

Tax Claims, Absolute Priority and the Resolution of
Financial Distress

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1 Introduction

Many firms have a variety of creditors, from banks to bondholders, trade (small and large) creditors, tort creditors, employees, and tax authorities. Creditors have a wide range of abilities to adjust their terms of credit in the event of a debtor’s financial distress. Banks and other large (secured or unsecured) creditors are able to adjust interest rates on loans to insolvent firms. On the other hand, small creditors and tax authorities (local, state, or federal governments) are less able to adjust the terms of credit to firms in financial distress.¹ Not only are the tax authorities unable to adjust their credit conditions, they may be slow to react to non-payment of taxes, or to enforce tax claims, or they may even be prevented from doing so by political pressure. By contrast, while they may not be able to adjust the terms of loan contracts, trade creditors play a key role in supplying the firm and allowing it to continue operating, especially when it is in financial distress.

Tax claims are widespread in bankruptcy and reorganization. Baird, Bris & Zhu (2007) report that over 75% of Chapter 11 firms with assets under \$200,000 have unpaid tax obligations representing, on average, 25% of the firms’ total liabilities. In Canada, roughly 80% of all reorganization cases involve government claims [Fisher & Martel (2014)]. In 2011, 75% of the roughly 20,000 U.K. corporate insolvencies listed the government as the single largest creditor.²

It is well known that equity represents a call option on the firm’s cash flows with a strike price equal to the interest and capital repayments. Since the time value of an option increases with maturity, equity holders in insolvent firms can increase their option value by delaying a bankruptcy filing. In this paper, we examine the conditions under which insolvent firms pay off some creditors at the expense of others in an attempt to buy time. In particular,

¹Bebchuck & Fried (1986) and Baird, Bris & Zhu (2007) use the term ‘non-adjusting’ creditors rather than ‘soft-touch’ creditors.

²“Poor Policing Leaves HMRC Exposed,” *Insolvency & Law*, December 14, 2012.

we focus on the asymmetry between the insolvent firm’s trade creditors—which supply goods or services essential to the day-to-day survival of the firm—and its tax creditors—which supply nothing to the firm and which, in addition, may be inattentive. We postulate that a financially distressed firm facing the choice between paying its tax claims or its suppliers, will opt to pay suppliers in order to survive longer. Essentially, we show how an insolvent firm may delay filing for bankruptcy by using unpaid tax claims as short-term cash, behavior we refer to as “claims substitution.” The model also allows us to examine the extent to which the enforcement of absolute priority (AP) impacts on the likelihood of equity using claims substitution.³ In particular, we parameterize enforcement of AP in a reorganization case and examine the sensitivity of claims substitution to changing values of the parameter.

Our theoretical model contains a number of interesting results. First, equity will always resort to claims substitution if AP is strictly enforced. Thus, the equity holders of a distressed firm can expropriate tax claims under a strict AP regime. We also show that a less-than strict application of AP reduces the incentive for equity holders to use claims substitution. Third, under less-than strict application of AP, tax creditors can reduce the incentive for claims substitution by increasing the required repayment rate on tax claims in reorganization. Thus, for any level of AP enforcement, there exists an optimal repayment rate on tax claims which deters claims substitution. Finally, under certain conditions, there exists an optimal penalty which deters claims substitution for any repayment rate on tax claims and any level of AP enforcement.

³According to AP, junior claimholders in reorganization are not entitled to any compensation unless senior claimholders have been fully paid. AP reflects the generally accepted corporate finance principle that creditors are entitled to compensation before shareholders, who are residual claimants. Notwithstanding the debate on identifying the residual claimants in a firm [Baird & Jackson (1988) LoPucki (2004)], the setting proposed in this paper identifies equity holders as the residual claimants.

