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IS THE CORPORATE SOLVENCY CONUNDRUM PRIMARILY AN BALKAN ISSUE OR A BROADER EUROPEAN CONTINENTAL MISUNDERSTANDING?[4]

As a consequence of the coronavirus outbreak, the corporate "(in)solvency" issue will probably be one of the most frequently discussed topics in the business and economics fields. We analysed the meaning of the term solvency and the solvency assessment methodology in the papers published in the journals indexed in SSCI from 01.01.2017 to 31.12.2019. We have found that the term "solvency" is inadequately used by the authors from Roman law countries, particularly by those who are from the East European countries. We have also found that the inadequate use of the solvency assessment methodology is conditioned by the scientific field of the researchers. The further the authors are from the legal and accounting fields, the more they are inclined to misuse the term (in)solvent and to introduce the solvency ratio. Finally, we explained the probable origin of this confusion.
Keywords: solvency; solvency ratio; solvency analysis; firm performance; semantics
JEL: M41; K22

1. Introduction

As it has been pointed out, "bankruptcy filings have historically tracked broad economic conditions, dropping during prosperous times and rising during recessions" (Wang, 2021; Wang, et al., 2020) Ayotte and Skeel (2020) worn that the prospects for small businesses are bleak and that thousands of consumers and businesses are going to default on their debts in

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the coming months. Therefore, it seems quite clear that the longer-term consequences of this pandemic will arise from mass business failures (Zhang, et al., 2020)

Along with the rise of bankruptcy, the interest of scholar in this topic is also increasing. From an economic and business perspective, the most important issue regarding bankruptcy and failure is the solvency assessment of the companies. Yet, there is a time lag between recessions, bankruptcy and business failures and the publication of scientific papers on this topic.

For example, the exploration of papers published with the subject of bankruptcy in the Web of Science Categories fields Business Finance, Business, Economics, Management, and Law in the period 2000-2007 reveals that 174 papers were published per year on average, but with a clear increasing interest in that topic. In the Year 2006, 231 papers were published, in 2007, when the Global Financial Crisis started with the sub-prime crisis in the US and became global very fast (Shahrokhi, 2011, p. 193), 248 papers were published. In the Year 2008, when the crisis had already gone global, 308 papers were published. During the following crisis years, 374 papers were published in 2009, and 355 papers were published in 2010. The after crisis period brings more interest in bankruptcy subject, 394 papers were published in 2011, 400 papers in 2012, 454 papers in 2013, 491 papers in 2014, 639 papers in 2015, 683 papers in 2016, 702 papers in 2017, 737 papers in 2018, 769 papers in 2019 and 797 papers in 2020. It is therefore evident that there is a lag of several years between the end of a period of crisis and a considerable increase in the number of articles published on the subject of bankruptcy. This could be for several reasons, some of which are based on the specificity of the bankruptcy analysis, while others are based on the time taken to complete the publication process in a scientific journal.

The initial coronavirus outbreak was reported in December 2019 and COVID-19 had been declared a global health emergency (Wu, et al., 2020), while the global pandemic was declared on March 11, 2020. (Ali, 2020), Keeping in mind that the crisis caused by COVID-19 is not even to its end, it could be expected a new wave of scholarly interest in this topic in the following years. The growing interest in bankruptcy is clear when the editorial material of the journals indexed in WoS is looked at. Looking at this criterion, the greatest interest in bankruptcy from the period 2000 to today was in 2009, 2018 and 2020. While 1 editorial material was published in 2010, 12 editorial material was published in the mentioned years. In 2019, 6 editorial material on bankruptcy was published. Given that the COVID crisis is global, it is expected that the discussion about the company's (in)solvency will intensify in the coming years around the globe.

However, there is a widespread misunderstanding about the real meaning of corporate insolvency, i.e. corporate solvency.

Despite the fact that accounting has broadly been seen as the language of business, one of the key accounting terms is used with a different meaning, and it seems that there is no awareness of that. Namely, the term "solvency" is a basic term of corporate law, accounting, and corporate finance. Solvency has been legally defined by various laws, but also by the accounting professional regulation, known as the financial reporting standards.

2. What (In)Solvency Means?

The legal regulations, as well the accounting professional regulations, define the term solvency in a clear and unambiguous way.

But, while the accounting legislation defines what solvency means, the business legislation defines what insolvency means. Furthermore, in the Anglo-Saxon states, the law relating to (in)solvency matters is referred to as "Insolvency Law".

This is not surprising. While the accounting and auditor profession should assess a company's solvency in order to realise the fulfilment of the going concern principle, the business legislation should prescribe when insolvency occurs and what insolvency imply.

