} = \min\left[1, \frac{(1-\alpha)\overline{\rho}}{2c}\right]$ of firms with low and high reorganization value, respectively. All those firms then file in pro-debtor courts implying that in equilibrium each court obtains:

$$V_j^{semiDC} \equiv \begin{cases} E(\rho)\,\overline{\delta} + \gamma\left[\overline{\rho}(1 + 2f_{\overline{\rho}}^{CD}) + \underline{\rho}(1 + 2f_{\underline{\rho}}^{CD})\right]\overline{\delta}/2 & \text{if } j = \text{ pro-debtor} \\ (\lambda + \overline{\rho})/2 + \gamma\left[\lambda(1 - f_{\underline{\rho}}^{CD}) + \overline{\rho}(1 - f_{\overline{\rho}}^{CD})\right]/2 & \text{if } j = \text{ unbiased} \\ (\lambda + \overline{\rho}\underline{\delta})/2 + \gamma\lambda(2 - f_{\underline{\rho}}^{CD} - f_{\overline{\rho}}^{CD})/2 & \text{if } j = \text{ pro-creditor} \end{cases}$$

If an unbiased court deviates to D it obtains $E(\rho) + \gamma\left[\overline{\rho}(1 + 2f_{\overline{\rho}}^{CD}) + \lambda(1 + 2f_{\underline{\rho}}^{CD})\right]/2$. A pro-creditor court deviating to D or C respectively obtains $E(\rho)\,\underline{\delta} + \gamma\lambda(1 + f_{\overline{\rho}}^{CD} + f_{\underline{\rho}}^{CD})$ and $\lambda + \gamma\lambda(2 - f_{\underline{\rho}}^{CD} - f_{\overline{\rho}}^{UD})/2$. This is therefore an equilibrium provided:

$$\gamma \leq (\lambda - \underline{\rho})/3(\overline{\rho} f_{\overline{\rho}}^{CD} + \lambda f_{\underline{\rho}}^{CD}) \tag{21}$$

$$\gamma \leq (\lambda - \underline{\rho}\underline{\delta})/3\lambda(f_{\overline{\rho}}^{CD} + f_{\underline{\rho}}^{CD}) \tag{22}$$

$$\gamma \geq (\lambda - \overline{\rho}\underline{\delta})/\lambda(f_{\overline{\rho}}^{UD} - f_{\overline{\rho}}^{CD}) \tag{23}$$

It is immediate to see that condition (22) is redundant and this equilibrium does not exist (i.e. the above conditions are mutually exclusive) when $6\overline{\rho}(\lambda - \overline{\rho}\underline{\delta}) \geq \lambda(\lambda - \underline{\rho})$. This condition is satisfied provided $\underline{\delta}$ is sufficiently small, for example if $\overline{\rho}\underline{\delta} < \underline{\rho}$. If $6\overline{\rho}(\lambda - \overline{\rho}\underline{\delta}) < \lambda(\lambda - \underline{\rho})$, the equilibrium might exists, at least provided $(f_{\overline{\rho}}^{UD} - f_{\overline{\rho}}^{CD})$ is sufficiently large.

3. Separating Equilibria.

3.1 $X_{cr} = C$; $X_{de} = D$; $X_{un} = U$; In this equilibrium, each court plays its static optimum and – by the above out-of-equilibrium beliefs' structure – any court playing outside of C, U, D is believed to be pro-creditor. Thus, no court finds it profitable to play outside of C, U, D, which constitute the only possible deviations. In this equilibrium, a pro-creditor court loses a fraction $f_{\rho}^{K}(\alpha, c)$ of firms, an unbiased court loses a fraction $f_{\underline{\rho}}^{K}(\alpha, c)$ of firms with $\rho = \underline{\rho}$ while it gains a fraction $f_{\overline{\rho}}^{K}(\alpha, c)/2$ of firms with $\rho = \overline{\rho}$. A pro-debtor court gains a fraction $2f_{\underline{\rho}}^{K}(\alpha, c)$ of firms

with $\rho = \underline{\rho}$ and a fraction $f_{\overline{\rho}}^{K}(\alpha, c)/2$ of firms with $\rho = \overline{\rho}$. In equilibrium, each court obtains:

$$V_j^{separating} \equiv \begin{cases} E(\rho)\,\overline{\delta} + \gamma\left[\overline{\rho}(1 + f_{\overline{\rho}}^{K}/2) + \underline{\rho}(1 + 2f_{\underline{\rho}}^{K})\right]\overline{\delta}/2 & \text{if } j = \text{ pro-debtor} \\ (\lambda + \overline{\rho})/2 + \gamma\left[\lambda(1 - f_{\underline{\rho}}^{K}) + \overline{\rho}(1 + f_{\overline{\rho}}^{K}/2)\right]/2 & \text{if } j = \text{ unbiased} \\ \lambda + \gamma\lambda(2 - f_{\underline{\rho}}^{K} - f_{\overline{\rho}}^{K})/2 & \text{if } j = \text{ pro-creditor} \end{cases}$$

