Financial Contracting and Warrant Structure: Unit IPOs vs. Chapter 11 Reorganizations

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Received: July 25, 2012 Accepted: August 8, 2012 Online Published: August 13, 2012
doi:10.5430/afr.v1n2p66 URL: http://dx.doi.org/10.5430/afr.v1n2p66

Abstract

The type of firms issuing warrants has changed over the last 20 years. In the 1990s, warrants were primarily issued by firms as part of their IPOs. However, firms emerging from chapter 11 bankruptcy began frequently issuing warrants. Between 2001 and 2003, firms emerging from chapter 11 bankruptcy issued the majority of warrants. Prior literature has examined the characteristics of warrants issued in IPOs and we extend the warrant literature to the chapter 11 setting. The contract characteristics of the warrants issued in the two situations are different. Warrants issued during chapter 11 have a longer time until expiration, lower dilution levels, higher exercise price to initial price ratio, and are less likely to have provisions that allow managerial control over the warrants. The differences arise from different motivations for the issuance of warrants.

Keywords: Initial public offerings, Bankruptcy, Warrants, Financial contracting

JEL classifications: G32, G33

1. Introduction

Warrants give the owner the right to purchase a specific amount of securities at a pre-specified price for a certain period of time. However, the terms related to how much stock can be purchased, at what price, and for how long differs from warrant to warrant. Researchers have studied these differences over the past 20 years, primarily in initial public offering (IPO) and secondary equity offering (SEO) settings. We extend this examination of terms to the area of chapter 11 bankruptcy, which has recently become an important setting for the issuance of warrants.

Warrants are an important financial security for high-risk firms, including those going public for the first time and those emerging from chapter 11 bankruptcy. In terms of age, size and reputation these two types of firms are quite distinct, yet both frequently use warrants as a part of their capital structure. Prior literature, such as Schultz (1993a) and How and Howe (2001), indicates firms that issue warrants tend to be young and high-risk enterprises, and that warrants are predominantly used in initial public offerings (IPOs). Recent literature, however, shows a significant change in the type of firms issuing warrants, with firms emerging from chapter 11 bankruptcy issuing warrants with increasing frequency. Nierenberg (2005) finds that "by 2005 the number of exchange-traded warrants issued by firms previously in bankruptcy exceeded the number of warrants issued by all other firms combined."

The differences between firms issuing warrants in IPOs and those issuing warrants in chapter 11 bankruptcy suggest that their motivation for using warrants may also be different. Schultz (1993a) argues that one reason firms use unit IPOs (IPOs that include warrants) is to ensure the firm has access to an additional round of financing in the event the

firm is viable, and the warrants provide this potential financing option. Chemmanur and Fulghieri (1997) provide another reason firms may issue warrants in IPOs. They argue that managers use warrants as a signal to provide private information to the market about the riskiness and future cash flows of the firm. Warrants allow new investors to profit if the firm's value increases but at a cost to the original pre-IPO shareholders because they have had to share the price appreciation.

Numerous papers, including Hotchkiss (1995), find that firms overestimate their future performance when developing a plan of reorganization in bankruptcy. The ability to have a second round of financing in place if the stock price increases above the exercise price may be especially valuable for these firms, hence the reason for issuing warrants. This reasoning is similar to the explanation Schultz (1993a) presents for unit IPOs.

However, there are other reasons firms in bankruptcy may issue warrants when emerging from chapter 11 that are not present in an IPO setting. The first is to offer junior claimholders a chance to recover their investment if the firm ultimately succeeds after the reorganization. Bebchuk (1988) proposes allowing junior claimholders to buy senior claims in the case of valuation disputes. There have been significant arguments about this suggested method; however, many researchers see benefit in using warrants (or other contingent claims) to help make chapter 11 more efficient.

Another reason firms use warrants is to significantly shorten the time in bankruptcy. Eberhart et al. (1999) indicate that frequently the junior claimants receive warrants in exchange for supporting the plan of reorganization. Junior claimants' support of the plan of reorganization will generally shorten the time in bankruptcy by helping to limit court fights over what each class of creditors receives.

In this paper, we compare the structure and characteristics of warrants issued by firms emerging from chapter 11 bankruptcy with warrants issued in IPOs and SEOs. Because the motivation for warrant issue emerging from bankruptcy is different than the motivation for unit IPOs, we expect systematic differences in the characteristics of warrants issued in the two settings. Further, we consider two distinct theories about the use of warrants by firms emerging from bankruptcy. The theories have competing empirical predictions (Table 1) which we test.

