ACADEMIC INVESTIGATIONS & CONCEPTS

SECTION 1

THE DESIGN OF DEBT CONTRACTS: EVIDENCE OF COST EFFECTIVE USE OF COVENANTS FROM A LARGE SAMPLE OF SMALL LOANS

Julien Bilodeau*, Franck Missonier-Piera**

Abstract

This paper investigates the use of covenants in debt contracts as well as the role played by accounting numbers in those contracts. More specifically, it provides evidence that covenants, and more importantly accounting based covenants, are used in a cost effective way in these contracts. It also provides a unique description of the types of covenants and accounting numbers which are used in a large sample of loan issued to small Canadian firms.

Keywords: Loan, Accounting, Covenants, Costs

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**Corresponding author. Université de Sherbrooke, Faculté d'administration, 2 500 boul. de l'Université, Sherbrooke (QC), Canada, J1K 2R1*
Tel: +1 819 821 8000 ext 62355
***University of Fribourg*

1 Introduction

The details of debt contracts and their links to certain firms' characteristics have been studied in a number of North American studies (Smith and Warner, 1979; Thornton, 1985; Dichev, 2002; Begley et al., 2004). However, we know very little about contracts involving small firms. These firms, which represent an important share of the economy in developed countries, must also borrow. For instance, Industry Canada estimated that, in 2007, 98% of all Canadian firms were small. They represented 30% of Canada's GDP and employed close to 50% of all the workers from the private sector. All our data were collected from debt contracts involving small firms (see section 3.1 for details on firms' size).

In a previous paper (Bilodeau et al. 2008), evidence was presented that a relationship exists between the size of a loan agreement, certain characteristics of the borrower and the use of covenants. In this paper, it is argued that the relationships that were found in this previous paper are evidence of a cost effective use of covenants.

We first classified all clauses as to the sources of conflicts discussed in Smith and Warner (1979; see Appendix 1). It provides a description of both accounting based covenants (ABC) and non-accounting based covenants (non-ABC).

2 Hypotheses

In this study, we develop three hypotheses that are based on cost effectiveness arguments. The first hypothesis suggests that a smaller loan will have fewer covenants because the benefit of using covenants increases with the size of the loan while costs are fixed. The second hypothesis implies that, in a legal context where covenants provide less benefit, we should observe fewer covenants. Finally, the last hypothesis is based on the fact that firms with a longer business relationship with their lender will have more to lose by behaving in an opportunistic way; therefore,

the need to use costly covenants to prevent such behaviour would decrease.

Taken together, we believe that all three hypotheses, if not rejected, will provide strong evidence that covenants are expensive and used in a cost effective manner.

2.1 Loan size vs benefit of covenants

We argue that the cost of writing and monitoring covenants in debt contracts is fixed to a large extent; that is, it does not change whether the amount of the loan is, e.g., 100 thousands or 100 millions dollars. On the other hand, the benefit of the covenant varies with the amount of the loan; that is, the higher the amount of the loan, the more benefit can be realized by preventing wealth transfer (it is so simply because the maximum amount of wealth that can be transferred is the total amount of the loan). Therefore, we should expect a positive association between the presence of covenants and the size of loans; that is, contractual agreements related to larger loans should contain more covenants.

More specifically, we hypothesize that:

H1: The presence of at least one covenant in a debt agreement is positively related to the size of debt.

2.2 Type of firms and benefit of covenants

One way to transfer wealth from debt-holders to owners, according to Smith and Warner (1979), is to transfer assets from the firm to its owners:

At the limit, if the firm sells all its assets and pays a liquidating dividend to the stockholders, the bondholders are left with worthless claims (p. 118).

In our sample, we have more than 22% of the firms which have a special legal status; that is, these firms are not legally distinct from their owners as opposed to incorporated firms. We will call them "unincorporated firms" in the rest of the paper. Any actions involving the transfer of an unincorporated firm's assets to its owners cannot be of any benefit to the owners because those assets can be seized by the lender (the firm and its owner are the same from a legal point of view).

In that context, we argue that the legal status of the firm plays an important role in the use of covenants; that is, the covenants that aim at preventing a firm from transferring its assets to the owner are of no benefit in the case of unincorporated firms. Therefore, the contractual agreements of such firms are expected to contain fewer covenants. More specifically, we hypothesize that:

H2: Debt contracts involving unincorporated firms are less likely to contain at least one covenant.