2 The Model

Consider a two-period framework. In period 1, a firm is in financial distress and revenues are less than total claims. At the beginning of period 2, the firm files for Chapter 11 reorganization and equity holders receive the equity cash flows for that period. There are only three types of claims: secured, tax (soft touch), and ordinary unsecured (trade) claims. For simplicity, we assume that secured claims are fully paid as they come due in both periods. The period 2 cash flows are conditional on the firm's behaviour in period 1 where the firm has two options: (i) it pays all its tax claims and only partially its unsecured (trade) claims, which we refer to as the **no claim substitution** scenario (NS), or (ii) it pays all its unsecured (trade) claims, pays only partially its tax claims and distributes the extra cash to equity holders, which we refer to as the **claim substitution** scenario (S).

We assume that the reorganization proposal must satisfy AP but its enforcement is under the authority of the bankruptcy court. In general, we allow AP to be partially enforced, which implies that equity in the firm is not erased and it receives part of the residual cash flows in period 2. This general specification includes the two extreme cases—AP is strictly enforced (equity in the firm is wiped out and equity holders receive nothing in period 2) or AP is not enforced at all (equity in the firm is kept intact and equity holders receive all the residual cash flows in period 2)—as special cases. The firm's manager is assumed to maximize the cash flows to existing equity holders and we assume the discount rate is equal to zero.⁴

The equity cash flows (CF) can be divided into two periods: period 1 (financial distress prior to reorganization) and period 2 (in reorganization). These cash flows depend on the firm's strategy. Period 1 cash flows are larger

⁴In order to simplify the exposition below, we consider the case where equity holders face unlimited liability. All the results go through in the case of limited liability. The incentive for claim substitution is stronger in the case of limited liability (because it limits losses to equity) so in some sense the model underplays the extent of claims substitution.

with claims substitution since it allows the firm to buy time and operate for a longer period before filing for reorganization.

Period 1 Equity Cash Flows

The period 1 cash flows to equity holders are given by:

$$CF_1^i = R_1^i - SC_1^i - \gamma TC_1^i - \delta UC_1^i$$

where the superscript $i = S$ if the firm uses claim substitution and $i = NS$ if the firm does not use claim substitution, R_1 is period 1 revenues with $R_1^S > R_1^{NS}$, SC_1 is secured claims in period 1, TC_1 is tax claims in period 1 and UC_1 is unsecured (trade) claims in period 1. The parameters γ and δ measure the extent to which tax and unsecured claims are reimbursed in period 1, with $0 \leq \gamma \leq 1$ and $0 \leq \delta \leq 1$. They are chosen by the firm's manager and equal to 1 if there is a full payment of claims and to less than 1 if there is a partial payment of claims. The values of γ and δ reflect the manager's decision on the use of claim substitution. No claim substitution (NS) corresponds to $\gamma = 1$ and $\delta < 1$ while claim substitution (S) corresponds to $\gamma < 1$ and $\delta = 1$.

Financial distress can be expressed by the following two conditions.

- $R_1^i < SC_1^i + TC_1^i + UC_1^i$: the firm's revenues are insufficient to pay all claims at the end of period 1.
- $R_1^i > SC_1^i + TC_1^i$: the firm's revenues cover at least secured and tax claims so that managers may choose not to pay the later in order to pay unsecured claims (claim substitution).

We can now write the equity cash flows in period 1 for each scenario. In the NS scenario, the firm pays all its tax claims ($\gamma = 1$) and unsecured claims are partially paid ($\delta < 1$) such that the cash flows to equity holders are equal to zero.

$$CF_1^{NS} = R_1^{NS} - SC_1^{NS} - TC_1^{NS} - \delta UC_1^{NS} = 0 \quad (1)$$

In the S scenario, the firm partially pays its tax claims ($\gamma < 1$) and unsecured claims are fully paid ($\delta = 1$) such that the cash flows to equity holders are positive.

$$CF_1^S = R_1^S - SC_1^S - \gamma TC_1^S - UC_1^S > 0 \quad (2)$$

Note that we exclude the two other possible scenarios. The $\gamma < 1$ and $\delta < 1$ scenario corresponds to claim substitution in which unsecured creditors are not fully paid and equity cash flows are positive. However, the point of claim substitution is to buy time thereby increasing the time value of the call option on cash flows. By not paying unsecured creditors, the firm may lose the time value component of the option, defeating the purpose of claim substitution. The $\gamma = 1$ and $\delta = 1$ scenario corresponds to no claim substitution in which unsecured creditors are fully paid. In this case the firm is able to fully reimburse all its claims and is not in financial distress.