A pro-debtor court never deviates. An unbiased court may only benefit by playing D, which allows the court to obtain $E(\rho) + \gamma\left[\overline{\rho}(1 + f_{\overline{\rho}}^{K}/2) + \lambda(1 + 2f_{\underline{\rho}}^{K})\right]/2$. A pro-creditor court playing D obtains $E(\rho)\,\underline{\delta} + \gamma\lambda(2 + f_{\overline{\rho}}^{K}/2 + 2f_{\underline{\rho}}^{K})/2$ while it obtains $(\lambda + \overline{\rho}\underline{\delta})/2 + \gamma\lambda(2 - f_{\underline{\rho}}^{K} + f_{\overline{\rho}}^{K}/2)/2$ by playing U. As a result, the separating equilibrium exists when:

$$(\lambda + \overline{\rho})/2 + \frac{1}{2}\gamma\left[\lambda(1 - f_{\underline{\rho}}^{K}) + \overline{\rho}(1 + f_{\overline{\rho}}^{K}/2)\right] \geq E(\rho) + \frac{1}{2}\gamma\left[\overline{\rho}(1 + f_{\overline{\rho}}^{K}/2) + \lambda(1 + 2f_{\underline{\rho}}^{K})\right] \quad (24)$$

$$\lambda + \frac{1}{2}\gamma\lambda(2 - f_{\underline{\rho}}^{K} - f_{\overline{\rho}}^{K}) \geq E(\rho)\,\underline{\delta} + \frac{1}{2}\gamma\lambda(2 + f_{\overline{\rho}}^{K}/2 + 2f_{\underline{\rho}}^{K}) \quad (25)$$

$$\lambda + \frac{1}{2}\gamma\lambda(2 - f_{\underline{\rho}}^{K} - f_{\overline{\rho}}^{K}) \geq (\lambda + \overline{\rho}\underline{\delta})/2 + \frac{1}{2}\gamma\lambda(2 - f_{\underline{\rho}}^{K} + f_{\overline{\rho}}^{K}/2) \quad (26)$$

constraint (24) makes sure that unbiased courts prefer U to D, constraints (25) and (26) respectively make sure that pro-creditor courts prefer C to U and D. These conditions can be rewritten as:

$$\gamma \leq (\lambda - \underline{\rho})/\lambda 3 f_{\underline{\rho}}^{K} \quad (27)$$

$$\gamma \leq 2\left[\lambda - E(\rho)\,\underline{\delta}\right]/\lambda(3f_{\overline{\rho}}^{K}/2 + 3f_{\underline{\rho}}^{K}) \quad (28)$$

$$\gamma \leq 2(\lambda - \overline{\rho}\underline{\delta})/\lambda 3 f_{\overline{\rho}}^{K} \quad (29)$$

Intuitively, a separating equilibrium can arise when courts are impatient. Because all expressions on the right hand side are positive, a separating equilibrium always exists provided γ is sufficiently low, the more so the smaller are α and c.

3.2 $X_{cr} = C$; $X_{de} = K$; $X_{un} = D$; In this equilibrium, pro-creditor courts play C, unbiased courts play D and pro-debtor courts play K. In this equilibrium, pro-creditor courts lose fraction $f_{\rho}^{K}(\alpha, c)$ of cases, unbiased courts lose fraction $f_{\underline{\rho}}^{K}(\alpha, c)$ of firms with $\rho = \underline{\rho}$ while they gain fraction $f_{\overline{\rho}}^{K}(\alpha, c)/2$ of firms with $\rho = \overline{\rho}$. Pro-debtor courts gain fraction $2f_{\underline{\rho}}^{K}(\alpha, c)$ of firms with $\rho = \underline{\rho}$ and

a fraction $f_{\overline{\rho}}^{K}(\alpha, c)/2$ of firms with $\rho = \overline{\rho}$. In equilibrium, each court obtains:

$$V_j^{separating} \equiv \begin{cases} (\underline{\rho}\overline{\delta} + \lambda)/2 + \gamma \left[\overline{\rho}(1 + f_{\overline{\rho}}^{K}/2) + \underline{\rho}(1 + 2f_{\underline{\rho}}^{K})\right] \overline{\delta}/2 & \text{if } j = \text{ pro-debtor} \\ E(\rho) + \gamma \left[\lambda(1 - f_{\underline{\rho}}^{K}) + \overline{\rho}(1 + f_{\overline{\rho}}^{K}/2)\right]/2 & \text{if } j = \text{ unbiased} \\ \lambda + \gamma\lambda(2 - f_{\underline{\rho}}^{K} - f_{\overline{\rho}}^{K})/2 & \text{if } j = \text{ pro-creditor} \end{cases}$$