According to the accounting legislation, solvency is defined as the "availability of cash over the longer term to meet financial commitments as they fall due" (IASC, Conceptual Framework, 1989, par. 16). Every certified public accountant should be familiar with that.

Legal regulations define solvency indirectly by defining its opposite term – insolvency. In legal texts, the term „insolvency" always means the state of being unable to pay debts as they come due. The consequence of being insolvent is to going into bankruptcy. So, the company is considered as insolvent in the case of (a) illiquidity (the period of illiquidity is different in different countries, and (b) future illiquidity (the assumption is that the illiquidity will occur if the liabilities exceed the value of assets). This is the case at the international level as well. (See: United Nations Commission on International Trade Law, UNCITRAL, Legislative Guide on Insolvency Law, United Nations New York, 2005). Numerous respectable dictionaries define solvency in the same manner (Pavlović, Milačić, 2013).

It is obvious that the accounting legislation and the insolvency laws mean by "solvency" the same but speak from a different point of view. Because "availability of cash over the longer term to meet financial commitments as they fall due" as solvency is defined by IASC (1989), means that the entity will be "unable to pay debts as they come due", as the legal texts defined the corporate insolvency.

Unlike accounting legislation which does not precisely describe when a company is not considered solvent, insolvency law describes precisely when the insolvency occurred, i.e. the number of days of not meeting debts signifying insolvency.

But neither accounting legislation, nor insolvency legislation describes how to assess a company's ability to have enough cash over the long term to cover its debts. This task is entrusted to the profession of financial analyst.

The financial analysts assess solvency for various purposes, as: loan approval, investments decisions or trade credit arrangement. Whatever is the purpose, the financial analysts have the goal to assess will the company be able to "pay debts as they come due", which is possible only if the company has sufficient disposable cash for meeting financial commitments when they fall due.

The accounting regulations prescribe the assessment of solvency in order to ensure compliance with the principle of going concern. But under the going concern principle, the assumption that the entity will continue to exist for the "foreseeable future" effectively means that the entity will not be required to cease operations or liquidate assets or deposit its balance sheet for the next twelve months (Pavlović, Knežević, 2018). In the Anglo-Saxon literature, that is sometimes called „technical solvency“ which is treated as a special subclass of solvency (Walter, 1957).

While from the insolvency law perspective, as well as from the accounting legislative perspective, the assessment of solvency occurs only when a company is already facing a liquidity problem, or when a company has suffered significant losses, the financial analyst may assess solvency even if there is not yet a sign of insolvency.

Due to the fact that insolvency caused by illiquidity is obvious, that is, it does not need to be assessed, a financial analysis is needed only to assess future illiquidity. The complexity of the contemporary business world makes the solvency analysis more and more complex, and due to the coronavirus outbreak, the financial analysis is becoming more and more complex on a global level.

As Simkovic (2017, p. 310) pointed out, financial analysis play a crucial role in bankruptcy, and “over the course of the 20th century, methods of financial analysis in bankruptcy have shifted from earnings multiples to discounted cashflow (DCF) and recently to market-based approaches such as auctions, market pricing of equity and unsecured debt, and credit spreads.” As Simkovic (2017, p. 300) pointed out, the novel methods of financial analysis have traditionally been developed first by financial economists, mathematicians, professional accountants, risk managers, or investors, but gradually, attorneys and financial experts incorporate the new methods into their legal briefs and expert reports, typically minimising risk by simultaneously presenting analyses using older, more established methods (Simkovic, 2017, p. 300). Scholars have also introduced a large number of business insolvency forecasting models based on various approaches, but each of them has certain limitations that should be understood (Grice, Dugan, 2001).

Anyhow, the solvency analysis must be based basically founded on a firm’s profitability, as well as the firm’s working capital position. The Anglo-Saxon textbook authors in the accounting field do not generally use the term solvency. Instead, they rather use the term “long term liquidity” (Damodoran, 2005; Alexander, Nobes, 2004; Weil, Schipper, 2006). Yet, some, such as Horngren, Sundem and Elliott (2002), use the syntagma “long term solvency“, which is defined as the ability of the organisation to generate enough cash to meet the long term debts when they come due.

The small number of Anglo-Saxon authors who use the term solvency, define it in accordance with the definition of that term in legal texts and professional accounting regulations. As they do not use the term solvency, they neither use the terms “solvency analysis”, “solvency assessment”, or “solvency ratio.”