Period 2 Cash Flows

The cash flows to equity holders in period 2 depends on the cash flows from period 2 operations, unpaid period 1 claims to be paid under the plan of reorganization, the enforcement of absolute priority and the financial penalty imposed to equityholders in the event of claim substitution. There are 3 states of nature in period 2. The firm can decide not to use claim substitution (NS) in period 1 and enter early into reorganization in which case it faces state M (moderate) cash flows. Alternatively, it can decide to use claim substitution (S) in period 1 in order to buy some time before filing for reorganization and benefit from the option value of time and the possible upside in period 2 cash flows. In such as case, the firm faces two states: state H (high) with probability q and state L (low) with probability $(1 - q)$. We can then write,

$$CF_{2j}^i = \rho [R_{2j} - SC_{2j} - TC_{2j} - UC_{2j} - \mu_{tc} (1 - \gamma) TC_1^i - \mu_{uc} (1 - \delta) UC_1^i - P] \quad (3)$$

where the subscript j denotes states L, M or H with $CF_{2L}^i < CF_{2M}^i < CF_{2H}^i$. The key parameter $0 \leq \rho \leq 1$ captures the extent to which AP is enforced, with $\rho = 0$ if there is a strict enforcement of AP (equity is wiped out), $0 < \rho < 1$ if there is a less-than-strict enforcement of AP (equity receives part of the cash flows in period 2), and $\rho = 1$ if there is no enforcement of AP (equity holders get all the equity cash flows in period 2).

Also in (3), μ_{tc} is the repayment rate on unpaid tax claims from period 1, $(1 - \gamma) TC_1^i$, μ_{uc} is the repayment rate on unpaid unsecured claims from period 1, $(1 - \delta) UC_1^i$, and P is the financial penalty imposed to the firm in period 2 for not paying its period 1 tax claims.⁵ We assume that μ_{uc} is determined by negotiation between the firm's manager and its creditors. In addition, μ_{tc} may result either from negotiations with the tax creditors or from regulation, for example, if the bankruptcy law stipulates repayment of some (or all) tax claims.⁶

We can now write the total equity cash flows under both scenarios.

Scenario 1: No claim substitution ($\gamma = 1$ and $\delta < 1$).

$$CF_1^{NS} + CF_2^{NS} = R_1^{NS} - SC_1^{NS} - TC_1^{NS} - \delta UC_1^{NS} + \rho[R_{2M} - SC_{2M} - TC_{2M} - UC_{2M} - \mu_{uc} (1 - \delta) UC_1^{NS}] \quad (4)$$

Given, condition (1), this simplifies to:

$$CF_1^{NS} + CF_2^{NS} = \rho[R_{2M} - SC_{2M} - TC_{2M} - UC_{2M} - \mu_{uc} (1 - \delta) UC_1^{NS}] \quad (5)$$

⁵In the limited liability case, the penalty would be levied on the manager. This would be similar to the situation in many countries where a manager may be personally liable for a company's debts if found guilty of illegal procedures.

⁶The treatment of tax claims differs widely across bankruptcy laws in different countries.