The characteristics that we examine are the exercise price (relative to stock price), length to maturity, and dilution effects. In addition to these basic features, Garcia and Howe (2010) identify three important characteristics for managerial flexibility that we also analyze: the right to call the warrant, the right to extend the life of the warrant, and the right to lower the exercise price of the warrant. These rights may be especially important to firms emerging from bankruptcy because other financing options are likely severely limited for the first several years after chapter 11.

Our results indicate first that the characteristics of warrants issued by firms emerging from chapter 11 bankruptcy are very different from those issued by firms during IPOs. Second, these findings offer significant support for the expedited emergence theory and very little support for the managerial flexibility theory in the context of bankruptcy.

The remainder of the paper is organized as follows. Section two discusses related literature and details our hypotheses. Section three describes the data. Section four provides the results and section five concludes.

2. Literature Review and Testable Hypotheses

Prior literature has examined the characteristics of warrants issued primarily during IPO settings. We extend this literature to firms emerging from chapter 11 bankruptcy because these companies are very different from other firms. These differences mean the bankrupt firms are potentially using warrants for different reasons. How and Howe (2001) show that firms that issue warrants tend to be young and high-risk, whereas Denis and Rodgers (2007) show firms emerging from chapter 11 tend to be large and more established. Eberhart et al. (1999) find that firms use warrants to speed up the bankruptcy process by allowing junior creditors a chance to recover part of their investment if the firm succeeds after emergence.

In addition to the differences in firm characteristics, there are significant differences in institutional pressures faced by the two types of firms. Baker and Gompers (2003) examine the board characteristics of firms going through the IPO process. They find that the IPO firms have an average of six directors, which is less than half the number found by Yermack (1996) in his study of large firms. Baker and Gompers (2003) also show that insiders make up 50% of the board in IPOs vs. the 36% seen in Yermack (1996), indicating that managers have substantial power to influence the characteristics of the warrants in IPOs. This managerial power leads the warrant characteristics in IPOs to more closely reflect the desires of management and the shareholders.

In contrast to IPOs, firms emerging from chapter 11 bankruptcy have to negotiate with all of the parties involved, including senior creditors and shareholders. Gilson and Vetsuypens (1993) indicate that senior creditors often have

significant leverage over managers, including some cases where management compensation is explicitly tied to the value creditors receive in the bankruptcy reorganization. Betker (1995) details the limited power that shareholders have in most bankruptcy cases. He argues that the senior creditors are willing to give some of the existing value of the firm to the shareholders in order to limit the firm's time in bankruptcy. In these cases, the warrant characteristics will be reflective of the desires of the senior creditors.

Based on the prior literature, we consider two explanations for the use of warrants by firms emerging from chapter 11 bankruptcy. The first we call the expedited emergence theory. This theory builds upon the findings of Eberhart et al. (1999) and Gilson and Vetsuypens (1993) showing that the senior creditors have substantial influence over the structure of the emerging firm. This influence frequently leads to the junior claimants receiving warrants in exchange for supporting the plan of reorganization. In bankruptcy, senior creditors are supposed to be paid in full before junior creditors receive any payments. However, junior creditors can fight the plan of reorganization in court, thus slowing down the process and forcing the firm to spend more time and money before it can successfully emerge. By obtaining the support of junior creditors, senior creditors benefit by limiting the time the firm spends in bankruptcy and quickly receiving their payouts.

The second theory we call the managerial flexibility hypothesis. This theory builds upon Schultz (1993a), Graham and Harvey (2001) and Hotchkiss (1995). Schultz (1993a) argues warrants are a method of staged financing where managers can obtain access to additional rounds of financing after showing they can successfully manage the firm by investing in positive net present value (NPV) projects. Investors are not willing to provide managers with all of the financing up-front because managers may use the proceeds to invest in negative NPV projects just to maintain their jobs. In contrast, staged financing helps ensure managers never have the opportunity to "squander" the remaining funds from an initial public offering.

Graham and Harvey (2001) find that Fortune 500 chief financial officers (CFOs) place a significant value on financial flexibility. They show that over 59% of the CFOs rate "financial flexibility" as either important or very important in a 1999 survey. Flexibility is the most important factor in determining the appropriate debt level for the firm, and is even more important than factors such as credit ratings, volatility of earnings and cash flows, tax advantages of interest deductibility, and transaction costs of issuing debt. Because managers ranked financial flexibility very highly in the superb economic times of the late 1990s, we posit that they also place a significant value on flexibility after emerging from chapter 11.