It does not matter if the syntagma’ solvency analysis’ is used or not, the solvency in all of the cases is assessed using the indicators of coverage and debt indicator with the purpose of seeing whether the long term debts can be met by cash generated in the normal course of business. In this case, the solvency definition is in line with the indicators used to assess it. It seems logical that a company that is able to cover interest expense with the operational earnings generated in the business and if the same company has lower leverage, as a consequence it will be exposed to a lower risk of not generating enough cash to pay its debts on time. Although, solvency indicators used in the analysis are not uniform. Many Anglo-Saxon authors measure the ability to pay long term debts using interest coverage ratios and debt ratios. In the context of interest coverage ratio, we find out that two or three different forms exist simultaneously. Some authors (Horngren, et al., 2002; Alehander, Nobes, 2004; Palepu, et al., 2007; Peterson, Fabozzi, 2006) use EBIT/Interest expense formula of this ratio, while others like Damodoran (2005) uses EBIT/ interest expense + principal. In line with this perspective, Higgins (2007) points out that both coverage ratios should be used while Brealy et al. (2003) add an additional coverage ratio in which EBITDA is used in the numerator while interest expense is in the nominator.

Almost all Anglo-Saxon authors use the traditional debt ratios based on financial statement items, while others such as Higgins (2007, p. 396) introduce debt ratios based on the market value of capital and market value of debts.

When small semantic differences have been acknowledged in university textbooks of Anglo-Saxon authors, it seems that there is no end of a diversity of definitions that can be found in the textbooks and papers written by Continental-European authors. Between other, we can find that according to some Continental-European scholars, solvency means "a firm characteristic", "an indicator of credit capacity", "a variable for the economic value calculation", or an "objective of business operation".

In France and in other countries exposed to French scientific impact, solvency has been often defined as a situation in which the value of the assets exceeds liabilities without taking into consideration whether the company pays its debts or not. This perspective is common to *Vernimmen* and his associates (2010), who is considered to be one of the most distinguished authors in France. Vernimmen and associates define solvency (*la solvabilité*) as follows: 'the ability of a company to meet the debts in the event of bankruptcy, and this situation considers termination of a business venture and asset sales' (Vernimmen, et al., 2010, p. 59). This perspective has been widespread in France in the scientific and academic literature and in the websites from the area of finance and accounting (http://www.lafinancepourtous.com/; http://www.trader-finance.fr). This perspective is used by many other Continental European authors from less developed countries and the accounting profession (Rodić, 1997; Tepšić, 1988). Hence, the company is considered insolvent only if the total owner's capital is lost and if liabilities exceed the assets of that company. From this, it can be derived that non-liquid companies can be considered solvent, only if the liquidity value of assets exceeds liabilities.

In the Francophone literature, different approaches to the same subject can be found. For example, in the Mining Faculty in Paris (*l'Ecole des Mines de Paris*), students are taught that solvency (*la solvabilité)* 'is the ability to meet current commitments if the company needs to terminate the business and its operations immediately' (*Cours de comptabilité générale*, www.mines-paristech.fr). According to this approach, the solvency concept considers the ability of a company to meet current debts and the following conclusion can be drawn: concepts of liquidity and solvency are almost treated as synonyms in this perspective. Although, the authors state that liquidity is the ability to meet current debts in the normal course of business, while solvency means: to meet the debts only if current operations are suddenly terminated.

The majority of Continental European authors who have adopted the previous attitude of what solvency means do not in general use coverage ratios at all. Instead, they introduce a "solvency ratio", which is, in fact, a leverage ratio, or few solvency ratios, but all calculated with the balance sheet items.

3. The Solvency Conundrum

However, outside the legal realm, there has been a huge misunderstanding about the meaning of solvency, particularly about the meaning and purpose of solvency analysis. Namely, even it seems to be quite logical that solvency analysis should be designed to assess the company's solvency, the logic has been lost somewhere during the centuries of solvency assessment. A strong belief that the future illiquidity will occur is reasonable in the case that a company has lost its capital, i.e. if the company is overdue. This is why the legislators consider a company as insolvent not only if it is not able to meet liabilities that came due (the period of illiquidity is different in different countries), but also if the liabilities exceed the value of the assets, ie if the company is overdue. But, assessing future illiquidity in the case that the company is not overdue, which indicates insolvency as well, is a very difficult task, and this task is entrusted to financial analysts. And from this point, the confusion over the meaning of solvency starts.