2.3 Firm's reputation and benefit of covenants

A firm with a good reputation can borrow at a lower cost (Begley and Chamberlain, 2005). This reputation develops over many years and we can argue that the longer the relationship with one lender, the more the firm has to lose by acting in an opportunistic way. If it does so, the cost of financing next time will be higher. In such a context and if the use of covenants is expensive, we should expect firms with a longer relationship to have fewer covenants because the cost of ending the advantage of a good reputation would act as a substitute to written covenants. More specifically, we hypothesize that:

H3: The presence of at least one covenant in a debt agreement is negatively related to the length of existing business relationship duration.

2.4 Use of accounting based covenant

We also argue that the use of accounting based covenants is more expensive than the use of other types of covenants. It is so because, instead of simply forbidding or making obligatory a particular behaviour, the use of accounting based covenants implies the production of reliable accounting data and the monitoring of these numbers on a regular basis.

Accordingly, we separated the covenants presented in Appendix 1 into two parts, calling those using financial data "accounting based covenants" and the others Non-Accounting based covenants "Non-ABC". For this reason, each hypothesis presented in section 2.1 to 2.3 will be tested using all covenants (for instance, H1), only accounting based covenants (H1a), and only non-accounting based covenants (H1b) as the explained variable. We do so in order to present empirical evidence on the relative costs of using accounting numbers in debt contracts.

3 Empirical evidence

3.1 The sample

All the observations in the sample are from small loans made to small businesses. The data were provided to us by a leading Canadian financial institution. Therefore, all 9,774 contractual agreements/firms under study are from the same lender and the firms are all Canadian.

The maximum amount of loan under study is $350,000[1]. The lender provided us with data from only this category of loan. Descriptive data are presented in Table 1 concerning the size of the loans under study. It is interesting to note that, in Canada, such small loans play an important economic role. For instance, loans of less than $250,000 represented more than 70 billion[2] in 2007.

[1] All monetary figures in this paper are in Canadian dollars.

[2] Industrie Canada, "Les petites et moyennes entreprises du Québec", website, p. 2; translated by the authors.

On average, the amount of total asset of the sampled firms is $288,455 while total liability is $179, 898. Only 0.2% of all observations are related to firms with total assets of more than half a million.

Table 1. Continuous variables – descriptive data

	Mean	Std dev.	Median	Min.	Max.	N.
Size of loans	118 427	82009	100 000	500	350 000	9 774
Duration of business relationship (in months)	120.78	96	101	0	747	9 441

Table 1 also shows that the length of the business relationship between the borrower and the lender is a little more than 10 years.

As discussed earlier, the owners of the unincorporated firms have unlimited personal liability concerning their firm's debt. Table 2 indicates that less than one quarter of our observations is from firms of this type (22%). The rest of the firms under study are incorporated.

Table 2. Legal status of firms under study

	N.	%
Incorporated firms	7 587	77.62
Unicorporated firms	2 187	22.38
Total :	9 774	100

The classification of the firms per industry is presented in Table 3. The "retail" and "miscellaneous" sectors, together, represent close to 50% of all observations. The percentage of use of all types of covenants (ABC and non-ABC) is above 16%. However, Table 3 shows that only 7.7% of all contractual agreements under study contain at least one accounting based covenant. The implication of this relatively low rate of use of accounting based covenant is discussed in the next section. Finally, Table 3 indicates little variability from one economic sector of activities to another in terms of using accounting based covenant.

Table 3. Classification of firms per industry and percentage of use of accounting based covenants (ABC)

	N.	%	% of use of ABC
Agriculture	631	6.46	5.2
Manufacturing	833	8.53	8.9
Construction	1646	16.84	7.8
Transportation and communication	1091	11.16	6.6
Retail and wholesale	2 696	27.58	7.8
Finance and professional services	871	8.91	9.1
Miscellaneous	2 006	20.52	7.9
Total :	9 774	100	7.7

The variables for which we present data in Tables 1 to 3 are the only variables we could link to the covenants in our study, given the data bases that were available to us. Accordingly, this study will not test variables such as firm's size, level of debt or growth, which have been found to be related to the use of covenants in past studies.

3.2 The covenants

Appendix 1 presents all the covenants used in our sample. It also classifies them according the sources of conflicts between debt-holders and shareholders discussed in Smith and Warner (1979).

16.27% of all contractual agreements contain at least one of the covenant presented in Appendix 1. On the other hand, only 7.71% of these contracts contain at least one ABC; that is, a covenant based on some data from the financial statements of the firm. Finally, 12.54% of our observations use at least one non-ABC (all other covenants).