The time after emergence from chapter 11 bankruptcy is likely a very difficult time for managers. Hotchkiss (1995) shows firms emerging from bankruptcy significantly underperform their financial projections. Because these financial projections provide the basis for the initial stock price and warrant exercise price upon emergence, managers who meet the projections are likely showing relatively good performance. Based on this performance, allowing the managers to access the second round of financing supports the theory developed in Schultz (1993a) stating that managers should only receive the additional financing after demonstrating an ability to successfully run the firm.

In addition, the low performance shown by Hotchkiss (1995) means that managers will likely desire to conserve cash. The need to preserve cash suggests that the costs required to raise additional funding may be prohibitive to the firm, even if the external funding is available. The additional costs mean the ability to have another round of potential financing may be especially important to firms emerging from bankruptcy. Based on this, many of the characteristics associated with the managerial flexibility theory are designed to ensure that managers will have the ability to raise additional funds if, and when, they deem it necessary.

The two theories detailed above are quite distinct and will lead to different warrant characteristics. Table 1 details the predicted characteristics of the warrants depending on which theory is dominant. Overall, warrants issued based on the expedited emergence theory offer little in the way of managerial flexibility, but instead are only structured to offer junior creditors an opportunity to recover some of their investment when the newly reorganized firm is successful shortly after emergence. In contrast, we expect managers to have significant leeway if, and when, the warrants are ultimately exercised if the managerial flexibility theory holds. We also believe this second theory will result in a greater likelihood of ultimately having the warrants exercised as discussed below.

The first characteristic we examine is the exercise price. Schultz (1993a) argues that IPO firms should set an exercise price significantly above the market price, but at a price that can be reasonably obtained by managers. This structure is designed to set a goal for the managers to attain in order to gain access to the second round of financing. He also indicates that this structure is comparable to the structure of staged financing that venture capitalists use to ensure managers are investing in positive NPV projects.

The expedited emergence hypothesis predicts that senior creditors, who are willing to offer warrants to junior creditors, will require that the warrants have an exercise price significantly above the stock market price. In this case, if the junior creditors are eventually able to exercise their warrants, the senior creditors will also have experienced a significant increase in value in their investments. Kalay and Zender (1997) show that the transfer of ownership in good states (successful reorganizations) is consistent with optimal contracting.

Managers, however, likely have an entirely different view on the exercise price. The managerial flexibility hypothesis suggests that managers look to the warrants as a second round of financing that they may need access to at some point. To help ensure access to this source of financing, they are likely to desire an exercise price very close to (or even below) the stock price at emergence. By having the exercise price set very close to the emergence stock price, it is much more likely the warrants will be exercised than if the exercise price is set much higher as the expedited emergence theory predicts. In this case, managerial access to the additional round of financing is consistent with Schultz (1993a) because of the significant underperformance of firms emerging from chapter 11 shown by Hotchkiss (1995). When managers are able to meet what outsiders would consider overly optimistic forecasts, it supports the idea that managers are successfully running the firm.

The next variable we consider is the time until expiration. Rational investors will not exercise a warrant before the expiration date so an extended time until expiration is more valuable than a short time until expiration. The expedited emergence theory predicts senior creditors only want junior creditors to benefit if the firm is successful shortly after emergence. The short duration lowers the value of the warrants provided to junior creditors because the time to expiration affects the value of warrants. In contrast, the managerial flexibility theory predicts warrants will have a long time until expiration. The extended time until expiration provides managers with additional flexibility. They do not have to make decisions in an attempt to increase the value of the firm in the short-term to access the additional financing, but can instead take a longer-term view. This ability and extended timeframe is consistent with Schultz (1993a) and Graham and Harvey (2001).

We also consider the dilution effects or the percent of the firm sold through the exercise of the warrants. Schultz (1993a) indicates there is a significant variation in the ratio of shares to warrants present in unit IPOs. He finds a median of twice as many shares as warrants; however, the range goes from 1/3 to four. How and Howe (2001) argue that the ratio of shares to warrants will decrease as the firm becomes more risky.

The expedited emergence theory predicts the percent of the firm sold through the exercise of the warrants will be low. Eberhart et al. (1999) indicate that warrants speed up the emergence from chapter 11 by placating junior creditors who are not legally entitled to any recovery. Based on this use of warrants, we believe it is unlikely that senior creditors are willing to provide junior creditors with a considerable amount of equity. In contrast, the managerial flexibility theory predicts a much higher percent of the firm will be sold through the exercise of warrants. The ability to issue a significant amount of new equity is beneficial to the firm, especially at a time when other sources of external capital are likely limited.