Scenario 2: Claim substitution ($\gamma < 1$ and $\delta = 1$).

$$\begin{aligned}
CF_1^S + CF_2^S &= R_1^S - SC_1^S - \gamma TC_1^S - UC_1^S + \rho[q(R_{2H} - SC_{2H} - TC_{2H} \\
&\quad - UC_{2H} - \mu_{tc} (1 - \gamma) TC_1^S - P) + (1 - q)(R_{2L} - SC_{2L} \\
&\quad - TC_{2L} - UC_{2L} - \mu_{tc} (1 - \gamma) TC_1^S - P)] \tag{6}
\end{aligned}$$

Let $NW_{2j} = R_{2j} - SC_{2j} - TC_{2j} - UC_{2j}$ be the net worth in period 2 in state j . A manager will use claim substitution iff (6) > (5), that is,

$$\begin{aligned}
R_1^S - SC_1^S - \gamma TC_1^S - UC_1^S + \rho[(qNW_{2H} + (1 - q)NW_{2L}) - NW_{2M}] \\
> \rho[\mu_{tc} (1 - \gamma) TC_1^S + P - \mu_{uc} (1 - \delta) UC_1^{NS}] \tag{7}
\end{aligned}$$

where the LHS is the gains to equity holders if the firm uses claim substitution and the RHS is the cost of using claim substitution equal to the difference between the amount of tax claims and penalty to be repaid in period 2 with claim substitution and the amount of unsecured claims to be repaid without claim substitution.

For illustrative purposes, assume that state M net worth is a mean-preserving spread of state L and M net worth (i.e. $NW_{2M} = qNW_{2H} + (1 - q)NW_{2L}$), the tax claims and other unsecured claims are paid in equal proportion under reorganization, that is, $\mu_{tc} = \mu_{uc} = \mu$, the penalty for unpaid tax claims is zero ($P = 0$) and the proportion of tax claims paid in the event of claim substitution is also zero, $\gamma = 0$. Thus, (7) simplifies to

$$R_1^S - SC_1^S - UC_1^S > \mu\rho[TC_1^S - (1 - \delta) UC_1^{NS}]$$

We can thus define the net gain to equity holders from claim substitution to be

$$G = R_1^S - SC_1^S - UC_1^S - \mu\rho[TC_1^S - (1 - \delta) UC_1^{NS}]$$

Using (1), we have $\delta = (R_1^{NS} - SC_1^{NS} - TC_1^{NS})/UC_1^{NS}$. Let us assume that claim substitution allows the firm to operate twice as long relative to no claim

substitution so that in a two-semester example, $R_1^S = 2R_1^{NS}$, $SC_1^S = 2SC_1^{NS}$, and so on. Hence, we can write:

$$G = 2(R_1^{NS} - SC_1^{NS} - UC_1^{NS}) - \mu\rho[2TC_1^{NS} - (1 - (R_1^{NS} - SC_1^{NS} - TC_1^{NS})/UC_1^{NS}) UC_1^{NS}]$$

which simplifies to:

$$G = 2(R_1^{NS} - SC_1^{NS} - UC_1^{NS}) - \mu\rho[2TC_1^{NS} - UC_1^{NS} + R_1^{NS} - SC_1^{NS} - TC_1^{NS}]$$

and further to:

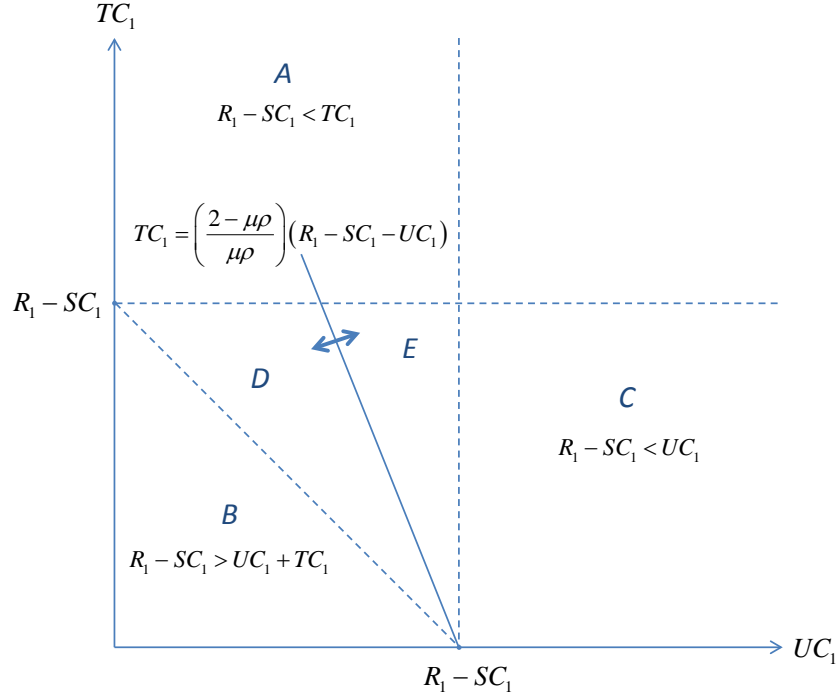
$$G = (2 - \mu\rho)(R_1 - SC_1 - UC_1) - \mu\rho TC_1$$

where the NS superscripts have been dropped for convenience. The manager is indifferent between claim substitution and no claim substitution when $G = 0$. Setting $G = 0$ and solving for TC_1 yields:

$$TC_1 = \left(\frac{2 - \mu\rho}{\mu\rho} \right) (R_1 - SC_1 - UC_1) \quad (8)$$

Figure 1 plots (8) with UC_1 on the horizontal axis and TC_1 on the vertical axis. There are three inadmissible areas for TC_1 and UC_1 . Area A violates the financial distress condition that $R_1 - SC_1 > TC_1$. Area C violates (2) which states that $CF_1^S > 0$ or alternatively that $R_1 - SC_1 > UC_1$ (with $\gamma = 0$). Area B violates the financial distress condition that $R_1 - SC_1 < TC_1 + UC_1$. Thus, the triangle region $(D + E)$ represents the admissible sample space for TC_1 and UC_1 subject to the three constraints.

Figure 1



Equation (8) is represented in Figure 1 by the solid line with a negative slope equal to $-(2 - \mu\rho)/\mu\rho$ and a horizontal intercept of $R_1 - SC_1$. Points above the line (region E) correspond to $G < 0$, the no claim substitution region, while points below the line (region D) correspond to $G > 0$, the claim substitution region. As $\mu\rho$ changes, the line pivots around its horizontal intercept, becoming steeper as $\mu\rho$ decreases (and vertical when $\mu\rho = 0$). Given a value for SC_1 , suppose that UC_1 and TC_1 are randomly selected from the admissible sample space. In this case, the ratio of the area (D) to the total area of the right-angled triangle ($D + E$) can be interpreted as the probability a firm uses claims substitution.

3 Enforcement of Absolute Priority

All bankruptcy laws define the order of payment in reorganization. This is referred to as the rule of Absolute Priority (AP). This section examines the impact of deviations from strict AP on the incentive to use claim substitution.

Case 1: Strict AP Enforcement ($\rho = 0$)

If AP is strictly enforced, equity is wiped out in reorganization and existing equity holders receive nothing in period 2.

Proposition 1: Equity holders always use claim substitution if AP is strictly enforced.

Proof: Replacing $\rho = 0$ in (7), the claim substitution incentive condition becomes:

$$R_1^S - SC_1^S - \gamma TC_1^S - UC_1^S > 0 \quad (9)$$

From (2), this condition is always satisfied since equity cash flows with claim substitution are positive. Thus a manager always has an incentive to use this strategy when AP is strictly enforced. Given that equity holders receive nothing in period 2, in order to maximize their cash flows equity holders have no incentive to pay period 1 tax claims. This can also be seen from Figure 1. When $\mu\rho = 0$, the TC_1 line is vertical and the ratio of the region D to the region $D + E$ is equal to 1 (E vanishes), indicating that for any value of μ , the probability of claim substitution is 1 when $\rho = 0$.

