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Should Solvency Tests Give the Same Answer? 1

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Solvency is an important issue in many bankruptcy and related matters. Unfortunately for the sake of consistency, there is not a single definition of solvency, nor is there a single test for bankruptcy. This paper addresses two of the primary tests for bankruptcy, discussing when these tests should give the same or potentially different results. A case study is provided based on a bankruptcy case in which the author served as an expert witness.

Introduction

There are many legal situations in which a finder of fact must determine whether a business entity is or was solvent. Among these are bankruptcy and fraudulent-conveyance cases. In an ideal world, there would be a single, clear definition of insolvency along with a single test, or at least a single framework for such a test, that corresponds to that definition. Instead, there are generally considered to be two standard definitions for solvency, along with three frameworks for such tests. An initial thought might be that with three different tests, there would either be no relationship at all among them or else there would be some strict ordering, for example with one test always imposing more stringent conditions than another.

In this paper, I discuss these issues, with reference to a relevant recent case in bankruptcy court in which I served as an expert witness. To preview the results, I find that there are theoretical relationships between two of the three types of solvency tests that should hold under ideal conditions, but that an investigation may be necessary to determine whether those conditions hold for any particular matter. Another finding is that results of solvency tests that do not obey these theoretical relationships without some explanation for why that is the case are suspect, and that the failure to obey the relationships may be due to inconsistencies in the assumptions used in the different tests.
The Baseline Case for Equivalent Results in Certain Tests of Solvency

A good starting point for considering the different definitions and tests for solvency is “Solvency Tests,” an article by J.B. Heaton published in 2007. In this article, Heaton discusses the “three solvency tests [that] appear in bankruptcy and corporate law”: the cash-flow test, the balance-sheet test, and the capital-adequacy test. The cash-flow test asks whether a firm “reasonably can be expected to pay its debts as they come due,” the balance-sheet tests asks “whether the fair value of a firm’s assets exceed the face value of its liabilities,” and the capital-adequacy test asks “whether a firm has adequate capital.”

For the purposes of this paper, I focus on the balance-sheet and cash-flow solvency tests. From the point of view of financial economics, any distinction between these two tests may at first seem odd. If the value of a company’s assets, including the value of future earnings that will come from assets that currently exist or will be purchased in the future, properly discounted for risk and the time value of money, exceed its liabilities, then the company has a positive net value that one would typically expect could be allocated over time to cover all of its debts. Thus, if assets can be freely transferred over time, and if asset values include the future income they will create, the balance-sheet and cash-flow tests should give identical results.

Furthermore, in a business context, assets should indeed be valued based on the future income they will create. This is clearly true if we are considering valuing an asset such as a division or other subset of a company. The value of that division must also be attributable to the assets of the division, though some of those assets may be amorphous (e.g., “brand value,” unpatented business processes, or customer relationships) that typically do not show up on the balance sheet unless they appear as goodwill due to a recent transaction.

If this is the baseline case, when can we have a divergence between the cash-flow and balance-sheet tests? There are several broad sets of possible answers. One, as discussed above, is that assets on the balance sheet are not being valued for the future income stream that they are expected to produce. This could be the case when “soft” assets like customer relationships are not included on the balance sheet. It would also be possible when assets are left at book value. A similar argument can be made for liabilities, which may be measured at face or book value despite having a different current market value.

A second possible answer is that the solvency tests were not based on the same underlying assumptions. For example, suppose that a company had an immediately upcoming debt of $100 and expected to receive $110 in cash flow next year. If the discount rate on that cash flow is less than 10%, that cash flow is worth more than $100 and the company passes the balance-sheet test. However, if the company can delay payment on the debt for a year, whether by rolling over the same debt or obtaining alternative financing, but only at a borrowing rate of greater than 10%, its obligations in one year will be more than $110 and it will fail the cash-flow test. The question is why the discount rate on these cash flows is less than 10% but the company can borrow, using these expected cash flows as collateral, only at a rate exceeding 10%. An answer to this question should be based on some reasoning that can be examined and ideally tested, while a failure to provide an answer may indicate that two separate approaches to estimating these rates (i.e., the discount rate and the borrowing rate) were undertaken without sufficient consideration of how they both address the question of how the value of the same cash flows is adjusted for risk and the passage of time.
In this example, all that is necessary for the tests to yield the same results is for the discount rate on future cash flows to equal the borrowing rate. In fact, in the simplest situations, that must be the case. If not, there is a theoretical “free lunch.” For example, barring other considerations, if the discount rate is greater than the borrowing rate, an investor could buy the company at its present value (assuming it were for sale), have the company borrow money to pay off its future debt, and wind up with an expected profit. In the situation in which the discount rate is less than the borrowing rate, the company could make a profit by selling the claim on its future cash flow and prepaying the debt today to avoid the higher borrowing costs.