If a pro-debtor court deviates to D it obtains $E(\rho)\overline{\delta} + \gamma \left[\underline{\rho}(1 - f_{\underline{\rho}}^{K}) + \overline{\rho}(1 + f_{\overline{\rho}}^{K}/2)\right] \overline{\delta}/2$. If an unbiased court deviates to K it obtains $(\underline{\rho}+\lambda)/2+\gamma \left[\overline{\rho}(1 + f_{\overline{\rho}}^{K}/2) + \lambda(1 + 2f_{\underline{\rho}}^{K})\right]/2$. A pro-creditor court deviating to D or K obtains $E(\rho)\underline{\delta}+\gamma\lambda(2-f_{\underline{\rho}}^{K}+f_{\overline{\rho}}^{K}/2)/2$ or $(\underline{\rho}\underline{\delta}+\lambda)/2+\gamma\lambda(2+f_{\overline{\rho}}^{K}/2+2f_{\underline{\rho}}^{K})/2$, respectively. As a result, this separating equilibrium exists when:

$$\gamma \geq (\overline{\rho}\overline{\delta} - \lambda)/3\underline{\rho}f_{\underline{\rho}}^{K}\overline{\delta} \tag{30}$$

$$\gamma \leq (\overline{\rho} - \lambda)/3\lambda f_{\underline{\rho}}^{K} \tag{31}$$

$$\gamma \leq 4\left[\lambda - E(\rho)\underline{\delta}\right]/3\lambda f_{\overline{\rho}}^{K} \tag{32}$$

$$\gamma \leq (\lambda - \underline{\rho}\underline{\delta})/3\lambda(f_{\overline{\rho}}^{K}/2 + f_{\underline{\rho}}^{K}) \tag{33}$$

Constraint (30) makes sure that pro-debtor courts prefer K to D, constraint (31) makes sure that unbiased courts prefer D to K, constraints (32) and (33) make sure that pro-creditor courts prefer C to D and K, respectively. After some algebra one can see that condition (30) is inconsistent with (31), and thus there is no γ fulfilling the conditions for this equilibrium provided $\overline{\rho}\overline{\delta}(\lambda - \underline{\rho}) \geq \lambda(\lambda - \underline{\rho}\overline{\delta})$, which is always satisfied because $\lambda - \underline{\rho} > 0$ and $\lambda - \underline{\rho}\overline{\delta} < 0$. Therefore, this separating equilibrium cannot occur.

4) Other Equilibria. Equilibria **1.1** ($X_{cr} = X_{de} = X_{un} = D$), **2.1** ($X_{cr} = C$; $X_{de} = X_{un} = D$), **2.6** ($X_{cr} = X_{un} = C$; $X_{de} = D$), **2.7** ($X_{cr} = X_{un} = U$; $X_{de} = D$), and **3.1** ($X_{cr} = C$; $X_{de} = D$; $X_{un} = U$), that is one pooling, three semi-separating and one separating, are the only equilibria in pure strategies that can be sustained. The reason behind this result is that under the assumed out-of-equilibrium beliefs' structure, D must be played in equilibrium. Otherwise, pro-debtor courts would benefit by deviating to it because by doing so they would improve both their current and future payoff.[36] This consideration alone eliminates the 3 pooling equilibria in U,

[36] It is interesting to see that playing D can be equilibrium dominated for both pro-creditor and unbiased judges, which implies that it is reasonable to assume that a court deviating to D is believed to be pro-debtor [notice that this argument is a special instance of the more general Cho and Kreps (1987) refinement criterion]. Consider for example an equilibrium where all courts pool in U. In this equilibrium, a pro-creditor court obtains $(\lambda + \overline{\rho}\delta_j)/2 + \gamma\lambda$. Suppose now that such court deviates to D and it is believed to be pro-debtor. This is the most favourable situation

C or K, the $3*2=6$ separating equilibria involving only play of U, C, K as well as the $3^2*2=18$ semi-separating equilibria involving only play of U, C or K, for a total of 27 equilibria. Next, we note that in all (semi-separating and separating) equilibria where pro-creditor courts separate themselves from the other two the pro-creditor courts must play C – otherwise they would always gain by deviating to C (or arbitrarily close to it if C is played by another court). This consideration eliminates 5 additional semi-separating equilibria and 14 additional separating equilibria. We have thus already eliminated $27+5+14=46$ equilibria.

Another consideration restricting the equilibrium set is that if in a separating equilibrium the pro-debtor court signals itself by playing U, then unbiased courts will deviate to U, which eliminates an additional equilibrium. Also, in any semi-separating equilibrium where D is played by pro-creditor and unbiased courts and pro-debtor courts signal themselves by playing U (resp. C), then unbiased (resp. pro-creditor) courts deviate from the pooling to their preferred U (resp. C), which eliminates two additional equilibria. In addition, if in a semi-separating equilibrium pro-debtor and pro-creditor courts pool in i) C, ii) U or iii) K while unbiased courts separate themselves in i) U or D, ii) D or iii) U or D, then pro-debtor courts have an incentive to deviate to the unbiased courts' strategy because such deviation entails a static gain and, just as in the case of equilibrium **2.2**, a dynamic gain, too. This consideration eliminates two additional equilibria, for a total of 51 equilibria eliminated so far.