This is a much smaller percentage of use than found in previous studies, especially for ABC. For instance, Bagnoli et al. (2006) found, in their sample involving private loans made to large family firms, the following percentages of use of specific ABCs:

- ABCs involving some liquidity ratios: 45.9%
- ABCs involving some debt ratios: 30.1%
- ABCs involving some measure of net worth: 15.9%

In our sample, the same kind of covenants are used to a much lesser extent (respectively, less than 4% for liquidity ratios, 2% for debt ratios and 2% for measures of net worth). In addition, our study bears on private loans which are supposed to contain more covenants than public ones. It is, therefore, interesting to note that, previous studies of public debt issued by large firms find a higher percentage of use of accounting based covenants than what was found in our study (ex., Begley and Friedman, 2004). We consider this as additional evidence supporting our first hypothesis; that is, smaller loans will use covenants to a lesser extent.

In this context, we argue that the covenants presented in Appendix 1 are the most cost efficient available because they are used in relation to extremely small loans.

3.3 Univariate tests of H1

The results of the univariate analysis concerning hypothesis 1 is presented in Table 4. On average, the amount of the loan of those contracts containing at least one covenant is $140,812. The amount of the loan related to the contracts with no covenant at all is, on average, much smaller: $114,078. The difference of means is significant at Δp probability level. Therefore, we conclude that, as hypothesized, expensive covenants tend to be used with larger loans where their use, other things being equal, provides more benefits.

Table 4. H1 use of covenants vs amount of loan

Covenant (none or at least one)	N.	Mean (amount of loan)	std. Dev. (amount of loan)
0 covenant	8 184	114 078.2	80 760
At least one covenant	1 590	140 812.8	84 727
Total :	9 774	118 427.3	
T = 11.98; P. (two tails) = 0.0000			

We also look more specifically at the use of ABC in our sample. If we assume that these covenants are more expensive because they involve the need to produce and monitor financial data, we should expect a more important difference between means while testing only for contracts with ABC. Tables 5 and 6 present the univariate tests of the use of ABC (a contract with at least one ABC) and the use of all other covenants (a contract with at least one non-ABC). As expected, the difference in means between the amount of loans is much bigger when we test for ABC alone ($43,418) than when we do for all other covenants ($26,735). However, in both cases, the difference in means (amount of loan) is significant and in the right direction; that is, the amounts of loan for those contracts with at least one covenant (ABC or non-ABC) are larger on average.

Table 5. H1a use of accounting based covenants (ABC) vs amount of loan

ABC (none or at least one)	N.	Mean (amount of loan)	std. Dev. (amount of loan)
0 ABC	9 020	115 077.9	80 958
At least one ABC	754	158 495.3	83 932
Total :	9 774	118 427.3	
T = 14.11; P. (two tails) = 0.0000			

Table 6. H1b use of non-accounting based covenants (non-ABC) vs amount of loan

non-ABC (none or at least one)	N.	Mean (amount of loan)	std. Dev. (amount of loan)
0 ABC	8 548	115 623.3	81 339
At least one none-ABC	1 226	137 977.2	84 008
Total :	9 774	118 427.3	
T = 11.98; P. (two tails) = 0.0000			

3.4 Univariate tests of H2

Table 7 presents the results of the univariate analysis of the relationship between the legal status of the firm and the use of covenants. As hypothesized, we find that the percentage of contracts with unincorporated firms having at least one covenant (12%) is much lower than with incorporated firms (17%). The level of significance of this test is at Δp probability level.

We think this result is due to the fact that some of the covenants (see appendix 1) aim at preventing wealth transfers from firms to their owners. In the case of unincorporated firms, the use of such covenant is not necessary because, from a legal point of view, the owners of unincorporated firms remain liable for any loan to their firms.

A more refined analysis shows that when we take into consideration only the covenants presented in

section A of appendix 1, covenants protecting against wealth distribution, the use of such covenants amongst unincorporated firms drops to 3% while it is 12% for incorporated firms. This evidence is in agreement with the arguments we propose to support H2.