While these are not all of the possible reasons for a divergence between different tests of solvency, they demonstrate that such a divergence is possible.

What To Do When The Solvency Test Results Differ

While the equivalence between the tests is relatively clear in the prior example, that equivalence should hold, in the absence of certain conditions, more broadly. Consequently, when confronting analyses that yield different results, either in direction or even materially in the magnitude by which a company is said to be solvent or insolvent, there is either an error in the analysis or else there needs to be an explanation for the difference.

Often, errors in the analysis are due to underlying inconsistencies in assumptions that may occur if one is not careful in dealing with more complicated capital structures with multiple borrowing rates for different liabilities and different time periods. Other times there may be inconsistencies in how future cash flows or terminal values are estimated, leading to differences in the valuation analyses.

Situations in which different assumptions are used in the different solvency analyses are generally unreliable. The purpose of a solvency analysis is to test solvency for a set of assumptions, not to vary the assumptions based on the test undertaken. Thus, to the extent that different solvency analyses yield conflicting results due to inconsistent assumptions, one should question the reliability of some if not all of those solvency analyses.

On the other hand, there are certain conditions that can legitimately lead to different results for the solvency tests. For example, borrowing and discount rates could be different because of asymmetries in information. The company under consideration may know that its future cash flows are relatively secure, but the lender may not share the same view. Suppose that the company has $100 in debt and a contract that will yield it $108 in profits in a year. The question is how binding the contract is on the counterparty. If the contract is binding, one should assume a low discount rate (say 5%, yielding a present value of future profits of $103), but if there is a risk that the deal will not go through, the discount may be higher (either by discounting the cash flows directly or by incorporating the risk into a higher discount rate, say of 10%, yielding a present value of future profits of only $98). If the company’s view is based on better information that it either cannot share with a bank or convince the bank is valid, then the company may be balance-sheet solvent (based on the better information) but not cash-flow solvent (based on the inability to convert this information into obtainable cash flow).
While this explanation suffices in theory, it leads to an important question: why should anyone evaluating solvency be convinced by the company’s arguments if those arguments did not or could not have convinced a lender? That is, if lenders turned down or would have turned down the opportunity to lend to the company at a rate close to what the company claims is the proper borrowing/discount rate, why should we now find the company’s arguments about the legitimacy of a lower borrowing rate convincing?

As a first pass, it seems that if the lending market is competitive, the proper borrowing and discount rate is the best that the company could have received in that market, not a rate based on its own position. To support a difference between the discount rate and the available borrowing rate, one therefore has to show that the appraiser is using information that would not have been available to lenders at the time. This sounds like an immediate red flag about an improper appraisal. One possible resolution of this apparent contradiction may exist if the appraiser is now able to use company information that would not have been available to lenders even under proper confidentiality agreements or similar arrangements. In contrast, if the bank simply found the company’s view of the strength of the business relationship overly optimistic, one has to ask why an independent appraiser should not take the same position as the bank did as an independent party at the time. Establishing this distinction may be a mixed question of finance and law. Another possible answer is that borrowing was not possible because the mere act of borrowing would have revealed information to the public or to competitors that would have reduced the value of the company. Again, this is a tricky situation that does not lend itself to a boilerplate or unsupported claim that there can simply be differences between the borrowing and discount rates, and thus between the results of the balance-sheet and cash-flow tests.

What this analysis shows is that many or perhaps all of the conditions that allow for a difference between the balance-sheet and cash-flow tests rely on relatively strong or unusual assumptions about what is possible. That is not surprising because differences between the two tests imply a possible arbitrage opportunity for some party, so it should be the case that profit-minded individuals would seek to find a way around any barriers to such arbitrage. There may be reasons for the difference in results, but they should be well-identified and satisfy rigorous examination about why they actually hold. Moreover, the explanations should correspond to the underlying differences in the analyses, such as borrowing difficulties primarily or wholly corresponding to higher borrowing rates, or borrowing limits affecting the size of potential loans. And if the explanations are weak or there is no explanation, then it may be worth investigating the analyses to see whether they contain inconsistent assumptions that undermine at least one of the solvency tests.