Proposition 2: Cash flows to equity holders are independent of μ_{tc} if AP is strictly enforced.

Proof: Equation (9) represents the claim substitution incentive condition under a strict AP enforcement. The condition is independent of μ_{tc} . This can also be seen from the equation for G which is independent of μ_{tc} when $\rho = 0$.

Given the incentive to use claim substitution, one could imagine introducing a financial penalty to equity holders in order to deter this type of behavior. The efficiency of this measure depends on whether or not the penalty is contingent on the application of AP.

Case 2: Relative AP Enforcement ($\rho > 0$)

Under relative AP enforcement, existing equity holders receive part (or all) of equity cash flows in period 2. According to (7), a manager will use claim substitution iff:⁷

$$R_1^S - SC_1^S - \gamma TC_1^S - UC_1^S > \rho[\mu_{tc} (1 - \gamma) TC_1^S + P - \mu_{uc} (1 - \delta) UC_1^{NS}] \quad (10)$$

Proposition 3: Relative AP enforcement reduces the incentive to use claim substitution.

The left hand-side of (10) is positive since it represents period 1 cash flows to equity holders with claim substitution (Eq. 2). Thus, the incentive to use claims substitution depends on the sign of the right hand side of the equation. We consider two scenarios.

Scenario 1 $\rho[\mu_{tc} (1 - \gamma) TC_1^S + P - \mu_{uc} (1 - \delta) UC_1^{NS}] > 0$

Under this scenario, the cost of using claims substitution is positive and the firm has to repay higher claims in period 2 when using claim substitution relative to not using it. This makes the claim substitution incentive condition less likely to be satisfied and thus reduces the incentive to resort to that scheme. Intuitively, this is explained by the fact that a strict enforcement of AP wipes out the entire equity in period 2 and thus existing equity holders, who are no longer responsible for unpaid tax claims, have the maximum incentive to use claim substitution. Under relative AP enforcement, they retain

⁷For ease of presentation, we assume that net worth in period 2 is a mean-preserving spread. The same conclusion holds for alternative scenarios.

part of period 2 equity cash flows, net of the payment of period 1 unpaid tax claims, which reduces their incentive to use claim substitution. This result can also be seen from Figure 1 where an increase in ρ , for given μ , reduces the slope of the solid line, reducing region D and hence the probability of claim substitution.

Scenario 2 $\rho[\mu_{tc} (1 - \gamma) TC_1^S + P - \mu_{uc} (1 - \delta) UC_1^{NS}] < 0$

Under this scenario, the cost of using claim substitution is negative and the firm has to repay lower claims in period 2 when using claim substitution relative to not using it. Thus, the claim substitution incentive condition will always be satisfied irrespective of ρ . This outcome is similar to a strict AP enforcement ($\rho = 0$).

Corollary 1: For a given μ_{tc} and μ_{uc} , full deviation from AP ($\rho = 1$) minimizes the incentive to use claim substitution.

Proof: Setting $\rho = 1$ in (10), the claim substitution incentive condition becomes

$$R_1^S - SC_1^S - \gamma TC_1^S - UC_1^S > \mu_{tc} (1 - \gamma) TC_1^S + P - \mu_{uc} (1 - \delta) UC_1^{NS}$$

On the one hand, if the RHS is positive, the incentive condition is less likely to be satisfied. On the other hand, if the RHS is negative, the incentive condition is always satisfied. In Figure 1, $\rho = 1$ (for a given μ) minimizes the slope of the solid line and thus the probability of claim substitution.

Proposition 4: Under relative AP enforcement, an increase in the payoff rate on tax claims (μ_{tc}) reduces the incentive to use claim substitution.