Let us now move to some final considerations. An equilibrium where pro-creditor and unbiased courts pool in K while pro-debtor courts separate in D cannot exist because an unbiased court gains both statically and dynamically by deviating to D. Accordingly, a separating equilibrium where unbiased courts play K cannot exists because those courts would gain, both statically and dynamically, by deviating to D (which must be played, if such equilibrium exists, by pro-debtor courts). A semi-separating equilibrium where pro-debtor and pro-creditor courts pool in D while unbiased courts play C is also impossible because, by the same argument used to discard equilibrium **2.2**, pro-creditor courts gain both statically and dynamically from deviating to C. This eliminates 3

in which the pro-creditor court can deviate to D. Then, the court obtains a number $nf_{\overline{\rho}}^U$ of firms with $\rho=\overline{\rho}$ and a number $nf_{\underline{\rho}}^U$ of firms with $\rho=\underline{\rho}$, where $f_{\overline{\rho}}^U(\alpha,c)\equiv\min\left[1,\frac{(1-\alpha)\overline{\rho}}{3c}\right]$ and $f_{\underline{\rho}}^U(\alpha,c)\equiv\min\left[1,\frac{2(1-\alpha)\underline{\rho}}{3c}\right]$. As a result, by deviating to D the pro-creditor court obtains $E(\rho)\delta_j+\gamma\lambda(1+f_{\overline{\rho}}^U+f_{\underline{\rho}}^U)/2$. As long as $\gamma\leq(\lambda-\underline{\rho}\delta_j)/\lambda(f_{\overline{\rho}}^U+f_{\underline{\rho}}^U)$ the pro-creditor court does not find it profitable to deviate to D, even under the most favourable configuration of beliefs. This condition is surely met provided f_{ρ}^U is sufficiently small, namely provided $(1-\alpha)/c$ is sufficiently small. A similar argument can be used to show that D is often equilibrium dominated for unbiased courts as well, although most of our analysis goes through even if that were not the case. Indeed, the key feature of our out-of-equilibrium beliefs is that pro-debtor courts can separate themselves from pro-creditor ones (though not necessarily from unbiased ones) by playing D. This feature prevents the existence of a pooling equilibrium in U.

additional equilibria, for a total of 54 equilibria already eliminated, leaving exactly the 10 equilibria analyzed in 1), **2)** and **3)** above.

5) Uniqueness of the pooling pro-debtor equilibrium. We have seen that under the assumed structure of out-of-equilibrium beliefs there exist 3 possible equilibria in pure strategies: a pooling where all courts play D, a semi-separating where pro-debtor and unbiased courts pool in D while pro-creditor courts play C, and a separating where each court plays its statically optimal strategy.

We now ask whether the pooling equilibrium, that is the most interesting equilibrium from the standpoint of our analysis, is unique whenever it exists. It turns out that the answer is yes. To see that, notice that the pooling **1.1** cannot coexist with the semi-separating **2.1** because condition (14) implies that in the latter equilibrium the discount factor γ should always be smaller than the smallest level allowed for a pooling to exist as identified by condition (12). In algebraic terms, it is easy to see that there is no γ jointly satisfying (14) and (12) if and only if

$$2\min\left[1,\frac{(1-\alpha)\,\underline{\rho}}{3c}\right]+2\min\left[1,\frac{2\,(1-\alpha)\,\overline{\rho}}{3c}\right]\leq 3\min\left[1,\frac{(1-\alpha)\,\underline{\rho}}{2c}\right]+3\min\left[1,\frac{(1-\alpha)\,\overline{\rho}}{c}\right],$$

which is always satisfied.

Finally, it is straightforward to see that the semi-separating equilibria **2.6** and **2.7** as well as the separating equilibrium **3.1** cannot as well coexist with the pooling **1.1** because there is no γ satisfying at the same time (11) and (18), (11) and (21), as well as and (12) and (28), respectively. Thus, under the assumed out-of-equilibrium beliefs' structure, in the parameter range where the pooling equilibrium exists, such equilibrium is the unique equilibrium in pure strategies. ■

Proof of Corollary 2. We study the impact of α and c within a given equilibrium outcome, i.e. for given strategies $x_\beta(\rho)$ followed by courts. Ex post welfare is:

$$W(\alpha,c)=E_{\beta,\rho}\left\{\lambda+x_\beta(\rho)(\rho-\lambda)+f_{\rho,\beta}(\alpha,c)(\rho-\lambda)\left[1-x_\beta(\rho)\right]\right\}$$