**Case Study: Adelphia**

A real-world example in which issues related to conflicting solvency tests played out was in a matter related to the bankruptcy of Adelphia Communications Corporation (“Adelphia”). In 2002, Adelphia filed for bankruptcy and disclosed that it had over $2 billion of previously undisclosed debt. Following this, a trust for debtors attempted to reclaim funds from a 1999 transaction in which Adelphia repurchased certain securities that it had previously issued, arguing that Adelphia was insolvent at the time of the 1999 transaction.
The parties in this matter disputed whether Adelphia was insolvent in 1999. One issue that arose was whether, even if Adelphia was balance-sheet solvent, it would still have been cash-flow insolvent. An expert for the trust argued that even if the company were balance-sheet solvent, had the fraud at the company been known, Adelphia would not have had access to the capital markets, which would have prevented it from continuing as a going concern. Here, the expert for the trust at least satisfied the condition described above, providing a potential reason for a discrepancy between a balance-sheet test (which, for purposes of this argument, he assumed that Adelphia might pass) and a cash-flow test (which he assumed Adelphia would fail even if it passed the balance-sheet test).

Yet, simply providing a potential reason for a difference in the two test results is not sufficient to establish that that reason is in fact legitimate or applicable in the case at bar. What followed was a “battle of the experts,” with the expert for the trust arguing that financial fraud prevented Adelphia from accessing the capital markets, while I presented the opposing position. It is my belief that this is a rare if not novel question before the courts: whether a company would have been excluded from the capital markets had an undisclosed financial fraud been publicly known at the time.

I now discuss the history of that dispute, working backwards from two court opinions on the issue to the underlying analyses presented by the experts. The Bankruptcy Court Opinion stated, “Tabak examined an empirical study on access to capital markets after disclosures of fraud, and also examined five large companies that had disclosed fraudulent activity (Cendant, Waste Management, Rite-Aid, Enron, and WorldCom), each of which was able to obtain financing after the disclosure.” The Bankruptcy Court focused more on the five examples rather than the academic article, so I save discussion of the latter for the review of the District Court Opinion.

The first two companies cited, Cendant and Waste Management, were brought up in my rebuttal report to the trust’s expert’s claim that, had the fraud been known, Adelphia would not have had access to the capital markets in 1999. Cendant disclosed its financial fraud in 1998 and Waste Management disclosed its financial fraud in 1997. Within two months of its disclosure of fraud, and before it restated its financials, Cendant obtained a term-loan agreement with a syndicate of financial institutions that provided it with over $3 billion in new funds. Waste Management issued billions of dollars in debt in equity securities before it restated its financials.

The trust’s expert’s response was two-fold. First, he argued that Adelphia would have had higher leverage ratios under its restated financials than Cendant or Waste Management would have had. He also claimed that when Enron disclosed its financial fraud in 2001 and WorldCom did the same in 2002, those two companies lost access to the capital markets. My response involved three points: (1) contrary to what the expert for the trust claimed, a careful investigation of news reports and financial filings showed that Enron and WorldCom did in fact access the capital markets following their disclosures of financial fraud, (2) Enron and WorldCom did so even given the tougher financial markets following the collapse of the technology and telecom markets in 2000, and (3) Rite-Aid was able to access the financial markets after its disclosure of financial fraud in 1999 despite having a leverage ratio in excess of Adelphia’s. The Bankruptcy Court Opinion stated the following:
Tabak concluded that “[t]he fact that all five of the companies examined obtained financing after disclosing fraud strongly supports my conclusion and completely rebuts that of [the trust’s expert]. Even two companies with massive fraud, Enron and WorldCom, which I note [the trust’s expert] cited in his rebuttal report, obtained financing in the much more challenging 2001/2002 economic environment . . . .” [The trust’s expert] countered that two of these companies (Cendant and Waste Management) had lower leverage ratios than Adelphia, and that the confluence of factors made Adelphia’s financing impossible. But Tabak argued that a third company’s (Rite-Aid’s) leverage ratio was higher. I harmonize this underlying evidence to find that fraud, at least at the lower level present at Adelphia before the co-borrowing facilities were put in place, would not necessarily result in an inability to access capital, and would not have done so here.