Apart from the problem that financial analysts started to define the term solvency from their one role in the solvency assessment, it seems that the problem has particularly derived from the inability to assess a company's future illiquidity in the past. Namely, when it is known that the term solvency was in use in the 13th century (Pavlović, Milačić, 2013) what is long before that the income statement appeared, it is obvious that solvency could not be assessed using a methodology based on the profitability analysis, which is the ground block of today's solvency analysis. The appearance of the income statement, which came much later, was not of much help in the time because the results shown in the successive income statements were not comparable for centuries, i.e. until the adoption of the dynamic theory's postulates. Namely, the comparability of the financial results presented in the successive income statements is a presumption of the profitability analysis.

Due to the impossibility of applying a solvency analysis based on the profitability analysis, the financial analysts at the time could only look at the relationship on assets to liabilities. The same conclusion about the ability to meet liabilities could be brought looking at the relationship on assets to equity, or liabilities to equity. So, these ratios appeared at the time as the only possibility to assess future illiquidity to assess a firm's solvency. In that manner, the leverage ratio has been proclaimed as the solvency ratio with its different forms. Declaring the leverage ratio as the solvency ratio could be justified at the time also by the fact that when the term solvency appeared, the net worth (owners' capital) was considered to be a guarantee of paying debts to creditors. Unlike today, at the time when the term solvency appeared, not only the majority of assets presented in the balance sheet could be easily sold, but they could be sold ate the values presented in the balance sheet (Pavlović, Milačić, 2013).

Knowing that the legal institute of bankruptcy appeared in the form of personal execution, which means that the debtor was responsible for the fulfilment of obligations, while The Law of the Twelve Tables on which the Roman law has been established, allowed the praetor to condemn the debtor not only as a slave of the creditor until he paid off the debt with his work, but the debtor could also be kept chained and bound and be severely punished (Pavlović, Milačić, 2013), the attitude that solvency means that the assets exceed liabilities could be justified. It is well known that Roman law influenced significantly the EU legal system (Vujović, 2017), and it seems that the solvency conundrum is related to Roman law heritage.

So, as Vernimmen and associates (2010, p. 174) rightly pointed out, the solvency ratio as a measure of the coverage of liabilities by selling assets "represents a legacy of the past and the proof of inertia in finance." But it seems that the "solvency ratio", which was established long ago, has led to a misunderstanding of the term solvency itself today. So today, we have a huge confusion, not only on how the solvency of companies should be assessed, but also on what solvency itself means.

It appears that the leverage ratio which has been mistakenly referred to as the "solvency ratio", which was supposed to help assess solvency, determined the meaning of solvency wrongly assuming that the relation between the assets and liabilities could show the entity's solvency.

4. Research Questions

In this paper, we will try to answer on four following questions:

- Is the inadequate use of the term "solvency" in scientific papers conditioned by the scientific field of the researchers?
- Is the inadequate use of the solvency assessment methodology in scientific papers conditioned by the scientific field of the researchers?
- Is the term "solvency" in scientific articles primarily inadequately used by authors from Roman law countries?
- Is the solvency assessment methodology in scientific articles primarily inadequately used by authors from Roman law countries?
- Is the term "solvency" in scientific articles primarily inadequately used by authors from former socialist countries of Eastern Europe?
- Is the solvency assessment methodology in scientific articles primarily inadequately used by authors from former socialist countries of Eastern Europe?

5. Data and Methodology of a Research

We analysed the meaning of the term solvency and the solvency assessment in the papers published in the journals with impact factor indexed in the Web of Science (WoS), where solvency is mentioned in the title or paper's abstract (topic). We explored papers in the following Web of Science Categories fields: Business Finance, Business, Economics, Management, and Law. We covered the period from 01.01.2017 to 31.12.2019. It should be noticed that some articles are categorised in a few categories, so we gave the total result is different from the sum of the results per category. We did not analyse the use of the term solvency in the article dealing with financial institutions and insurance companies. In these articles, solvency is always used in the meaning of Basel III and Solvency II regulations. We did not analyse the articles dealing with personal solvency, sovereign solvency and fiscal solvency and the articles where solvency is not used in economic-financial meaning as well. If the paper was written by a few authors, if one of them is from Common law countries, we do not consider the article to be written by authors of a country of Roman law, even if one of them is from a country under Roman law, except if the coauthor is not from the field of Law, Business Finance, Business, Economy or Management. The criteria for recognition if the author is from a Common low country or a Roman Law country is the location of the university (organisation) in which the author is employed.

6. Results

6.1. "Law" category

In the WoS category "Law", five papers mentioned the term (in)solvency, and in all papers, this term was used in bankruptcy and failure context without providing an assessment methodology.

