

A Primer on Option Valuation in Restructuring

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Abstract

The restructuring of a financially distressed but viable business firm creates an unusual and complex valuation problem. The distressed business has taken on too much debt and must adjust its capital structure to preserve value. The goal of the process is to emerge with a new capital structure that allows the firm to raise funds for future projects. But that requires a two-pronged valuation. On the one hand, the old claims on the firm must be reconciled to determine who is owed what. On the other hand, the value available to pay those claims derives from the firm's prospects at creating value in the future. The claims are determined by a backward-looking inquiry while the pay-outs are determined by a forward-looking valuation. For the forward-looking valuation, conventional approaches distribute ownership to the various claimants as if a sale had occurred. This ties the distribution rights to the value of the firm at the moment of restructuring, which artificially destroys option value that otherwise belongs to the junior stakeholders. This destruction of option value has distributional effects that can distort the incentives and behaviour of those running a firm, both in distress and in the period leading up to distress. This chapter reviews how restructuring procedures today destroy option value. It then explores the foundations of an alternative approach that values and preserves option value.

Keywords: bankruptcy, priority, option value

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A Primer on Option Valuation in Restructuring

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1. Introduction: Restructuring & Options

The restructuring of a financially distressed but viable business firm creates an unusual and complex valuation problem. The distressed business has taken on too much debt and must adjust its capital structure to preserve value. Often the firm is balance sheet insolvent—the value of its debts exceeds the value of its assets—or faces a liquidity crunch and cannot pay debts as they become due. Other firms enter the restructuring process earlier, as they find themselves unable to raise new financing or perceive an increasing risk of insolvency.

In all cases, the goal of the process is to emerge with a new capital structure that allows the firm to raise funds for future projects. But that requires a two-pronged valuation. On the one hand, the old claims on the firm must be reconciled to determine who is owed what. On the other hand, the value available to pay those claims derives from the firm's prospects at creating value in the future. The claims are determined by a backward-looking inquiry while the pay-outs are determined by a forward-looking valuation.

The restructuring process might take the form of an auction. The firm could sell its assets and then distribute the proceeds of the sale among the claimants. Some academics have argued that an all-asset sale is an ideal way to simplify restructuring procedures. Others have argued that you can restructure the firm by distributing ownership to the various claimants *as if* a sale had occurred. Both approaches tie the distribution rights to the value of the firm at the moment of restructuring, which artificially destroys option value that otherwise belongs to the junior stakeholders.

To see why this is true, consider a firm with two stakeholders: a senior creditor and a junior investor. The firm owes \$100 to its senior creditor, and the junior investor owns the equity in the firm. Now imagine the firm has one asset. That asset will be worth either \$200 or nothing in a year. Each outcome has a 50%

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probability. This firm is, thus, worth \$100 today in expected value. But what part of that value belongs to the senior creditor? And what part to the junior investor?

If you do a valuation based on the expected payouts from each stakeholder's respective positions in the firm, each has a \$50 stake. Half the time, the firm is worth \$200, and each stakeholder gets \$100. The other half, the firm is worth \$0, and each stakeholder gets nothing.

If, instead, you do a valuation based on a sale of the asset today, the senior creditor has a \$100 stake and the junior investor has nothing. In a sale today, the buyer would pay \$100 for the asset. The firm would now have \$100 cash with certainty. There would be no upside possibility and no downside risk. Because the senior creditor gets paid first, the senior creditor gets \$100 and the junior investor gets nothing.¹

This example demonstrates how layered capital structures create asymmetric payout profiles for stakeholders. Senior stakeholders bear the downside risk of future projects and junior stakeholders benefit from the potential upside. As a result, projects with uncertain outcomes "create[] a payoff profile [for junior stakeholders] identical to the payoffs from a call option."² Any valuation based on a sale of the assets at the time of the restructuring eliminates that call option by converting the project into a certain cash payment.

This destruction of option value has distributional effects that can distort the incentives and behaviour of those running a firm, both in distress and in the period leading up to distress.

Academics, lawyers, and courts alike have struggled to identify the optimal procedures for dealing with this problem. This chapter reviews how restructuring procedures today destroy option value. It then explores the foundations of an alternative approach that values and preserves option value.