Garcia and Howe (2010) show over 91% of the unit IPOs have call provisions present in the warrant agreement. Normally, for managers to act on such provisions, the warrant has to be outstanding for a specific length of time and the stock price has to be trading above a predetermined price. If these terms are met and managers decide to call the warrants, those holding warrants generally have a short time period to determine whether to exercise them or receive the nominal call price. Because rational investors will exercise the warrants instead of receiving the nominal call price, call provisions are viewed as exercise-forcing. Schultz (1993b) finds that firms frequently call warrants as soon as they are eligible to, and overall, there is a positive market reaction to the call.

The expedited emergence theory does not provide a prediction as to whether warrants will have a call provision. The presence of a call provision is not likely to be of much concern to senior creditors. For this provision to be exercised, the stock price would likely increase over the issue price (assuming the exercise price is above the stock price). In this case, the senior creditors are not concerned with managers forcing the exercise because the warrants could be exercised anyway. The managerial flexibility theory would lead to the presence of call provisions. Because call provisions are generally exercise-forcing, managers have the flexibility to access the additional round of financing at a time of their choosing.

Some warrant contracts include a clause that gives managers the right to extend the life of the warrant. The extendibility clause is likely to be invoked if the warrant is expected to be out of the money at expiration, but management believes the warrant will be in the money in the future. The alternative to extending the warrant is allowing the warrant to expire and then issuing another warrant or attempting to obtain funding from a different

source if necessary. This method may be prohibitive for two reasons: the cost of raising additional funds and, potentially, the inability to access capital markets shortly after emerging from bankruptcy.

The expedited emergence theory indicates that warrants would not have an extendibility provision. Senior creditors are willing to provide junior creditors warrants to decrease the time in bankruptcy; however, as described above, these warrants are designed to provide junior creditors with an opportunity to recover part of their investment when the firm succeeds very quickly after emergence. Based on this desire, an extendibility provision would mitigate the purpose of the warrants by allowing managers to extend the time until the warrants expire. From a managerial flexibility perspective, managers desire an extendibility provision. If managers believe the warrants will be in the money in the future, it is in their best interest to have the right to extend the warrant.

The final provision we examine is the right to lower the exercise price in the warrant. Howe and Su (2001) find two types of warrant exercise price reductions: conversion-forcing and long-term, each used about 50 percent of the time. They define a warrant exercise price reduction as conversion-forcing if it is a temporary reduction to a warrant that was previously out of the money but after the reduction is in the money. In contrast, a warrant with a long-term exercise price reduction does not force the conversion because rational investors will not exercise the warrant prior to its expiration (unless the firm pays a dividend).

The expedited emergence theory predicts the warrant contract will not include an exercise price reduction provision. The presence of this provision would allow managers to transfer value from the senior creditors to the junior creditors by lowering the exercise price junior creditors must pay to exercise the warrants. In this case, the senior creditors wish to prohibit managers from offering junior creditors a better deal because the warrants were designed to benefit the junior credits only in certain situations. If the firm does not succeed, the junior creditors should not be rewarded.

The managerial flexibility theory indicates warrants will have an exercise price reduction provision. This provision gives managers substantial flexibility because they have the option of forcing conversion if the firm is in a situation where it needs additional capital. In addition, managers can attempt to use the provision to help ensure the warrants are issued at some time in the future by using a long-term exercise price reduction. Howe and Su (2001) argue that this type of long-term reduction helps to restore managerial incentives. If the warrants are so far out of the money that one cannot reasonably expect them to be exercised, managers do not have an incentive to invest in positive NPV projects. If managers can reduce the exercise price to give a reasonable expectation of exercise, they then have the incentive to invest in projects to increase the value of the firm.

3. Data

We collect data from several sources. Stockwarrants.com identifies all publicly traded warrants in the United States since 1996. This website also provides a significant amount of information about each warrant, including the exercise price, time to expiration, conversion rates, presence of call provisions, and whether the warrants were issued by firms emerging from chapter 11 bankruptcy or through an IPO. In addition, we examine the warrant agreements and prospectuses to determine whether the warrants are extendible or can have their exercise price reduced. Because we need to obtain information from the warrant agreements and prospectuses from U.S. Securities and Exchange Commission's Edgar database, we analyze only warrants trading from 2003 to 2008. This requirement leads to a sample of 334 warrants, 67 issued in chapter 11 reorganizations and 267 issued in IPOs. The bankruptcy warrants were issued by 48 different firms while the IPO warrants were issued by 238 different firms. In addition, 17% (eight) of the firms issuing warrants when emerging from bankruptcy refile for chapter 11. This finding is comparable with Hotchkiss (1995) who finds that 18% of the firms emerging from chapter 11 refile.

