

THE ECONOMIC IMPACT OF THE DURATION OF INSOLVENCY PROCEEDINGS ON DEBTOR ASSET VALUE AND CREDITOR INTERESTS

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Abstract. *The speed with which an insolvency case is resolved is not a procedural detail but a primary determinant of how much economic value survives financial distress. This paper develops an analytical framework that links the duration of insolvency proceedings to the present value of the debtor's estate and, through it, to the recovery available to creditors. Two value-destruction channels are formalised: (i) the physical and going-concern depreciation of assets that accrues while the firm is held in legal limbo, and (ii) the discounting of delayed recoveries at the prevailing cost of capital, compounded by the continuous accrual of administrative and procedural costs. A simple decay-and-discount model shows that the marginal value destroyed by each additional period of delay equals the sum of the depreciation rate and the discount rate applied to the remaining estate, plus the flow of procedural cost.*

Keywords: *insolvency; bankruptcy duration; asset value; creditor recovery; going concern; present value; Uzbekistan.*

Insolvency law is, at bottom, an instrument for allocating the value of a firm that can no longer meet its obligations. Its economic success is therefore measured less by the elegance of its procedures than by a single outcome: how much value reaches creditors relative to what existed before the firm failed. A growing body of law-and-finance research has established that this outcome depends heavily on three operational variables — the time a case takes, the direct cost of administering it, and whether the business survives as a going concern or is broken up and sold piecemeal (Djankov, Hart, McLiesh and Shleifer, 2008; World Bank, 2020). Of these, the duration of proceedings is arguably the most consequential and the most underappreciated, because it silently magnifies every other source of loss.

The intuition is straightforward. A firm in insolvency is a depreciating asset held inside a slow legal process. Machinery rusts, inventory expires, skilled employees leave, customers migrate to competitors, and contracts lapse. Simultaneously, the money owed to creditors remains locked up and unremunerated, so that even a nominal recovery paid years later is worth far less in present-value terms. Procedural costs — trustee remuneration, legal fees, valuation and storage expenses — accumulate in the meantime and are deducted from the estate before

creditors are paid. Each of these forces grows with time. Delay is thus not neutral: it is the medium through which the estate is consumed.

This paper makes three contributions. First, it organises the economic channels through which duration affects value into a single, tractable decay-and-discount model and derives the marginal cost of delay in closed form. Second, it provides an illustrative calibration to emerging-market financial conditions, showing how quickly recoverable value collapses and identifying the time horizon beyond which even a successful reorganisation underperforms an immediate liquidation. Third, it links these results to international evidence and to the recent insolvency reform of the Republic of Uzbekistan, drawing concrete policy implications for jurisdictions seeking to shorten proceedings while protecting creditor interests.

The remainder of the paper is organised as follows. Section 2 reviews the theoretical and empirical literature on insolvency, asset values and creditor recovery. Section 3 sets out the channels through which duration destroys value. Section 4 develops the decay-and-discount model and derives the marginal cost of delay and the continuation-versus-liquidation threshold. Section 5 calibrates the model and reports illustrative magnitudes and a sensitivity analysis. Section 6 connects the results to international evidence, Section 7 to the Uzbekistan reform, and Section 8 draws policy implications. Section 9 concludes.

The economic analysis of insolvency rests on the recognition that bankruptcy is a collective debt-collection device. Jackson (1986) framed insolvency law as a solution to a “common pool” problem: in the absence of a collective procedure, individual creditors race to seize the debtor's assets, dismembering a business that may be worth more whole than in parts. The automatic stay (in Uzbek law, the moratorium) freezes that race so that value can be assessed and, where possible, preserved. Yet the very procedure that prevents a destructive race introduces its own cost — time — and the central design problem of insolvency law is to resolve the common-pool conflict quickly enough that the cure does not become worse than the disease.