Proof: Equation (10) is less likely to be satisfied as μ_{tc} increases. In Figure 1, the solid line becomes less steep as μ_{tc} increases, reducing the probability of claim substitution.⁸

⁸The reader is reminded that all these results hold for $\mu_{tc} \neq \mu_{uc}$. Figure 1 shows the simplifying case where $\mu_{tc} = \mu_{uc}$ purely for illustrative purposes.

Corollary 2: $\mu_{tc} = 1$ minimizes the incentive to use claim substitution.⁹

This represents the limiting case of Proposition 4. If $\mu_{tc} = 1$ unpaid tax claims are fully reimbursed in period 2, minimizing the incentive for claim substitution. Corollary 4 reflects the situation in bankruptcy regimes where tax claims are granted priority (preferred) status.

A natural extension is to consider the payoff rate on tax claims that deters claim substitution for a given penalty P .

Proposition 5: Under relative AP enforcement, the payoff rate on tax claims that deters claim substitution is μ_{tc}^* .

Proof: Using (10) and letting $A = (R_1^S - SC_1^S - \gamma TC_1^S - UC_1^S)$ and $B = P - \mu_{uc} (1 - \delta) UC_1^{NS}$. We can write the claim substitution incentive condition as

$$\frac{\frac{A}{\rho} - B}{(1 - \gamma) TC_1^S} > \mu_{tc} \quad (11)$$

Thus, for given P , the payoff rate on tax claims which makes the manager indifferent between using or not using claim substitution is

$$\mu_{tc}^* = \frac{\frac{A}{\rho} - B}{(1 - \gamma) TC_1^S} \quad (12)$$

A manager will use claim substitution if $\mu_{tc} < \mu_{tc}^*$. This is related to Proposition 4, which states that the incentive for claim substitution is inversely related to the repayment rate on tax claims under relative AP enforcement.

Corollary 3: μ_{tc}^* is a monotone decreasing function of ρ .

Proof: Taking the derivative of (12) with respect to ρ

$$\frac{\partial \mu_{tc}^*}{\partial \rho} = -\frac{1}{\rho^2} \frac{A}{(1 - \gamma) TC_1^S} \quad (13)$$

⁹This results hold for $\mu_{tc} \in [0, 1]$.

Given $A > 0$, this derivative is negative. Thus, a reduction in the enforcement of AP (an increase in ρ) requires an increase in the repayment rate on tax claims in order to deter claim substitution. In Figure 1, an increase in ρ reduces the slope of the solid line and increases the probability of claim substitution so the optimal repayment rate on tax claims must be reduced in order to compensate. Corollary 3 implies that differences in AP enforcement across bankruptcy regimes would, in the presence of a claim substitution incentive, dictate differing treatments of tax claims. In particular, everything else equal, countries where AP enforcement is low will require a higher priority for tax claims in order to discourage claim substitution.

4 Efficiency of Claim Substitution

This paper argues that managers, representing existing equity holders, have a strong incentive to use claim substitution before filing for reorganization. By doing so, equity holders can extract rent from tax creditors and buy time before entering into reorganization hoping to benefit from an improved economic environment. Yet, the decision to resort to claim substitution in period 1 implies that the firm is opting for more risky (state H or L) rather than less risk cash flows (state M) in period 2. This raises the question of the economic efficiency of claim substitution. Is this strategy creating or destroying value? Is the firm's net worth higher or lower with claim substitution?

From an economic perspective, claim substitution is efficient if it generates a higher firm's net worth than with without it, where net worth is equal to the difference between the firm's total revenues and claims over both periods. The net worth without claim substitution is equal to:

$$NW^{NS} = NW_1^{NS} + NW_{2M}$$

Net worth with claim substitution is equal to:

$$NW^S = NW_1^S + [qNW_{2H} + (1 - q)NW_{2L}]$$

Therefore, claim substitution is efficient iff $NW^S > NW^{NS}$, that is,

$$NW_1^S - NW_1^{NS} > NW_{2M} - [qNW_{2H} + (1 - q)NW_{2L}] \quad (14)$$

Proposition 6: If the net worth in period 2 is a mean preserving spread, claim substitution is always inefficient.