Table 2 details the number of warrants issued each year. Panel A shows that approximately 20% of the warrants were issued by firms emerging from bankruptcy, while 80% were issued in unit IPOs. The type of warrant issued is also related to the overall health of the economy. From 1998 to 2000 and 2004 to 2008, the majority of warrants issued each year were in IPOs, which corresponded to significant periods of economic growth. However, between 2001 and 2003, the majority of warrants issued each year were from chapter 11 bankruptcies. Panel B shows the number of warrant securities issued each year. Because only about 7% of the total numbers of warrants are from chapter 11 bankruptcies, it indicates that there are more warrants issued in an average unit IPO than in an average bankruptcy. In addition, since 2004, there has been a dramatic increase in the average number of warrants issued in each IPO.

Table 3 shows the number of warrants outstanding each year from 2003 to 2008. Panel A details the number of warrant issues, average number of warrants per issue, and total number of warrants outstanding for each year. Panels B and C show similar information for warrants issued through chapter 11 bankruptcies and IPOs, respectively.

The number of warrant issues outstanding increased dramatically each year. From 2003 to 2008, the average number of warrants in each issue increased from 2.7 million to 14.9 million and the total number of warrants outstanding increased from 288 million to 3.4 billion. The number of warrant issues outstanding because of chapter 11 bankruptcies fell by 25% from 2003 to 2008, the result of an improved economy. Support for this belief is also shown in the number of warrant issues outstanding from IPOs; which increased through 2008.

Table 4 details the warrant issues by the 10 Standard Industrial Classification (SIC) divisions. Because of the limited number of firms in most divisions, we could not include three or four digit SIC analyses. The results indicate significant clustering by industries. Panel A shows the SIC divisions for all of the warrant issues. The two largest divisions, manufacturing and finance, insurance, and real estate, contain 50% of the total issues. In contrast, the smallest four divisions, agricultural production crops, construction, wholesale trade, and public administration, contain less than 6% of the total number of warrant issues.

Panels B and C show the SIC analysis for warrants issued during bankruptcy and IPOs, respectively. For the warrants issued during bankruptcy, the two largest divisions are services and manufacturing. In contrast, the largest divisions for the IPO issues are finance, insurance, and real estate and manufacturing. The finance, insurance, and real estate division is one of the largest divisions in the whole sample; however, these warrant issues are concentrated in the IPO sample.

Table 5 details the summary statistics. The values for the bankrupt firms are taken from the first annual report after emergence while the values for IPO firms are from the annual reports at the end of the issue year. This table shows the firms that issue warrants during chapter 11 bankruptcy are very different from the firms issuing warrants in IPOs. The average total assets of the firms issuing warrants are approximately $640 million; however, the total assets of the bankrupt firms issuing warrants are approximately $2.2 billion compared to $100 million for IPO firms. Firms issuing warrants emerging from chapter 11 have sales over 60 times the sales of IPO firms. The short- and long-term debt levels are also very different. Firms emerging from bankruptcy have approximately $38 million and $442 million in short- and long-term debt, respectively, which is much greater than the $1 million and $9 million IPO firms have. Both types of firms have very low levels of free cash flow and operating cash flow. However, firms emerging from chapter 11 have much higher levels of capital expenditures. Overall, this table shows the types of firms in each category are very different. This finding also supports our belief that firms use warrants for two different purposes.

4. Results

We first examine the general characteristics of the warrant including the exercise price, time to expiration, and dilution effects. Table 6 details the results of this analysis. Panel A shows the results for all 334 warrant issues. The average time to expiration is 4.6 years; however, there is a significant difference between those issued in chapter 11 bankruptcy and those in IPOs. Warrants issued in bankruptcy have a time to expiration of almost 1 year longer than IPO warrants. This finding is supportive of the managerial flexibility hypothesis as the longer life helps ensure managers will have access to an additional round of financing if the firm is successful after emergence.

The second characteristic examined is the percent dilution common stockholders would experience in the event all of the warrants are exercised. Overall, for the average firm, the number of shares of stock would increase by 80%, severely diluting the original stockholders. Again, there was a significant difference between warrants issued in bankruptcy and IPOs. The dilution for bankruptcy stockholders was only 11% compared to 98% for shareholders in IPOs. This result shows support for the expedited emergence theory. The senior creditors are likely giving junior creditors the ability to recoup some of their investment if the firm succeeds; however, the amount is only a small proportion of the firm.