2. Priority Rules

Financial restructuring is necessary because firms have layered capital structure. One can imagine a one-layered structure where a firm has no debt. A small business may take this form, at least for a time. If the firm runs out of money, it simply shuts down and no restructuring is necessary. If the firm finds

¹ This example is taken from *Anthony J. Casey, The Creditor's Bargain and Option Preservation Priority in Chapter 11*, 78 U. Chi. L. Rev. 759, 773-74 (2011).

² Anthony J. Casey & Edward R. Morrison, *Beyond Options* in RESEARCH HANDBOOK ON CORPORATE BANKRUPTCY LAW, Barry Adler (Ed.) (Edward Elgar 2020).

itself unable to raise new equity, it can simply adopt a two-layered structure by issuing debt. A third layer can be added by issuing secured debt. For large companies, capital markets have evolved in ways that allow for increased and more complex layering.

Once a firm has more than one layer, the problems of priority, option value, and divergent incentives arise.

2.1 Priority & Non-Bankruptcy Rights

In its simplest form, priority is just the rule for who gets paid first when a firm liquidates. As a general matter, priority in most jurisdictions looks like this:

- 1) Secured Creditors (as to the value of identified assets)
- 2) Unsecured Creditors
- 3) Equity

That is to say that when you liquidate a firm and sell off its assets, you give the value first to the creditors with a security interest, next to the unsecured creditors, and then—only after everyone else has been paid—you give anything left over to the equity holders.

What happens, however, when the firm is not liquidated?

Liquidation is often suboptimal. The firm may be worth more when it is kept together than when it is torn apart. And a sale—even of all assets—often produces a lower price than more orderly restructuring.³ If the firm continues to exist and the value goes up, that increase in value will ultimately run to the benefit of the junior stakeholders. For example, in the hypothetical presented in the introduction, the junior stakeholders capture the increase in value when the asset is worth \$200.

Thus, a senior creditor often wants to force a liquidation to capture its priority payment immediately while the junior stakeholder wants to stall in hopes that the firm turns around. To avoid liquidation, the parties will likely have to reach a negotiated agreement. The distributions of value produced by that agreement depends on a mix of things. These include the maturity of debt, the terms of default, and the negotiation dynamics among the stakeholders.

Usually, a senior creditor has a right to demand a firm's immediate liquidation, and to subsequently capture any value that might be available in a foreclosure

³ This is often true because the law does not allow a sale of all assets free of certain claims. The buyer becomes liable for certain unsecured claims and so the buyer is unwilling to pay full price for the assets.

sale. Unsecured creditors, on the other hand, have a right to whatever value is left over after the senior debt is paid out. They also have the option to obtain and enforce judgment liens and themselves force the firm into liquidation in some cases. Similarly, equity holders and management often have leverage by way of control rights and relationships.

This dynamic creates an uncertain negotiation that can destroy value if the parties do not reach a negotiated outcome. Formal restructuring procedures are, in part, intended to prevent such a breakdown from destroying value. Thus, the parties are brought together in an organized forum to negotiate a new capital structure.

This creates a puzzle. Restructuring procedures are precisely intended to preserve the value that gets destroyed when parties exercise their nonbankruptcy rights. Is it possible then to say who is entitled to that value “outside of bankruptcy”?

And yet, any law of restructuring must provide rules to determine the substantive rights that parties are entitled to in the absence of a negotiated agreement. For example, can junior stakeholders⁴ be forced to take a partial payment on their claims if they object? And if so, what value should be placed on those claims? Similarly, can a secured creditor be forced to accept a promise of payment in lieu of foreclosing on an asset? And if so, how much must that promise be worth?

2.2 The Absolute Priority Rule—Simplicity and Distortions

The Absolute Priority Rule is one way to answer these questions. At its core, the rule provides that the parties must treat the restructuring as if it were a liquidation. The firm and its asset should be valued, and the value should be distributed among the parties in the same order that it would be in a liquidation.

This rule has an appeal of simplicity. In the easiest case, the firm can be sold as a whole, free and clear of all prior claims, and the money can be paid in a clear waterfall.

There are costs to this simplicity. Imagine a firm has one class of equity holders and one class of creditors. It owes the creditors \$100. Now imagine that same firm has one project that has a 50% chance of success. If the project succeeds, the firm will be worth \$300. If it fails, it will be worth nothing.