Shleifer and Vishny (1992) showed that the liquidation value of specialised assets is endogenous and often depressed: when a firm is forced to sell, its most natural buyers — industry peers — are frequently distressed themselves, so assets are sold at a “fire-sale” discount to outsiders who value them less. The longer and more visibly a firm is mired in insolvency, the deeper this discount tends to be, and the more its going-concern premium — the value embedded in ongoing relationships, reputation, and an assembled workforce — dissipates. A going concern preserved through timely reorganisation can be worth substantially more than the sum of its liquidated parts; that premium, however, is perishable.

Taken together, this literature converges on a conclusion that is easy to state but consequential in practice: the efficiency of an insolvency system is governed less

by the formal rights it confers than by the speed with which it exercises them. Strong creditor rights on paper deliver little if the procedure that vindicates them consumes the estate before distribution. The remainder of the paper therefore treats time as the binding economic constraint and asks how it maps into value.

Consider a debtor whose assets are worth A_0 at the moment an insolvency petition is filed, where A_0 denotes the firm's value as a going concern before the process begins. Let $t \geq 0$ denote the duration of the proceedings until creditors are paid, and let r be the relevant per-period cost of capital (discount/lending rate). Asset value evolves according to a regime-dependent decay process. Under reorganisation that preserves the business as a going concern, value decays at the relatively slow rate δ_g :

$$S_g(t) = A_0 \cdot e^{-\delta_g t} \quad (1)$$

Under piecemeal liquidation, the estate suffers both an immediate fire-sale discount $(1 - \lambda)$, with $0 < \lambda < 1$, and a faster decay rate $\delta_l > \delta_g$, reflecting the loss of the going-concern premium and the deeper discounts on specialised assets discussed by Shleifer and Vishny (1992):

$$S_l(t) = \lambda \cdot A_0 \cdot e^{-\delta_l t} \quad (2)$$

Procedural costs accrue as a flow c per unit of time, expressed as a fraction of the initial estate, plus any fixed cost F . Because creditors are paid only at the end of the process, the present value of the estate available for distribution is the recovered asset value, net of accrued costs, discounted back to the filing date:

$$PV(t) = [S(t) - (F + c \cdot t) \cdot A_0] \cdot e^{-rt} \quad (3)$$

The recovery rate — the quantity that ultimately matters for creditors — is the present value of distributions divided by total admitted claims D :

$$R(t) = PV(t) / D \quad (4)$$

Differentiating (3) with respect to time isolates the economic cost of delay. Setting $F = 0$ for clarity and writing the recovered value as $S(t) = A_0 e^{-(\delta t)}$, the marginal value destroyed by an additional unit of proceeding time is:

$$-dPV / dt = [(\delta + r) \cdot S(t) + c \cdot A_0] \cdot e^{-rt} \quad (5)$$

Equation (5) is the analytical core of the paper. It states that every additional period spent in insolvency destroys value at a rate equal to the sum of the asset-decay rate δ and the discount rate r , applied to the value still remaining in the estate, plus the flow of administrative cost $c \cdot A_0$. Two implications follow immediately. First, the cost of delay is not constant: it is proportional to the surviving estate, so the heaviest losses occur early, when there is most to lose. Second, the discount rate enters symmetrically with physical decay — in a high-interest-rate economy, the mere passage of time is as corrosive to creditor recovery as physical depreciation. Because both δ and r are strictly positive, recovery is monotonically decreasing in duration: there is no region in which delay creates value.

Finally, the model clarifies the continuation-versus-liquidation choice in the presence of delay. A reorganisation concluded at time t is superior, in present value, to an immediate piecemeal liquidation at the filing date if and only if

$$e^{-rt} \cdot (e^{-\delta g t} - c \cdot t) > \lambda \quad (6)$$

The left-hand side falls steadily with t , so condition (6) defines a critical duration t^* . Below t^* the firm is worth more reorganised; beyond it, the going-concern route — however successful in nominal terms — returns less to creditors than a prompt sale would have, because depreciation and discounting have outrun the going-concern premium. The policy lesson is that the value of rehabilitation is conditional on speed: a rescue regime without a binding time limit can convert a value-creating reorganisation into a value-destroying one.