The third characteristic considered is the ratio of the warrant exercise price to the initial stock price. For initial public offerings, the initial stock price is from SDC Platinum. The initial stock price for firms emerging from bankruptcy is from either the disclosure statement or plan of reorganization. This value is frequently an estimated price quoted in the court documents based on the value of the firm and the number of shares to be distributed when the plan of reorganization is approved and becomes effective.

Overall, the exercise price of the warrants is set approximately 29% above the initial stock price. However, again, there is a significant difference between warrants issued during chapter 11 and those issued in IPOs. The average exercise price of a warrant issued during bankruptcy is 96% above the initial stock price while the average exercise price of a warrant issued in an IPO is only 13% above the initial stock price. This finding supports the expedited emergence theory because the warrants are much less likely to be exercised than warrants issued in IPOs. In this case,

since the warrant exercise price is so far from the initial stock price, the value provided to the junior claimants is minimal. However, it is still likely more than they would be entitled to under the absolute priority rule. The IPO warrants show support for the staged financing argument of Schultz (1993a).

Panel B shows the results for the same three characteristics discussed above; however, we exclude all firms with multiple classes of warrants, which lowers the total sample size by 77 warrant issues. This approach ensures that differences in warrant classes of the same firm do not influence the results. The smaller sample yields similar results to those of the full sample, with a longer time to expiration, lower dilution, and a lower ratio of exercise price to issue price in warrants issued when firms emerge from chapter 11 bankruptcy. (Note 1)

The final analysis examines the warrant agreement to determine if management had the right to call, extend the expiration date, and/or reduce the exercise price of the warrant. Table 7 details the eight possible combinations of these characteristics an individual warrant can have. Panel A shows the number and percent of warrants in each category for the entire sample. The results show all three characteristics are present in 55% of the warrants. The second largest category is warrants without any of the three characteristics present. The most common characteristic is the call provision, which is present in 75% of the warrant agreements. In cases without the call provision, the warrants are very unlikely to have any of the other two characteristics.

Panel B and C detail the results of this analysis for the warrants issued in chapter 11 bankruptcy and IPOs, respectively. Over 80% of the warrants issued in bankruptcy do not have any of the three characteristics present. In fact, only one warrant issue has a call provision in the agreement. Three warrant issues allow managers to extend the expiration date and 12 issues allow managers to reduce the exercise price. The IPO sample is very different, with almost 70% of the sample having all three provisions present. In addition, over 90% of the sample gives managers the right to call the warrants. Seventy-five percent of the warrant issues allow managers to extend the expiration date and reduce the exercise price.

The table shows significant support for the expedited emergence theory and no support for the managerial flexibility theory. The expedited emergence theory did not have a prediction on the presence of a call provision; however, the managerial flexibility theory predicts the presence of a call provision. The lack of provisions allowing managers to extend the length of the warrant and reduce the exercise price supports the expedited emergence theory. These results indicate the warrants issued by firms exiting chapter 11 bankruptcy are designed to satisfy the senior creditor's demands, which is consistent with the arguments presented in Gilson and Vetsuypens (1993).

5. Conclusion

We examine a sample of 334 warrant issues outstanding between 2003 and 2008 to see if there are any differences between the contract characteristics of warrants issued during a chapter 11 bankruptcy reorganization and an initial public offering. These two settings are very different, with large, developed firms emerging from chapter 11 and small, younger firms engaging in IPOs. Based on this difference in firm type and setting, we examine whether the structure and characteristics of the warrants themselves are different. We focus on three basic characteristics: the exercise price relative to stock price, time to expiration, and dilution effects. In addition to these characteristics, we also examine the warrant agreements to determine if management has the rights to call the warrant prior to expiration, extend the length of the warrant, and / or reduce the exercise price of the warrant.

We develop two theories about the characteristics of warrants issued by firms emerging from bankruptcy, the expedited emergence theory and the managerial flexibility theory. The expedited emergence theory builds upon Eberhart et al. (1999), who argue that senior creditors are giving junior creditors warrants in exchange for their support of the plan of reorganization. This theory provides very little financial flexibility for managers and is only designed to allow junior creditors to recover some of their investment if the firm succeeds shortly after emergence.

In contrast, the managerial flexibility theory is derived from Schultz (1993a), Graham and Harvey (2001) and Hotchkiss (1995). Schultz (1993a) argues warrants are a method of staged financing where managers can access the money after showing they can successfully run the firm. Graham and Harvey (2001) show managers place a significant value on financial flexibility and Hotchkiss (1995) finds firms emerging from bankruptcy significantly underperform their financial projections. The presence of warrants in firms emerging from bankruptcy potentially provides access to additional rounds of financing, which would otherwise likely not be available.