The Bankruptcy Court Opinion further noted its reliance on these case studies:

Ultimately, the most persuasive aspect of FPL’s position was its analysis of other companies facing a similar confluence of factors. In particular, Tabak’s analysis of five companies facing similar situations (especially Rite-Aid, which was also highly leveraged) was persuasive; it showed how markets actually reacted to fraud at large public companies.

The primary take-away from this opinion is that while the Bankruptcy Court properly accepted the theoretical idea that there could be a divergence between the balance-sheet and cash-flow tests for solvency, it also correctly examined the evidence as to whether the claimed reason for that difference applied in the case before it.

The District Court Opinion provided a further focus on the academic work cited in my report, noting the following:

[Tabak] cited empirical data showing that the majority of companies that issued restatements from 1997 through 2002 (237 of 437 companies for whom sufficient data was available), including nineteen companies that issued restatements due to fraud, were able to obtain post-restatement financing.

In fact, the academic paper may understate the fraction of companies that actually “were able” to obtain post-restatement financing, as some of the 200 companies that did not obtain post-restatement financing may not have even sought such financing. The District Court Opinion also reviewed the five companies discussed above, stating (emphases in original):

The fact that all of these companies were able to obtain financing under such circumstances is persuasive evidence that cannot be ignored simply because Cendant and Waste Management had lower leverage ratios than Adelphia, Rite-Aid had a much higher leverage ratio but more liquid inventory, and Enron and WorldCom filed for bankruptcy less than two years after obtaining financing. Notably, Recovery Trust provided no empirical evidence of other major companies who were unable to obtain financing following disclosure of a fraud, effectively asking the Court to disregard Tabak’s evidence on Recovery Trust’s say-so.
I believe that the last sentence quoted was of particular relevance. Individual examples or case studies are often of limited use: they can show that something is possible, but by themselves are not sufficient to show that something is likely. However, in the context of a litigated dispute, in which opposing parties are expected to bring forth evidence to support their respective positions, the presence of several examples or case studies on one side with none on the other may lead a finder of fact to draw an inference that no persuasive opposing examples were to be found. As noted above, in this case, the expert for the trust did in fact try to bring forth counter-examples, those of Enron and WorldCom. However, this in fact backfired, as a more careful examination of those examples showed that, rather than support his position that companies that disclose fraud cannot access the financial markets, those two companies did in fact receive post-disclosure financing, making them examples against his position.

Thus, while the expert for the trust had an interesting theoretical proposition—that companies that are known to have engaged in financial fraud would be unable to access the capital markets—which indeed would have allowed for a divergence between the results of the balance-sheet and cash-flow solvency tests, there was no evidence to support that proposition in the real world and, in fact, much evidence against it.

**Conclusion**

Two of the three main tests of solvency, the balance-sheet test and the cash-flow test, should yield the same results under idealized conditions. Discrepancies between the two tests should therefore be based on some identifiable reason; if not, the differences may be due to errors or to some unnoted inconsistency between the inputs to the analyses. Moreover, identified reasons should be subjected to scrutiny to determine whether they make sense theoretically as well as to whether they apply in a given situation. As seen in *Adelphia*, even theoretically reasonable arguments may not survive a careful investigation. In particular, though there are reasons why a firm may not have access to the capital markets, which could mean that it would not be able to obtain the financing to meet its debt-payment requirements even though it is balance-sheet solvent, the possibly novel legal claim that a company that was known to have committed financial fraud would not have access to the capital markets was shown to be incorrect.
Notes

1 A previous version of some of the material in this paper previously appeared in the Weil Bankruptcy Blog.


3 Heaton, p. 983 for all quotes in this paragraph.

4 The Heaton paper provides a good discussion of the relationship between the two tests I discuss and the capital-adequacy test. While this paper disagrees with Heaton on certain aspects of the relationships between the balance-sheet and cash-flow tests, we are in agreement on their relation to the capital-adequacy test and the interested reader can review the discussion in the Heaton paper.

5 The first opinion, In re Adelphia Communications Corp., 512 B.R. 447 (Bankr. S.D.N.Y. 2014) (“Bankruptcy Court Opinion”) was issued following a trial in the Bankruptcy Court. This opinion was then reviewed, based on jurisdictional issues, and affirmed by a district court in In re Adelphia Communications Corp., No. 02-41729 (REG) (S.D.N.Y. Mar. 17, 2015) (“District Court Opinion”). Footnotes are omitted from all Court quotations cited in this paper.

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