⁴ For the remainder of this chapter, we will refer to equity and junior creditors interchangeable as junior stakeholders. The point is to refer to the junior-most stakeholder in a dispute. In some cases, this will be the equity holders and in others it will be the most junior creditor. The distinction does not affect the analysis.

An economist would say that this firm has expected value of \$150. But the values to the creditors and equity holders are more complicated. The equity holders will get nothing half the time and \$200 the other half. The project has an expected value of \$100 for them. The creditors get nothing half the time and \$100 the other half. The project has an expected value of \$50 for them.

Now imagine that during the restructuring process a buyer offers \$51 to buy the firm. This offer undervalues the firm by \$99. And yet, under the Absolute Priority Rule, the creditors want to take this offer. They get \$51 with certainty rather than playing out the project with an expected value of \$50 (for them).

On the other side, imagine a buyer offers \$199 to buy the firm. This overvalues the firm by \$49. But with the Absolute Priority Rule, the equity holders oppose the sale. They get \$99 in cash for giving up a project that has an expected value of \$100 (for them).

The source of the problem is that—based on their position in the capital structure—stakeholders benefit differently from future risk and volatility. Senior stakeholders are harmed by volatility while junior stakeholders benefit from it. The result is that any procedure that grants power to either party will create distortions. If the senior creditors have control, they will engage in fire sales. If the junior stakeholders have control, they will engage in delay.

The distortions are costly in themselves. And they also create costs because parties have an incentive to compete for control. In the United States, for example, this competition takes two forms. First, parties compete for the favour of the firm's managers who have default control. Second, parties litigate to wrest that control away from the debtor.

2.3 Relative Priority Rule and Option-Preservation Priority— Definitional Points

The Absolute Priority Rule is often regarded as the gold standard of reorganization law and a foundational principle for the law of corporate restructured, at least among those who take a law and economics view of the field. But it is not the only alternative.

Some who are concerned with the distortions created by the Absolute Priority Rule might advocate for an alternative such as Relative Priority or Option-Preservation Priority.

It is necessary at this point to define terms and clear up some semantic confusion, before discussing how Option-Preservation Priority would be implemented.

2.3.1 Options

As a starting point, the term “option” is used to refer to implicit financial and real options that are embedded in an investor’s position in a firm. For example, a junior investor has an implicit call option. A call option gives the holder the right, but not the obligation, to buy an asset at a set strike price. Thus, if the price of the asset goes up, the option holder can realize the benefit by exercising the option. If the price drops below the strike price, any further losses are borne by someone other than the option holder.

Equity and junior debt work the same way:

Equity is implicitly a call option on the firm’s assets, with a strike price equal to the firm’s liabilities. Senior (secured) debt is equivalent to owning the firm’s assets and selling a call option with a strike price equal to the face value of the senior debt. And unsecured debt is a combination of two options—a long call option on the firm’s assets, with a strike price equal to senior debt, plus a short call option, entitling equityholders to buy the assets from unsecured creditors at a price equal to total firm liabilities.⁵

Senior creditors also have options that are affected by restructuring, including the implicit real option “to choose between immediate recovery (via market-based liquidation of collateral) or postponed realization (via debt restructuring).”⁶ These real options of secured creditors are often ignored in the discussion of priority but are equally important.

2.3.2 Relative Priority Properly Understood

Relative Priority describes a rule that accounts for the relative position each party has in the capital structure and the options created by that position. As Douglas Baird has explained,

“Relative priority” is not a vague idea that allows any plan as long as senior stakeholders fare better than junior ones. Relative priority fully respects the right of senior creditors to be paid before junior creditors. It differs from absolute priority only in the way it identifies the time at which the rights of the players are assessed.⁷

⁵ Casey & Morrison, *supra* note 2.

⁶ *Id.*

⁷ Letter from Douglas Baird to Prof. dr. R.J. de Weijs, March 17, 2019. See also Douglas G. Baird, *Priority Matters*, 165 U. Penn. L. Rev. 785, 792 n. 22 (2017) (“Relative priority is not merely a ‘deviation’ from absolute priority.”)

The term has, however, been used to describe priority regimes that are not just merely deviations for absolute priority. For example, the provision in the European directive allowing for junior classes to recover value has been referred to as a Relative Priority Rule, despite having no clear tie to the option values that exist in the absence of a liquidation.