A.1 implies that: $dW(\alpha,c)/dc=-(1-\alpha)E_{\beta,\rho}\left\{\left(\rho^2-\rho\lambda\right)\left[1-x_\beta(\rho)\right]^2\right\}/c^2$. After some algebra one finds $dW(\alpha,c)/dc\propto-\left[E(\rho^2)-\lambda E(\rho)\right]\Pr(\beta\leq\beta_{\overline{\rho}})-\left(\underline{\rho}^2-\lambda\underline{\rho}\right)\Pr\left[\beta\in\left(\beta_{\overline{\rho}},\beta_{\underline{\rho}}\right)\right]/2$. Given $\underline{\rho}<\lambda$, $dW(\alpha,c)/dc>0$ for any $B(\alpha)$ (even for $\Pr(\beta\leq\beta_{\overline{\rho}})=1$) iff $E(\rho^2)\leq\lambda E(\rho)$. Since $Var(\rho)=E\left(\rho^2\right)-E(\rho)^2$, the condition is $\lambda-E(\rho)\geq Var(\rho)/E(\rho)$. By contrast, $dW(\alpha,c)/d\alpha=-E_{\beta,\rho}\left\{\left(\rho^2-\rho\lambda\right)\left[1-x_\beta(\rho)\right]^2\right\}/c-E_\rho\left\{(\rho-\lambda)\left[1-f_{\rho,\beta}(\alpha,c)\right]b(\beta_\rho)d\beta_\rho/d\alpha\right\}/c$, where $b(\beta_\rho)$ is the density function of β evaluated at the threshold β_ρ. We know from above that the first term is

positive and it is easy to find that the second term is negative as well. Indeed, $\underline{\rho} - \lambda < 0$ and $d\beta_{\underline{\rho}}/d\alpha > 0$, while $\overline{\rho} - \lambda > 0$ and $d\beta_{\overline{\rho}}/d\alpha < 0$. As a result, we have that if $\lambda - E(\rho) \geq Var(\rho)/E(\rho)$, also $dW(\alpha, c)/d\alpha$ is positive. Notice also that $\lim_{c\to\infty} W(\alpha, c) = E_{\beta,\rho}\{\lambda + x_\beta(\rho)(\rho - \lambda)\}$ while $\lim_{\alpha\to 1} W(\alpha, c) = (\lambda + \overline{\rho})/2$. ■

Proof of Proposition 5. The overall proportion of reorganized firms is equal to:

$$E_{\beta,\delta,\rho}\{f_{\beta,\delta,\rho}(\alpha, c) + [1 - f_{\beta,\delta,\rho}(\alpha, c)]\, x_\beta(\rho)\} = E_{\beta,\delta,\rho}\{x_\beta(\rho) + f_{\beta,\delta,\rho}(\alpha, c)\,[1 - x_\beta(\rho)]\} \geq 1/2 \quad (34)$$

As a result, also in this case there is a systematic pro-debtor bias. Such bias falls in legal restrictions c, as the derivative of (34) with respect to c is equal to $-E_{\beta,\delta,\rho}\{f_{\beta,\delta,\rho}(\alpha, c)\,[1 - x_\beta(\rho)]\}/c < 0$. Ex post social welfare is equal to:

$$W(\alpha, c) = E_{\beta,\delta,\rho}\{f_{\beta,\delta,\rho}(\alpha, c)\,\rho + \delta\,[1 - f_{\beta,\delta,\rho}(\alpha, c)]\,[\lambda + x_\beta(\rho)(\rho - \lambda)]\} \quad (35)$$

Taking into account that $\delta = 0$, the derivative of (35) with respect to c is proportional to:

$$-(1-\varphi)E\left(\rho^2\right) - \varphi\left\{\left[E(\rho^2) - \lambda E(\rho)\right]\Pr(\beta \leq \beta_{\overline{\rho}}) + \left(\underline{\rho}^2 - \lambda\underline{\rho}\right)\Pr\left[\beta \in \left(\beta_{\overline{\rho}}, \beta_{\underline{\rho}}\right)\right]/2\right\}$$

Since $E\left(\rho^2\right) - \lambda E(\rho) \equiv \lambda - E(\rho) \geq Var(\rho)/E(\rho) > \left(\underline{\rho}^2 - \lambda\underline{\rho}\right)/2$, $dW/dc \leq 0$ for every $B(\beta)$ provided $-(1-\varphi)E\left(\rho^2\right) - \varphi\left(\underline{\rho}^2 - \lambda\underline{\rho}\right)/2 \leq 0$, which is true whenever $\varphi \leq \varphi^* \equiv 2E\left(\rho^2\right)/\left(\underline{\rho}^2 - \lambda\underline{\rho}\right)$. Notice that $\varphi^* > 1$ irrespective of the sign of $\lambda - E(\rho) \geq Var(\rho)/E(\rho)$. ■

Proof of Proposition 6. This proof focuses on the pooling pro-debtor equilibrium (the more general properties of the equilibria of this model easily follow from the proof of Proposition 3). Suppose that $\eta = 0$ and $\varphi = 1/2$. Given $\delta = 0$, all debtors allocated to slow natural venues try to file in fast courts granting reorganization. In the first period, a fraction f_ρ of firms leaves each slow court and files in the corresponding fast court. Define $\widetilde{f} \in \{-f_\rho, +f_\rho\}$. A slow court has $\widetilde{f}_\rho = -f_\rho$, a fast courts has $\widetilde{f}_\rho = +f_\rho$. In the second period, the outcome depends on the equilibrium prevailing in the first period. In a pooling equilibrium, the same flow from slow to fast court occurs, implying that in this equilibrium each court obtains:

$$V_j^{pooling} \equiv \begin{cases} \left[\overline{\rho}(1 + \widetilde{f}_{\overline{\rho}}) + \underline{\rho}(1 + \widetilde{f}_{\underline{\rho}})\right]\overline{\delta}(1+\gamma)/2 & \text{if } j = \text{ pro-debtor} \\ \left[\overline{\rho}(1 + \widetilde{f}_{\overline{\rho}}) + \underline{\rho}(1 + \widetilde{f}_{\underline{\rho}})\right]/2 + \gamma\left[\overline{\rho}(1 + \widetilde{f}_{\overline{\rho}}) + \lambda(1 + \widetilde{f}_{\underline{\rho}})\right]/2 & \text{if } j = \text{ unbiased} \\ \left[\overline{\rho}(1 + \widetilde{f}_{\overline{\rho}}) + \underline{\rho}(1 + \widetilde{f}_{\underline{\rho}})\right]\underline{\delta}/2 + \gamma\lambda(2 + \widetilde{f}_{\overline{\rho}} + \widetilde{f}_{\underline{\rho}})/2 & \text{if } j = \text{ pro-creditor} \end{cases}$$

This is an equilibrium if courts are better off by pooling than by playing their static optimum. Under the out-of-equilibrium beliefs of Proposition 3 an unbiased court deviating to its static optimum is believed to be pro-creditor and loses a fraction f_ρ of firms irrespective of whether it is slow or fast, obtaining $\left[\overline{\rho}(1+\widetilde{f}_{\overline{\rho}})+\lambda(1+\widetilde{f}_{\underline{\rho}})\right]/2+\gamma\left[\lambda(1-f_{\underline{\rho}})+\overline{\rho}(1-f_{\overline{\rho}})\right]/2$. A pro-creditor court deviating to its optimal static policy also loses f_ρ firms and does not attract debtors from slow courts, obtaining $\lambda(2+\widetilde{f}_{\overline{\rho}}+\widetilde{f}_{\underline{\rho}})/2+\gamma\lambda(2-f_{\overline{\rho}}-f_{\underline{\rho}})/2$. Because with $\eta=0$ slow courts obtain the same cases' outflow of pro-creditor courts, they will always play their statically optimal policy in equilibrium. As a result, the equilibrium for slow courts is always separating. What about fast courts? They all behave as pro-debtor provided:

$$\gamma \geq (\lambda-\underline{\rho})(1+f_{\underline{\rho}})/2(\overline{\rho}f_{\overline{\rho}}+\lambda f_{\underline{\rho}}) \tag{36}$$

$$\gamma \geq \left\{2\left[\lambda-E(\rho)\underline{\delta}\right]+(\lambda-\overline{\rho}\underline{\delta})f_{\overline{\rho}}+(\lambda-\underline{\rho}\underline{\delta})f_{\underline{\rho}}\right\}/2\lambda(f_{\overline{\rho}}+f_{\underline{\rho}}) \tag{37}$$

It is easy to check that (36) is always easier to meet than (11) while (37) is easier to meet than (12) if and only if $(1-\alpha)/c$ is sufficiently small that there is little forum shopping. In other words, the pooling pro-debtor equilibrium among fast courts is easier to attain than the pooling of Proposition 3 provided there is sufficiently little forum shopping. The intuition is that forum shopping from slow to fast courts can boost the courts' incentives to select their statically optimal policy in the first period. ■

Proof of Proposition 7. The total share of reorganized firms is equal to:

$$E_{\beta,\rho}\left\{pf_\rho^D+\left[1-(1-p)\,f_\rho^C-pf_\rho^D\right]x_\beta(\rho)\right\}$$

After some algebra, the above expression becomes:

$$1/2+p\left[E_{\beta,\rho}\left(f_\rho^D\right)+E_\beta f_{\underline{\rho}}^C/2+E_\beta f_{\overline{\rho}}^C(1-Z)/2\right]-\left[E_\beta f_{\underline{\rho}}^C/2+E_\beta f_{\overline{\rho}}^C(1-Z)/2\right] \tag{38}$$

Where Z is an indicator function taking value 1 when $\alpha>\lambda/\overline{\rho}$ and 0 otherwise. Then, p^* is equal to:

$$p^*=\frac{E_\beta f_{\underline{\rho}}^C/2+E_\beta f_{\overline{\rho}}^C(1-Z)/2}{E_{\beta,\rho}\left(f_\rho^D\right)+E_\beta f_{\underline{\rho}}^C/2+E_\beta f_{\overline{\rho}}^C(1-Z)/2}$$

Notice that $p^*\in[0,1]$. Consider how systematic bias varies with c. The derivative of (38) with respect to c is equal to $-\left\{p\left[E_{\beta,\rho}\left(f_\rho^D\right)+E_\beta f_{\underline{\rho}}^C/2+E_\beta f_{\overline{\rho}}^C(1-Z)/2\right]-\left[E_\beta f_{\underline{\rho}}^C/2+E_\beta f_{\overline{\rho}}^C(1-Z)/2\right]\right\}/c$,

which is positive for $p < p^*$ and negative otherwise. Thus, as indicated by Proposition 7, the total proportion of reorganized firms increases if the systematic bias is pro-creditor and decreases otherwise. It is immediate to check that an increase in c_k/c_d (leaving contant $c_k + c_d$) reduces the value of p^* while an increase in $c_k + c_d$ (leaving constant c_k/c_d) leaves it unaffected. ■