Our results indicate that the characteristics of warrants issued by firms emerging from chapter 11 bankruptcy are very different from those issued by firms during IPOs. The warrants issued by firms in bankruptcy expire 5.4 years after emergence, compared to 4.5 years for those issued in IPOs. Warrants issued during IPOs have significant levels of dilution while warrants issued during bankruptcy only allow warrant holders to purchase about 11% of the equity.

The exercise price is much closer to, or even below, the issue price in IPOs, whereas, the exercise price is almost double the issue price when firms emerge from chapter 11. In addition to these differences in basic characteristics, there are significant differences in the contract terms. Warrants issued in bankruptcy give managers very little flexibility because very few have call provisions, extendibility provisions, or allow managers to lower the exercise price.

The expedited emergence theory predicts the warrants will have an exercise price set far above the stock price, very little dilution, lack extendibility provisions, and not allow managers to lower the exercise price. It does not make a prediction on the call provision; however, the lack of this provision provides no support for the managerial flexibility theory. The only characteristic that did not support the expedited emergence theory is the time to expiration. One potential reason for this is the significant stock price increase required to exercise the warrants. The exercise price was set approximately 96% above the initial price, an unlikely occurrence in the first few years after emergence. Overall, these findings offer significant support for the expedited emergence theory and very little support for the managerial flexibility theory.

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Notes

Note 1. In results not shown, we repeat the analysis excluding the eight firms that refile for chapter 11 bankruptcy and do not find any substantial differences.

Table 1. Summary of the Predictions

Variable	Expedited Emergence Theory	Managerial Flexibility Theory
Exercise Price	Far Above Stock Price	Close to Stock Price
Time to Expiration	Shorter	Longer
Dilution Effects	Little Dilution	Significant Dilution
Call Provision	No Prediction	Present
Extendable	Not Present	Present
Ability to Lower Exercise Price	Not Present	Present

The expedited emergence theory details predictions about the warrant terms based on the belief senior creditors are willing to provide junior creditors warrants in exchange for potentially limiting the time in chapter 11 bankruptcy. The managerial flexibility theory details predictions about warrant terms based on the belief managers desire substantial flexibility on if, and when, they can raise external funds.

Table 2. Distribution of the 334 Warrant Issues by Year

	Panel A: Number of Warrant Issues			Panel B: Number of Warrants (millions)		
	All Firms	IPO	Bankruptcy	All Firms	IPO	Bankruptcy
1992	1	1	0	1.7	1.7	0.0
1993	1	1	0	3.6	3.6	0.0
1994	1	1	0	1.1	1.1	0.0
1995	1	1	0	1.7	1.7	0.0
1996	5	5	0	6.4	6.4	0.0
1997	9	8	1	12.6	11.6	1.0
1998	21	20	1	33.0	30.0	3.0
1999	15	9	6	44.3	22.3	22.0
2000	14	11	3	26.8	21.1	5.8
2001	15	6	9	34.5	12.6	21.9
2002	24	8	16	79.0	36.4	42.7
2003	19	8	11	82.5	48.5	34.0
2004	29	20	9	298.9	275.2	23.7
2005	38	36	2	461.0	457.3	3.7
2006	53	46	7	649.1	566.9	82.2
2007	69	68	1	1,466.1	1,459.2	7.0
2008	19	18	1	484.2	479.7	4.5
Totals	334	267	67	3,686.6	3,435.1	251.4

This table includes all publicly traded warrant issues outstanding from 2003-2008. Panel A details the number of warrant issues each year in unit IPOs and chapter 11 bankruptcy reorganizations while Panel B details the total number of warrants issued.

Table 3. Total Number of Warrants Outstanding by Year and Issue Type

	Panel A: All Firms			Panel B: Bankruptcy			Panel C: IPO		
	Warrant Issues	Average Warrants / Issue (millions)	Total Number of Warrants (millions)	Warrant Issues	Average Warrants / Issue (millions)	Total Number of Warrants (millions)	Warrant Issues	Average Warrants / Issue (millions)	Total Number of Warrants (millions)
2003	106	2.7	287.7	47	2.8	130.3	59	2.7	157.4
2004	115	4.9	561.0	55	2.8	153.5	60	6.8	407.5
2005	138	7.1	980.7	50	2.7	135.6	88	9.6	845.1
2006	175	9.0	1,582.6	52	4.1	211.6	123	11.1	1,371.0
2007	222	13.5	2,997.9	41	4.6	189.8	181	15.5	2,808.1
2008	230	14.9	3,431.1	35	4.5	156.7	195	16.8	3,274.3

Panel A details information for all firms in the sample, Panel B includes only those warrants issued in chapter 11 bankruptcy reorganizations, and Panel C includes warrants issued only through unit IPOs. Warrant issues are the number of different warrant securities outstanding. Total number of warrants outstanding calculated by multiplying the warrant issues times the average warrants per issue.