To make the magnitudes concrete, the model is calibrated to conditions broadly representative of an emerging-market economy. The initial estate is normalised to $A_0 = 100$. The discount rate is set at $r = 18\%$ per year, in line with the high nominal lending rates that prevail in such economies and that sharply penalise delay. The going-concern decay rate is $\delta g = 8\%$ and the liquidation decay rate $\delta l = 25\%$ per year (consistent in order of magnitude with the World Bank's 20% movable-asset depreciation assumption); the fire-sale factor is $\lambda = 0.55$, and procedural costs accrue at $c = 4\%$ of the initial estate per year. Table 1 reports the resulting present value of recovery under each regime.

Table 1.

Present value of creditor recovery by proceeding duration ($A_0 = 100$; $r = 18\%$; $\delta g = 8\%$; $\delta l = 25\%$; $\lambda = 0.55$; $c = 4\%$)

Duration t (years)	Going-concern recovery (cents)	Piecemeal-liquidation recovery (cents)	Value lost to delay vs. $t = 0.5$
0.5	86.0	42.5	—
1.0	73.8	32.4	12.2
2.0	53.9	17.7	32.1
3.0	38.8	8.1	47.2
5.0	19.1	≈ 0.0	66.9

The pattern is stark. When the case is resolved within six months, secured creditors recover about 86 cents per unit of pre-filing value through reorganisation. By year two recovery has fallen to roughly 54 cents, and by year five to only 19 cents — a destruction of about two-thirds of the estate attributable purely to the passage of time. The liquidation path is even more punishing: the fire-sale discount lowers the starting point to about 43 cents, and the combination of faster decay and accruing costs drives recoverable value to essentially zero within five years. Figure 1 plots the full trajectories.

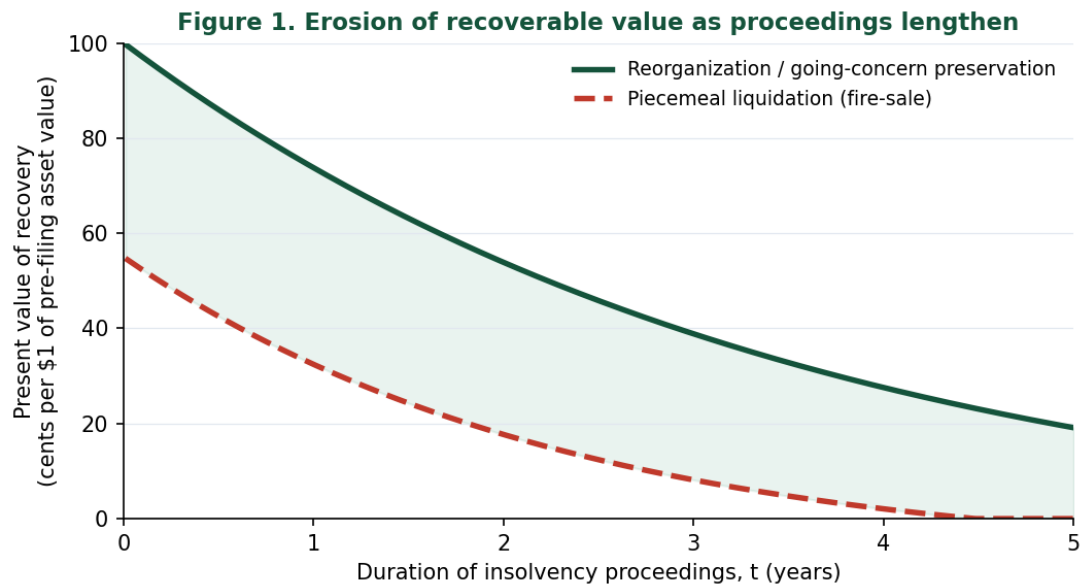


Figure 1. Present value of creditor recovery as a function of proceeding duration, by resolution regime. Source: author's calibration of equations (1)–(3).