Table 7. H2 legal status of firms vs % of contracts with at least one covenant

Legal status	N.	Mean *	std. Dev. *
Unincorporated firms	2 187	12.16	3.27
Incorporated firms	7 587	17.45	3.80
Total :	9 774	16.27	
T = 5.91; P. (two tails) = 0.0000			
* % of contracts with at least one covenant			

As for H1, if we assume that ABC are more costly than other covenants, we should expect a bigger difference when we test for difference between the proportion of contracts with ABC of unincorporated firms vs incorporated firms. Tables 8 and 9 show that it is the case. In the case of ABC the differences of means is 6% (see table 8: 3% vs 9%).

Table 8. H2a legal status of firms vs % of contracts with at least one ABC

Legal status	N.	Mean *	std. Dev. *
Unincorporated firms	2 187	2.97	1.70
Incorporated firms	7 587	9.08	2.87
Total :	9 774	7.71	
T = 9.48; P. (two tails) = 0.0000			
* % of contracts with at least one ABC			

On the other, when we make the same comparison for the presence of non-accounting based covenant, we find a much smaller difference; that is, 2% (see Table 9: 11% vs 13%).

Table 9. H2b legal status of firms vs % of contracts with at least one non-ABC

Legal status	N.	Mean *	std. Dev. *
Unincorporated firms	2 187	10.79	3.10
Incorporated firms	7 587	13.05	3.37
Total :	9 774	12.54	
T = 2.81; P. (two tails) = 0.005			
* % of contracts with at least one non-ABC			

3.5 Univariate tests of H3

Finally, on average, the firms with at least one covenant have a business relationship with the lender that has lasted for 98 months as opposed to 124 months for the firms without covenant. The difference is significant at Δp probability level (see Table 10). This result supports hypothesis 3; that is, the fear to lose the benefits from keeping a good reputation that developed over the year with the lenders acts as a motivation not to cheat and expensive covenants are used to a lesser extent in such cases.

Table 10. H3 use of covenants vs number of months since the beginning of business relationship

Covenant (none or at least one)	N.	Mean *	std. Dev. *
0 Covenant	7 970	124.85	97.12
At least one covenant	1 471	98.71	88.27
Total :	9 441	120.78	
T = 9.62; P. (two tails) = 0.0000			
*Number of months since the beginning of business relationship			

Tables 11 and 12 show that the difference in the length of the business relationship is more important for non-accounting based covenants; that is, 6% for ABC (table 11) and 10% for non-ABC (table 12).

Table 11. H3a use of ABC vs number of months since the beginning of business relationship

Covenant (none or at least one)	N.	Mean *	std. Dev. *
0 ABC	8 731	121.98	96.8
At least one ABC	710	106.01	88.0
Total :	9 441	120.78	
T = 4.25; P. (two tails) = 0.0000			
*Number of months since the beginning of business relationship			

This evidence is contrary to our assumption that ABC are more expensive to use.

Table 12. H3a use of ABC vs number of months since the beginning of business relationship

Covenant (none or at least one)	N.	Mean *	std. Dev. *
0 ABC	7 970	124.27	96.9
At least one ABC	1 471	94.56	87.4
Total :	9 441	120.78	
T = 2.8; P. (two tails) = 0.0000			
*Number of months since the beginning of business relationship			

3.6 Multivariate analysis

Tables 13 to 15 show the results of our multivariate analysis. All 3 models have the same explanatory variables; that is, the size of debt, the legal status of the firms and the length of the business relationship duration. Model A presents the results concerning the use of covenants in general (see table 13).

Table 13. Explained variable - presence of at least one covenant (logit regression)

Logit estimates	Number of obs =		9 441	
	LR chi2(3) =		255.53	
	Prob.> chi2		0.0000	
Log likelihood = -3956.9353	Pseudo R2		0.0313	
Explanatory var. :	Coef.	Std. Err.	z	Prob.> z
Size of loan	3.622e-06	3.37e-07	10.75	0.000
Legal status of firm	0.338652	0.078129	4.33	0.000
Lenght of relationship	-0.003365	0.000341	-9.86	0.000
Constant	-2.049865	0.084153	-24.36	0.000

Models B and C present the results for the use of, respectively, accounting based covenants (see table 14) and non-accounting covenants (see table 15).