Proof: If net worth in period 2 is a mean preserving spread, the efficiency condition for claim substitution becomes, $NW_1^S - NW_1^{NS} > 0$. Given that $NW_1^S - NW_1^{NS} < 0$, this condition is never satisfied.

Proposition 7: If net worth in period 2 is monotone increasing in the state of nature ($NW_{2L} < NW_{2M} < NW_{2H}$), the likelihood that claim substitution is efficient increases with q .

Proof: The RHS of equation (14) decreases with q and the efficiency condition is easier to satisfy. A rise in the likelihood of state H increases the possibility of the upside in net worth in period 2 and the option value of time associated to claim substitution.

5 Conclusion

Although bankruptcy procedures like Chapter 11 respect AP in principle, empirical evidence suggests it is not fully enforced in practice. This is true for large corporations and even more so for small businesses in which owner-managers have private information and firm-specific knowledge essential for the firm's survival. Existing research justifying deviations from AP is based on bargaining outcomes between senior and junior claim-holders in the presence of uncertainty about the value of the firm. In this paper, we present

a model in which deviations from AP deter inefficient behavior by equity-holders. The intuition is that by letting equity share in the firm's future value, it has less incentive to expropriate soft-touch claims prior to reorganization. In addition, we show that the tax authorities, can set a repayment rate or penalty in reorganization that eliminates the incentive to use claim substitution. Our results have important policy implications. First, they provide a justification for bankruptcy courts not to apply AP strictly, independent of any uncertainty surrounding the firm's valuation. Our results also suggest that tax claims should be fully repaid in reorganization in order to minimize the incentive for managers to use claims substitution at the expense of government creditors.

The incentive of firm owners to delay bankruptcy is well-known. Recent evidence from Chapter 11 shows that creditors have exerted greater control on the process and demanded stronger enforcement of AP, thus ensuring a harder landing for managers and equity [Skeel (2003); Baird & Rasmussen (2002, 2003); Ayotte & Morrison (2009)]. Adler, Capkun & Weiss (2012) caution that the hard landing associated with a strict application of AP provides an incentive to delay bankruptcy and leads to an inefficient use of assets.¹⁰ Our results compliment Adler, Capkun & Weiss (2012) since equity always uses claim substitution when AP is strictly enforced and, in so doing, delays filing for bankruptcy and extracts rents from soft-touch creditors. We show that a soft landing for equity through deviations from AP reduces the inefficiency.

Whether strict enforcement of AP is the optimal policy is a more complex matter. Beside our results, there are many other explanations of the ex ante desirable effects of AP deviations, such as investment in firm-specific human capital, the transfer of information to creditors, and the reduction in excessive-risk-taking in financially distressed firms.¹¹ Deviations from AP

¹⁰Achyara et al. (2011) also argue that a hard landing creates incentives for managers to adopt inefficient strategies in bankruptcy.

¹¹See Bebchuck (2002) for a discussion.

may also be detrimental to risk-taking by firms near bankruptcy and the level of effort exerted by managers prior to bankruptcy [Adler (2002) and Bebchuck (2002), Povel (1999) and Schwartz (1997)]. We believe that our results bring an additional element to the debate by highlighting the role of tax claims and the possibility of claims substitution. Arguably, the model and its conclusions are more relevant for small, owner-manager businesses. Yet, the conclusions hold for any type of organization in which different kinds of creditors have different bargaining power or capacity to adjust to changes in the firm's environment. All firms, small and large, in the economy act as tax collectors for governments and the vast majority of firms in reorganization have unpaid tax obligations. The presence of tax creditors is thus common to most financial distress situations and is worthy of serious consideration.