Proof of Proposition 8. It is useful to start by recalling that r_j maximizes the court's utility $E_\rho\{\lambda\Phi_j + v_j\rho(1-\Phi_j)\}$, where we have labeled $v_j = \alpha + \beta_j(1-\alpha)$. The first order condition implies that $E_\rho\left\{(\lambda - v_j\rho)\Phi_j'\right\} = 0$. Consider now the effect of θ_j on the probability of liquidation Φ_j. First, by deriving expression (8) it is easy to see that $dr_j/d\theta_j = -\frac{2\theta}{\overline{\rho}-\underline{\rho}}\ln\frac{\beta_j(1-\alpha)\overline{\rho}+(\alpha\overline{\rho}-\lambda)}{(\lambda-\alpha\underline{\rho})-\beta_j(1-\alpha)\underline{\rho}}$ whose sign is negative if and only if $\beta_j > 1$. It follows that

$$\frac{d\Phi_j}{d\theta_j} = E_\rho\left\{\Phi_j'\left[\frac{(dr_j/d\theta_j)\,\theta_j - r_j + \rho}{\theta_j^2}\right]\right\} = E_\rho\left\{\Phi_j'\left[-\frac{1}{\overline{\rho}-\underline{\rho}}\ln\frac{\beta_j(1-\alpha)\overline{\rho}+(\alpha\overline{\rho}-\lambda)}{(\lambda-\alpha\underline{\rho})-\beta_j(1-\alpha)\underline{\rho}}\right]\right\}$$

where the last equality exploits the court's first order condition in setting r_j and the definition of r_j. Thus, the effect of θ_j on the probability of liquidation is positive if and only if $\beta_j > 1$.

Finally, the derivative of expected repayment ($E_\rho\{\lambda\Phi_j + \alpha\rho(1-\Phi_j)\}$) with respect to θ_j is equal to:

$$E_\rho\left\{(\lambda-\alpha\rho)\,\Phi_j'\right\}\left\{\frac{(dr_j/d\theta_j)\,\theta_j - r_j + \rho}{\theta_j^2}\right\} = E_\rho\left\{\beta_j(1-\alpha)\,\Phi_j'\left[-\frac{1}{\overline{\rho}-\underline{\rho}}\ln\frac{\beta_j(1-\alpha)\overline{\rho}+(\alpha\overline{\rho}-\lambda)}{(\lambda-\alpha\underline{\rho})-\beta_j(1-\alpha)\underline{\rho}}\right]\right\}$$

where the equality exploits the court's first order condition in setting r_j. Thus repayment falls in θ_j. if and only if $\beta_j > 1$. ■

Appendix 2. Ex Ante Consequences of Judicial Discretion

To study the impact of judicial discretion on debt financing and investment, suppose that ρ is the productivity attached to the concave production function $f(I)$ under reorganization, λ the productivity under liquidation. $I \geq 0$ is the level of ex ante investment and $f(.)$ satisfies the usual Inada conditions. Consider the case where only debtors can forum shop. Then, if the expected probability of reorganization is equal to $\widetilde{x}(\rho) = [1 - f_{\rho,\beta}]\,x_\beta(\rho) + f_{\rho,\beta}$, the debtor proposes the creditor a financial contract solving:

$$\max_{A,I} \; A + E_\rho \left\{ (1-\alpha)\, \rho \widetilde{x}\,(\rho) \right\} f\,(I) \tag{39}$$

$$s.t. \;\; E_\rho \left\{ \lambda \left[1 - \widetilde{x}\,(\rho) \right] + \alpha \rho \widetilde{x}\,(\rho) \right\} f\,(I) \;\; \geq \;\; A + I \tag{40}$$

$$A \geq 0 \tag{41}$$

The contract maximizes the debtor's payoff by stipulating that the creditor should finance investment I and advance to the debtor an additional payment A which is set so as to ensure creditor break-even (we are assuming that there is perfect competition among creditors). The constraint $A \geq 0$ simply reflects the fact that the debtor has no initial wealth. Since the payment A renders the debtor full residual claimant to the profits of the firm, the above problem boils down to:

$$\max_{I} \; E_\rho \left\{ \lambda \left[1 - \widetilde{x}\,(\rho) \right] + \rho \widetilde{x}\,(\rho) \right\} f\,(I) - I \tag{42}$$

$$s.t. \;\; E_\rho \left\{ \lambda \left[1 - \widetilde{x}\,(\rho) \right] + \alpha \rho \widetilde{x}\,(\rho) \right\} f\,(I) \;\; \geq \;\; I \tag{43}$$