Two further results deserve emphasis. First, the gap between the two curves — the going-concern premium — is itself eroded by delay, vindicating the warning in condition (6). In this calibration the critical duration t^* is approximately 1.9 years: a reorganisation that concludes within about two years preserves more value than an immediate liquidation, but one that drags on longer leaves creditors worse off than a prompt sale would have. Second, the slope of the curves is steepest near the origin, confirming that the marginal return to procedural speed is highest at the very start of a case — precisely where reforms that accelerate the opening, verification and decision stages have the greatest payoff.

The critical duration t^* defined by condition (6) is not a fixed number; it shifts with the economic environment. Table 2 reports how it responds to the discount rate r and the fire-sale factor λ , holding the other parameters at their baseline values. Two regularities stand out. First, a higher cost of capital shrinks the window within which rehabilitation is worthwhile: when r rises from 8% to 25%, the viable-rescue horizon contracts from roughly 2.8 to 1.6 years. This is why emerging-market economies, where lending rates are high, face an especially narrow margin for slow proceedings. Second, the better the assets sell in a prompt liquidation — a higher λ — the sooner a delayed reorganisation ceases to be worthwhile, because the opportunity cost of forgoing an immediate sale rises.

Table 2.

Sensitivity of the critical duration t^* to the discount rate and fire-sale factor ($\delta g = 8\%$, $c = 4\%$)

Scenario	Critical duration t^* (years)	Economic interpretation
Baseline ($r = 18\%$, $\lambda = 0.55$)	≈ 1.9	Reorganisation must conclude within ~ 2 years to beat a prompt sale
Low rate ($r = 8\%$, $\lambda = 0.55$)	≈ 2.8	Cheaper capital widens the viable-rescue window
High rate ($r = 25\%$, $\lambda = 0.55$)	≈ 1.6	Costly capital sharply penalises delay
High resale value ($r = 18\%$, $\lambda = 0.70$)	≈ 1.2	Better fire-sale outcomes make speed even more decisive

The model's predictions are mirrored in cross-country data. Under the World Bank's Doing Business methodology, the recovery rate is computed as the present value of proceeds, net of costs (one cent for each percentage point of the estate consumed) and net of the value lost while funds remain tied up, with the outcome — going concern or piecemeal sale — determining the recovered base (World Bank, 2020). In high-income OECD economies, where cases are typically resolved in well under two years through reorganisation, recovery rates of around two-thirds to three-quarters of the estate are common. In jurisdictions where proceedings routinely last three to five years and end in piecemeal liquidation, recovery rates frequently fall below one-third — and in the most inefficient regimes, close to nothing. Djankov et al. (2008) reported exactly this association: efficient debt enforcement, marked by short duration and going-concern preservation, delivered dramatically higher recoveries than slow, liquidation-prone systems.

The macroeconomic corollary is equally well established. Because lenders price the expected recovery into credit, jurisdictions that resolve insolvency quickly enjoy deeper credit markets and lower borrowing costs; the World Bank explicitly links efficient insolvency regulation to greater access to credit on better terms. Duration, in other words, is not merely a problem for the creditors of a particular failed firm; through its effect on expected recovery it raises the cost of capital for every solvent borrower in the economy.

It is also worth stressing that the recovery rate captured by such indicators understates the full social cost of delay, because it measures only the direct loss to the estate. The indirect costs documented by Hotchkiss et al. (2008) — forgone investment by a firm trapped in limbo, the diversion of management attention, the chilling effect on suppliers and customers, and the spillovers to employees and local communities — are not recorded in the creditors' recovery but are real economic losses that grow with duration. A complete welfare accounting would therefore make the case against protracted proceedings even stronger than the present-value calculus alone suggests.