Table 14. explained variable - presence of at least one ABC (logit regression)

Logit estimates	Number of obs =		9 441	
	LR chi2(3) =		255.3	
	Prob.> chi2		0.0000	
Log likelihood = 2392.1204	Pseudo R2		0.0507	
Explanatory var. :	Coef.	Std. Err.	z	Prob.> z
Size of loan	5.16e-06	4.44e-07	11.62	0.000
Legal status of firm	1.017341	0.141084	7.21	0.000
Lenght of relationship	-0.002106	0.000453	-4.65	0.000
Constant	-3.840008	0.149912	-25.62	0.000

Table 15. Explained variable - presence of at least one non-ABC (logit regression)

Logit estimates	Number of obs =		9 441	
	LR chi2(3) =		182.34	
	Prob.> chi2		0.0000	
Log likelihood = 3333.0802	Pseudo R2		0.0266	
Explanatory var. :	Coef.	Std. Err.	z	Prob.> z
Size of loan	3.13e-06	3.77e-07	8.29	0.000
Legal status of firm	0.150565	0.084123	1.79	0.000
Lenght of relationship	-0.003878	0.000394	-9.84	0.000
Constant	-2.107812	0.090648	-23.25	0.000

All 3 models are significant at Δp probability level. In addition, each of the explanatory variables is significant in all three models at Δ*p* probability level. This is additional evidence in support of our 3 hypotheses.

4 Conclusions

All of our univariate and multivariate tests provide support for the stated hypotheses.

The study shows a positive relationship between debt size and use of covenants (H1). We argued that it is so because the use of covenants is costly and the benefit from using them rises with the size of the loan (larger loans have more potential for wealth transfers).

Our results also show that, when certain covenants offer less benefit, as it is the case for unincorporated firms, they are used to a lesser extent (H2). Again, we argue that this is evidence that the use of covenants is costly and, therefore, covenants are used only in situations where they can bring benefit above their cost.

Finally, in a situation where the cost of misbehaving is higher (longer term relationship with lender), we found that covenants are used to a lesser extent (H3). In this situation, we think that the benefit of a "good reputation" is high enough to prevent conflict, making the use of costly covenants less cost effective.

The results concerning hypotheses 1 and 2 also provide some evidence that the use of accounting based covenants may be more expensive than the use of non-accounting-based covenants.

Given that our study supports the idea that covenants are expensive to use, we think that, in general, those covenants presented in Appendix 1 maybe the most cost effective covenants available because they are used in a context where benefits cannot be high due to the small size of the loans involved in our study (maximum $350,000). In such a situation, covenants which are less cost effective can be easily replaced by setting a higher rate of interest on the loan in order to compensate for a lower expected rate of return due to a possible opportunistic behaviour of the debtor.

There are at least two important limitations to our study. First of all, all the contracts under study involve the same lender. This is a situation that may introduce a bias. For instance, this particular lender may have its own unique way of writing contracts. On the other hand, we can argue that the loan market in Canada is very competitive and involves a large number of small and large lenders. If this is true, a particular lender cannot impose covenants that are more constraining than those of other lenders. It would, however, be interesting to expand our study by studying the contracts from other lenders as well as contracts from other countries.

Another important limitation of the study is the fact that some variables known to affect the use of covenants in debt contracts are missing in the models presented in section 3.6. For instance, other studies have shown that firm characteristics, such as size or level of debt, are significantly related to the use of covenants (e.g., Begley and Friedman, 2004; Bagnoli et al., 2006). Unfortunately, these data were not available to us.

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Appendix A. Classification of covenants

We classified covenants according to the type of behaviour under constraint using Smith and Warner (1979) classification scheme.

Some covenants cannot be unequivocally classified under one single category. We tried to avoid this kind of situation. In the end, only 3 covenants appear in more than one category. They are marked with an *.

A. Covenants restricting dividend payment or other type of distribution of firm's assets

Smith and Warner (1979) suggests that the payment of dividend or similar actions can lead to wealth transfers from debt-holders to shareholders:

Dividend payment. If a firm issues bonds and bonds are priced assuming the firm will maintain its dividend policy, the value of the bonds is reduced by raising the dividend rate and financing the increase by reducing investment. At the limit, if the firm sells all its assets and pays a liquidating dividend to the stockholders, the bondholders are left with worthless claims (p. 118).

The following covenants aim at controlling for actions that will reduce the amount of assets available to debtholders whether it is through the dividend policy or other types of liquidating actions (e.g., payment of bonuses to owners, buying back of shares, etc.). :

Non-Accounting based covenants (Non-ABC) :

- Variable *vb23* : The borrower must obtain a written approbation from the lender before reimbursing certain amounts due to executives, shareholders or related entities … above a certain level … ;
- Variable *vb24* : The borrower must obtain a written approbation from the lender before paying dividends or bonuses, buying back shares, … above a certain level … ;
- Variable *vb25* : The borrower must obtain a written approbation from the lender before increasing the salaries of executives … above a certain level … ;
- Variable *vb32* : The borrower is committed to maintain its main operating bank account with the lender … .