Table 4. Number of Warrant Issues by SIC Division

		Panel A: All Issues		Panel B: Bankruptcy		Panel C: IPO	
SIC Division		Number	%	Number	%	Number	%
A:	Agricultural Production Crops	2	0.6%	1	1.5%	1	0.4%
B:	Mining	14	4.2%	2	3.0%	12	4.5%
C:	Construction	8	2.4%	2	3.0%	6	2.2%
D:	Manufacturing	86	25.7%	14	20.9%	72	27.0%
E:	Transportation, Communications, Electric, and Gas	39	11.7%	12	17.9%	27	10.1%
F:	Wholesale Trade	8	2.4%	3	4.5%	5	1.9%
G:	Retail Trade	28	8.4%	10	14.9%	18	6.7%
H:	Finance, Insurance, and Real Estate	81	24.3%	6	9.0%	75	28.1%
I:	Services	67	20.1%	17	25.4%	50	18.7%
J:	Public Administration	1	0.3%	0	0.0%	1	0.4%
Total		334	100%	67	100%	267	100%

Panel A details the number of issues and percent for each division for all warrant issues. Panels B and C provide the number and percent of warrant issues for each division during chapter 11 bankruptcy and unit IPOs, respectively.

Table 5. Summary Statistics

Variable	n	All Firms	Bankruptcy	IPO	Difference	T-test	
Total Assets	228	$639.5	$2,188.8	$98.7	$2,090.2	3.58	***
Sales	201	477.9	1,565.9	25.8	1,540.1	7.00	***
Long-term Debt	228	120.9	442.1	8.7	433.4	4.88	***
Short-term Debt	222	10.2	38.4	1.1	37.3	2.96	***
Market Value of Equity	204	269.7	689.1	99.1	590.0	2.85	***
Free Cash Flow	194	-16.2	-51.1	-1.0	-50.1	-0.85	
Operating Cash Flow	194	1.1	2.7	0.4	2.2	0.04	
Capital Expenditures	195	17.3	53.8	1.4	52.3	5.02	***

Summary statistics for all warrant issues and warrants issued during chapter 11 bankruptcy and IPOs. The values are from the annual report at the end of the issue year and all variables are measured in millions of dollars. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6. Warrant Characteristics

Variable	All Firms	Bankruptcy	IPO	Difference	T-test	
Panel A: All Issues (n=334)						
Time to Expiration (Years)	4.6	5.4	4.5	0.9	4.10	***
Dilution Effects	80%	11%	98%	-87%	-20.15	***
Exercise Price / Issue Price	1.29	1.96	1.13	0.8	5.72	***
Panel B: Excluding Firms with Multiple Issues (n=257)						
Time to Expiration	4.5	5.4	4.4	1.0	2.86	***
Dilution Effects	92%	12%	103%	-92%	-17.47	***
Exercise Price / Issue Price	1.09	1.91	0.97	0.9	7.20	***

Time to expiration is in years from issue date. Dilution effect is equal to the number of warrants divided by the number of common shares outstanding. Exercise price / issue price is equal to the stock price at issuance divided by the exercise price of the warrant. Panel A includes all warrant issues. Panel B excludes all firms with multiple issues of warrants. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 7. Managerial Flexibility Characteristics

Warrant Contract Provision			Panel A: All Firms (n=334)		Panel B: Bankruptcy (n=67)		Panel C: IPO (n=267)	
Call	Extension	Reduction	Num	%	Num	%	Num	%
Y	Y	Y	185	55%	1	1%	184	69%
Y	Y	N	11	3%	0	0%	11	4%
Y	N	Y	10	3%	0	0%	10	4%
Y	N	N	44	13%	0	0%	44	16%
N	Y	Y	4	1%	2	3%	2	1%
N	Y	N	2	1%	0	0%	2	1%
N	N	Y	13	4%	9	13%	4	1%
N	N	N	65	19%	55	82%	10	4%

Frequency of call, extension, and exercise price reduction provisions in the warrant agreements. Panel A details information for all firms in the sample, Panel B includes only those warrants issued in chapter 11 bankruptcy reorganizations, and Panel C details warrants issued through unit IPOs. Y indicates the presence of the contract provision and N indicates the absence of the contract provision. Num is the number of warrant issues and % is the percent of issues in that category.