The Republic of Uzbekistan has made insolvency reform a deliberate instrument of its market transition. The Law “On Insolvency” No. ZRU-763, adopted on 12 April 2022, replaced the 2003 Law “On Bankruptcy,” notably substituting the term “insolvency” for “bankruptcy” to emphasise financial rehabilitation over liquidation. The reform was explicitly developed under the State Programme and the roadmap to improve the country's standing in the World Bank's Doing Business assessment, and it was followed by Law No. ZRU-911 of 21 February 2024, which harmonised numerous codes and statutes — including the Civil and Tax Codes — with the new regime and extended insolvency to individuals.

The statute embeds several features that bear directly on duration and value. It provides a sequence of procedures — monitoring (observation), judicial rehabilitation, external management, liquidation, and a settlement (amicable) agreement available at any stage — and it favours rehabilitation, including the suspension of current tax payments during rehabilitation to ease the firm's path back to operation. A moratorium suspends enforcement against the debtor so that value can be assessed collectively, addressing the common-pool problem identified by Jackson (1986). Procedurally, the court is required to consider the insolvency petition within two months, extendable by one month, and applicants must advance an amount equal to several times the minimum wage to fund the court administrator — design choices intended to prevent the very delays the model identifies as value-destroying.

The framework developed here suggests where the practical risks lie. Tight statutory deadlines for the opening stage are valuable, but the model shows that the bulk of value is destroyed across the full life of a case, not only at its commencement; the binding constraint is the total elapsed time to distribution. Where rehabilitation is chosen but allowed to extend over several years — as condition (6) warns — the going-concern premium that justified the rescue can be entirely consumed. For an economy with relatively high lending rates, the discount channel is especially powerful, so that even procedurally “correct” but slow cases can yield poor recoveries. The reform's emphasis on rehabilitation will therefore deliver its intended benefits only if accompanied by effective limits on the duration of each procedural phase and by capable court administrators able to realise asset value promptly.

The distributional consequences of duration also deserve attention in the national setting. Because the present-value loss falls on whatever value remains after secured claims and procedural costs are met, prolonged proceedings tend to wipe out junior and unsecured creditors first, while still eroding the position of secured creditors as collateral depreciates. A regime that resolves cases quickly therefore protects not only aggregate recovery but the integrity of the statutory priority ladder: when the estate shrinks slowly, there is more value left to honour the

ranking of claims that the law prescribes. For Uzbekistan, whose reform extends subsidiary liability to those responsible for a debtor's failure and tightens the rules on voidable transactions, pairing these protections with genuine speed would reinforce both the deterrent and the distributive aims of the new framework.

The model is deliberately parsimonious, and its simplicity invites several extensions. The decay rates and the fire-sale factor are treated as exogenous constants, whereas in reality they depend on industry, asset specificity and macroeconomic conditions, and may themselves vary with the duration and visibility of the case. The framework also abstracts from strategic behaviour — the holdout incentives of junior creditors, the control rents that may lead incumbents to prolong proceedings, and asymmetric information about the firm's true viability — each of which can make observed durations exceed the value-maximising horizon. Endogenising these forces, and calibrating the parameters to firm-level Uzbek insolvency data once a sufficient case history accumulates under the 2022 law, are natural directions for future empirical work. Such estimation would allow the critical duration t^* to be measured rather than assumed, and would sharpen the design of the statutory deadlines recommended above.

The duration of insolvency proceedings is not a neutral procedural attribute but the principal channel through which financial distress is converted into permanent economic loss. The decay-and-discount model developed in this paper shows that each additional period of delay destroys value at a rate equal to the sum of asset depreciation and the cost of capital, applied to the remaining estate, plus accruing procedural costs — and that this loss is heaviest precisely when most value is at stake. A calibration to emerging-market conditions illustrates how recoverable value can collapse from roughly 86 to 19 cents as a case lengthens from six months to five years, and how a reorganisation that overruns about two years can leave creditors worse off than a prompt liquidation. These results align with international evidence and underscore the logic of Uzbekistan's recent insolvency reform. The policy implication is unambiguous: protecting creditor interests and preserving debtor value are, above all, a question of speed. A system that resolves insolvency quickly protects not only the creditors of failed firms but the cost and availability of credit across the whole economy.

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