That is, the optimal contract maximizes the firm's expected profits (42) [i.e. his average revenues under the expected reorganization policy minus investment costs] subject to the creditor's break even constraint (43). The first order condition of the problem is:

$$E_\rho \left\{ \lambda \left[1 - \widetilde{x}\,(\rho) \right] + \frac{1 + \alpha\mu}{1 + \mu} \rho \widetilde{x}\,(\rho) \right\} f'\,(I) \;\; = \;\; 1 \tag{44}$$

$$\mu E_\rho \left\{ \lambda \left[1 - \widetilde{x}\,(\rho) \right] + \alpha \rho \widetilde{x}\,(\rho)\, f\,(I) - I \right\} \;\; = \;\; 0 \tag{45}$$

where $\mu \geq 0$ is the Lagrange multiplier attached to the creditor's break even constraint. μ measures the tightness of the break even constraint. It is then immediate to find:

Proposition 9 *If the break even constraint is binding (i.e. $\mu > 0$) debt and ex ante investment increase in c and in α. Forum shopping reduces debt and investment by reallocating cases to judges with higher β_j.*

The logic behind this result is simple. If $\mu > 0$, debt and investment are determined by (44) and they increase in the expected repayment to the creditor, which in turn falls with $\widetilde{x}\,(\rho)$ for every ρ, as showed by Proposition 1. Clearly, the expected probability of reorganization falls in c and α as both parameters reduce forum shopping to pro-debtor courts.

Broadly speaking, Proposition 9 suggests that under judicial discretion, debtors' forum shopping

increases the ex ante costs of debt finance by undermining repayment. An immediate reaction to these costs could be for entrepreneurs to relax their financial constraints by issuing equity, which is perhaps less subject to pro-debtor enforcement.

An alternative reaction to the cost of forum shopping may be for the parties to contract ex ante about the bankruptcy venue. These contracts are often legally forbidden (Schwartz 1997), but it is still interesting to see what would be the outcome if they were allowed. Ex ante, the parties solve the above contracting problem by picking an optimal reorganization policy $\widetilde{x}(\rho)$ among those implemented by bankruptcy courts. It is worthwhile stressing that in this case the venue choice would be formulated ex ante and there would thus be no forum shopping ex post. The optimal choice of $\widetilde{x}(\rho)$ for every ρ adds to (44) and (45) the following first order condition:

$$-\lambda(1+\mu)+\rho(1+\alpha\mu)\geq 0 \tag{46}$$

The parties set $\widetilde{x}(\rho)=1$ if and only if (46) holds. It is immediate that this can only be true at $\overline{\rho}$. As a result, the parties will choose an unbiased or pro-creditor judge. In particular, for $\alpha\overline{\rho}\geq\lambda$ the parties choose an unbiased judge. By contrast, for $\alpha\overline{\rho}<\lambda$ the parties choose an unbiased judges provided $\mu\leq(\overline{\rho}-\lambda)/(\lambda-\alpha\overline{\rho})$ and a pro-creditor judge otherwise. The intuition is that it is optimal for the parties to ex ante commit to always liquidate the project when the creditor's break even constraint is highly binding. By so doing, the parties profitably increase ex ante investment. This model of ex ante contracting predicts that only one type of court (unbiased or pro-creditor depending on parameters) will be used in equilibrium. Thus, in a career concerns version all courts will try to mimic that one. Not surprisingly, in this model of ex ante contracting competition among courts is beneficial and triggers efficient outcomes.

Appendix 3. Private Workouts

Suppose that before going to court the debtor and the creditors can negotiate a private workout. Assume for simplicity that the investor has all the bargaining power. Then, a firm of type $\underline{\rho}$ which ended up before a judge reorganizing it with probability $x(\underline{\rho})$ is spared inefficient reorganization, as the investor can offer an amount $(1-\alpha)\,\underline{\rho}x(\underline{\rho})$ of liquidation proceeds to the entrepreneur. Thus, the workout is successful and ex post efficiency is attained. Consider now the case of a firm of type $\overline{\rho}$ which ended up before a judge reorganizing it with probability $x(\overline{\rho})$. Because the entrepreneur is cash constrained, to avoid unprofitable liquidation, he can promise to the investor at most $\alpha\overline{\rho}$ of reorganization proceeds. As a result, the workout goes through and the firm is reorganized if

and only if $\alpha\overline{\rho} \geq \lambda$. If instead $\alpha < \lambda/\overline{\rho}$, the workout fails and the firm is over-liquidated with probability $1 - x(\overline{\rho})$. From this analysis, and consistent with Giammarino (1989), it is clear that while workouts can soften some of the ex post costs of judicial bias, they cannot prevent pro-debtor bias from reducing ex ante repayment and thus debt capacity and welfare. Even if $\alpha\overline{\rho} \geq \lambda$, which is associated to workouts giving full ex post efficiency, expected repayment to creditors is $(1/2)\left[\alpha\overline{\rho} + \lambda - x(\underline{\rho})(1-\alpha)\underline{\rho}\right]$, which falls in $x(\underline{\rho})$ and thus in β_j. As a result, in line with Appendix 2 above, although workouts improve ex post efficiency and might sometimes induce full ex post efficiency, they do not eliminate the ex ante cost of judicial bias.

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