Accounting based covenants (ABC) :

- Variables *vb05/vb12* : To maintain/reach a working capital ratio equal or superior to … ;
- Variables *vb06/vb13* : To maintain/reach an amount of working capital equal or superior to … ;
- Variables *vb07/vb14* *: To maintain/reach a debt ratio equal or inferior to … ;
- Variables *vb08/vb15* : To maintain/reach an amount of invested capital (debt or share) by owners equal or superior to … ;
- Variables *vb09/vb16* : To maintain/reach a minimum amount of net worth …. ;
- Variables *vb10/vb17* *: To maintain/reach a long term debt to net worth ratio equal or inferior to … ;
- Variables *vb11/vb18* *: : To maintain/reach a debt service coverage ratio equal or superior to … .

B. Covenants restricting the issuing of new debt

Smith et Warner (1979) argues that the issuing of new debt reduces the guaranty offered by the assets of the firm to the current lenders and, therefore, increases their risk :

Claim dilution. If the firm sells bonds and the bonds are priced assuming that no additional debt will be issued, the value of the bondholders' claims is reduced by issuing additional debt of the same or higher priority (p. 118).

The following covenants were classified as restricting the ability of the firm to dilute the guarantee offered to current debt-holders :

Non-Accounting based covenants (Non-ABC) :

- Covenant *vb26* : The borrower must obtain the permission from the lender before offering new guarantee or a caution to a third party;
- Covenant *vb30* : A joint engagement firm/owners relative to the covering of certain costs or certain deficits … .

Accounting based covenants (ABC) :

- Covenants *vb07/vb14* *: To maintain/reach a debt ratio equal or inferior to … ;
- Covenants *vb10/vb17* *: To maintain/reach a long term debt to net worth ratio equal or inferior to … ;
- Covenants *vb11/vb18* *: To maintain/reach a debt service coverage ratio equal or superior to … .

C. Covenants preventing asset substitution

According to Smith et Warner (1979), a firm can transfer wealth from debt-holders to owners by increasing the level of risk of its activities:

Asset substitution. If a firm sells bonds for the stated purpose of engaging in low variance projects and the bonds are valued at prices commensurate with that low risk, the value of the stockholders' equity rises and the bondholders' claim is reduced by substituting projects which increase the firm's variance rate (p. 118).

The following covenants were classified as restricting the ability of the firm to increase risk :

Non-Accounting based covenants (Non-ABC)

- Covenant *vb19* : the borrower must obtain a written permission before modifying the nature of its activities ;
- Covenant *vb20* : the borrower must obtain a written permission before making certain investment;
- Covenant *vb21* : the borrower must obtain a written permission before making any loan;
- Covenant *vb22* : the borrower must obtain a written permission before acquiring another business or merging;
- Covenant *vb27* : the borrower must obtain a written permission before making some capital expenditures above a certain amount … ;
- Covenant *vb33* : the borrower must respect certain environmental obligations … ;
- Covenant *vb34* : must respect all the conditions of a governmental insurance or guarantee program … ;
- Covenant *vb35* : must obtain an insurance policy containing certain clauses … ;
- Covenant *vb36* : must maintain a civil responsibility insurance of an amount superior to … ;
- Covenant *vb37* : must maintain a life insurance for … of a minimum amount of …. ;
- Covenant *vb38* : the borrowed funds must be used with certain restrictions … .

D. Covenant preventing underinvestment

A wealth transfer is possible when a firm does not undertake certain profitable activities because the generated benefit accrued to debt-holders; not owners :

Underinvestment. Myers, 1977, suggests that a substantial portion of the value of the firm is composed of intangible assets in the form of future investment opportunities. A firm with outstanding bonds can have incentives to reject projects which have a positive net present value if the benefit from accepting the projects accrues to the bondholers (p. 118).

Following our analysis, we could not find any non- accounting covenant linked to the underinvestment problem. However, we believe that a covenant forcing a firm to maintain/reach a debt service coverage ratio may oblige it to undertake cash-generating projects in order to respect this covenant even if the benefit of those projects accrue to debt-holders :

Accounting based covenants (ABC) :

- Covenants *vb11/vb18*[3]: To maintain/reach a debt service coverage ratio equal or superior to ... .

[3] ABC classified under more than one category