The American Bankruptcy Institute Reform Commission's 2013 proposal for allowing junior creditors to recover their redemption option value is a better example of what Relative Priority is properly understood to be.⁸ This ties the priority rule explicitly to the option value of the junior creditor. The report does not discuss the option value belonging to the senior creditor (discussed below). That value, which should be tied to the liquidation valuation of the firm, puts a floor on the recovery to which a senior creditor is entitled. Presumably, the Commission felt no need to state this point as it is covered by the "best interest of the creditors" test, which is almost universally understood to be fundamental to a restructuring process.

The term "Option-Preservation Priority", though inelegant and cumbersome, was coined by one of the authors of this chapter⁹ to make the connection between the priority regime and the value of options clear.

2.4 Option-Preservation Priority

Option-Preservation Priority covers any restructuring procedure that is intended to preserve the option value of junior stakeholders and distribute that value to those stakeholders. There are various ways one can achieve this. The junior stakeholders might simply have their claims and interests converted into call options in the form of warrants that allow them to purchase equity in the restructured debtor in the future. These warrants will have a defined strike price and time periods for exercise. Warrants of this sort are commonly included in Chapter 11 reorganization plans as a means of settling valuation disputes.

One objection to the use of warrants is that if they are widely granted, you might end up with a class of stakeholders who own all of the upside of a firm without having any control rights. In this scenario, the firm emerges from restructuring with a flawed capital structure that incentivizes those in control to depress the value of the firm. This might be referred to as option or equity overhang.

An alternative system is to provide the junior stakeholders with a payment for the value of the option they are losing. In a sense, this is like any other cramdown procedure where the stakeholder is being forced to accept a payment

⁸ See American Bankruptcy Institute, Commission to Study the Reform of Chapter 11, 214-224 (2014).

⁹ See Casey, *supra* note 1.

in exchange for a right they are being forced to give up. Such a mechanism would, like all cramdown measures, require a judicial valuation.

That is a major cost to Option-Preservation Priority. Judicial valuation is imperfect. But there are reasons to think the effect of those imperfections will be small relative to alternatives. Judicial valuation is necessary any time restructuring law is converting a right into a payment in the absence of a market sale. When there are market sales, parties can also object to sale procedures claiming they produce a low value bid. In those cases, the judge may need to engage in a valuation just to approve the sale.

The goal of restructuring procedures should be to minimize the frequency of judicial valuations and reduce the potential scope of error. Some have argued that option valuation is more difficult for judges to perform than valuing the firm's assets. This is likely incorrect. Valuing options is essentially a subset of valuing a firm. This is true because any attempt to value a firm's going concern must include the same upside and downside projections that would go into the option valuation. Option value turns on duration, variance, and potential outcomes. So does asset valuation. You cannot say a firm is worth \$1 Billion today without understanding the likelihood that it will be worth \$2 Billion in a year.

More importantly, with the valuation of options, the cost of errors is lower and the incentive for abusive litigation is reduced. We explore these points in the next section.

3 Valuing the Option

It is one thing to say that junior creditors have option value that should be protected, and something entirely different to provide for a workable procedure for doing so. We now lay out the foundational points for valuing options.

3.1 Which Options to Consider

It is imperative that all options be considered. When a firm is restructured, junior stakeholders are losing their option on the upside of the firm. But the senior creditors are losing their foreclosure option. For an Option-Preservation Priority regime to function it must balance these options. A failure to do so would reintroduce the distorted incentives that the regime is supposed to address. For example, if senior creditors receive less than liquidation value in restructuring, management might have an incentive to manufacture insolvency to strip the senior creditors' liens. Thus, the senior creditors should get no less than they would in a liquidation.

3.2 Judicial Valuation of Options

Option pricing, like any other asset valuation, can be performed by the court with the help of experts. There is a robust field of experts who regularly price options for market purposes. The court can hear testimony from the experts to understand and evaluate their models and inputs. This typically includes projections of potential outcomes and the estimates of variance of those outcomes over the option's duration.

Notably, the cost of error here is much smaller than when a court is estimating the value of an entire firm. A 10 percent error in the valuation of a \$10 billion company will have a much higher effect on recoveries than a 10 percent error in valuing the options that junior stakeholders hold in that company.

Similarly, the incentives are potentially less troublesome with Option-Preservation Priority than with Absolute Priority. As one of us explained in earlier work:

Most importantly, in APR the out-of-the-money junior creditors always stand to gain from playing the variance lottery. Imagine a firm that is worth \$90 with a senior lien of \$100. Now add a 20 percent valuation variance in either direction. The court will overvalue the firm at \$108 half of the time and undervalue it at \$72 half of the time. The junior creditor gets \$8 from an overvaluation and \$0 from an undervaluation. If the junior creditor forgoes the valuation, it gets \$0. The obvious incentive is for the junior creditor to litigate the valuation (with an expected outcome of \$4).

This is not the case with variance in Option-Preservation Priority. Here the junior creditor bears the downside and the upside of the variance. If the option in the same firm is worth \$10 and there is the same variance, then the junior will either get \$12 or \$8. The expected value of valuation is \$10. The expected cost to the senior creditor is \$10. Both the senior creditor and the junior creditor are just as well off (better if we throw in litigation costs) if the senior creditor offers \$10 in the first instance and the valuation is avoided.¹⁰

3.3 Option Terms

Any form of option-based priority must set the term of the option including the strike price and the duration. This is necessary regardless of whether the option is being distributed in kind or the value is being paid out in cash or another form. If the option is distributed in kind, it will need to have defined terms like any option that is bought and sold on a market. If the value of the option is to be paid out, then these terms are necessary for determining the value.

¹⁰ See *Id.*

Setting the strike price is straightforward. It can be inferred from the priority interests of the stakeholders. For example, if a senior class of creditors is owed \$100, the next class of stakeholders will have an option with strike price on the assets of the firm equal to \$100—essentially the redemption price of the debt. While some financial instruments can make this determination more intricate, the value of the strike price will usually be easily determinable once the value of the claim of the senior class is known. To the extent that claims are difficult to estimate, the strike price will be equally difficult to calculate. In that way, Option-Preservation Priority and Absolute Priority function in the same way.

Perhaps the most vexing question for Option Preservation Priority is what time limit to put on the exercise of the option. On the one hand, a non-bankruptcy option of a junior stakeholder usually will not have an expiration date. Unless and until debt is either paid or enforced, there is usually a redemption option for the debtor outside of bankruptcy. That would imply no expiration date for the equity holders' options. And the junior creditor's option derives from its own claim on the firm when it becomes insolvent and would be treated the same as an equity holder's option.

One might use the duration of the senior debt to set the expiration date for the option belonging to the next junior class. The theory here would be that, if the debt had not been paid by the term of the senior debt, the senior creditors right to foreclose would have kicked in. But this approach again ignores the reality that, in a restructuring, the senior creditor is not foreclosing. The debtor is using restructuring to create value that only exists in a world where the senior creditor waives or is forced to waive its foreclosure rights.

On the other hand, perpetual options might exacerbate the separation of incentives (discussed above) and it may be much cleaner for negotiation and valuation purposes to impose an expiration date. Perhaps the best approach is a blanket rule that provides a date far out from the restructuring. As Professor Baird notes,

It is likely necessary to pick an arbitrary time for the duration of the options—perhaps three or five years. This exercise date can be thought of as an approximation of the time at which the senior debt would have been paid off in the absence of financial distress.⁶

4 Conclusion

The debate over the optimal priority rule is likely to persist. The Absolute Priority Rule is generally invoked as the one that most respects nonbankruptcy

⁶ Douglas G. Baird, *Priority Matters*, 165 U. Penn. L. Rev. 785, 816 (2017).

contracting. Yet, that opposition is far from obvious. Meanwhile, jurisdictions around the world have and will continue to experiment with certain deviations from Absolute Priority. These deviations will usually benefit classes such as shareholders, employees, or perhaps—as many have urged—tort claimants. But these experiments don't look like true Relative Priority or Option-Preservation Priority. Indeed, the instances of true Option-Preservation Priority are almost exclusively observed in the context of private ordering, such as with ex ante venture capital structures that are implemented without resort to formal restructuring procedures and consensual reorganization plans. These private systems may also provide valuation models for a true Option-Preservation Priority system mechanism.

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