Table 1

Definition and solvency assessment in papers published in the "Law" category

Mentioned in bankruptcy and failure context	5 papers	Ringe, 2018; Fox, 2017; Böckli, et al, 2017; Simkovic, 2017; Park, & Samples, 2017.	Solvency assessment	Used in bankruptcy and failure context	5 papers	Without providing assessment methodology	Ringe, 2018; Fox, 2017; Böckli, et al, 2017; Simkovic, 2017; Park, & Samples, 2017.

All papers are written by authors from Common law countries (UK and SAD), except one paper written by a few authors, whereby three of them are from Common law countries (UK and SAD). No papers provide a solvency assessment methodology.

6.2. "Business Finance" category

In the WoS category "Business Finance", four papers mentioned the term (in)solvency.

In the category "Business Finance", solvency is not mentioned in the context of bankruptcy or failure in just one paper, while in other papers, solvency is mentioned appropriately, or the meaning cannot be reached. The paper where solvency is not mentioned in the context of bankruptcy or failure is written by authors from a Roman law country (Spain). The paper where the meaning of solvency cannot be reached is written by authors from a Common law county (USA).

Table 2

Definition, i.e. the meaning of corporate solvency in papers published in the "Business Finance" category

Definition, i.e. meaning of corporate solvency	2 papers	Mentioned in bankruptcy and failure context	Lamieri, Sangalli, 2019; Mselmi, et al, 2017.
	1 paper	Solvency is not mentioned in the bankruptcy and failure context	Arias, et al., 2017.
	1 paper	The meaning of solvency cannot be reached	Baig, Winters, 2018.

Table 3

Solvency assessment in papers published in the "Business Finance" category

2 papers	Mentioned in bankruptcy and failure context	1 paper	Insolvency prediction models	Lamieri, Sangalli, 2018.
		1 paper	Not specified solvency ratio	Mselmi, et al., 2017.
1 paper	Not mentioned in bankruptcy and failure context	1 paper	Not specified solvency ratio	Arias, et al., 2017.
1 paper	The meaning of solvency cannot be reached	1 paper	Do not provide assessment methodology	Baig, Winters, 2018.

Despite two papers mentioning solvency in the context of bankruptcy or failure, just one paper uses a methodology for assessing solvency in the context of bankruptcy or failure, while the second paper introduces the "solvency ratio" for assessing solvency. So, two papers mention the "solvency ratio" instead of a solvency assessment methodology.

The papers using the solvency ratio are written by authors from Roman law countries (France, Tunisia, and Spain). The paper, which does not provide assessment methodology (where the meaning of solvency cannot be reached), is written by authors from a Common law county (USA), and one paper written by authors from Roman law countries (France and Tunisia) provide a real solvency assessment methodology.

6.3. "Business" category

In the WoS category "Business", ten papers mentioned the term (in)solvency.

In the category "Business", solvency is mentioned in the context of bankruptcy or failure in four papers (40%), not mentioned in the context of bankruptcy or failure either in three papers (30%), while in three papers, the meaning cannot be reached.

All the papers where solvency is not mentioned in the context of bankruptcy or failure are written by authors from a Roman law country (Romania, Serbia, and Croatia). Half of the papers, where solvency is mentioned in the context of bankruptcy or failure are written by authors, or with the participation of authors from a Common Law country (USA, UK), while the other half is written by authors from Roman law countries (Spain, Czech Republic, Slovakia, Lithuania) The paper where the meaning of solvency cannot be reached is written by authors from a Common law county (USA), as well as by authors from Roman law country (Spain), or authors from a legal system primarily based on the Roman law (China).

Table 4

Definition, ie meaning of corporate solvency in papers in the "Business" category

<table>
<tr><td>4 papers</td><td colspan="2">Mentioned in bankruptcy and failure context</td><td>Josefy, et al, 2017; Böckli, et al., 2017; Rodríguez-Rad, et al., 2017; Kljucnikov, et al., 2018.</td></tr>
<tr><td rowspan="3">3 papers</td><td rowspan="3">Not mentioned in bankruptcy and failure context</td><td>Used in 1 paper as an objective of business operation</td><td>Šaponja, et al., 2017.</td></tr>
<tr><td>Used in 1 paper as a firm characteristic</td><td>Vintilă, et al., 2018.</td></tr>
<tr><td>Used in 1 paper as an indicator of credit capacity</td><td>Novokmet, Rogošić, 2017.</td></tr>
<tr><td>3 papers</td><td colspan="2">The meaning of solvency cannot be reached</td><td>García-Gallego, Chamorro Mera, 2017; Elmore, 2018; Zhang, et al., 2018.</td></tr>
</table>

Table 5

Solvency assessment in papers published in the "Business" category

<table>
<tr><td rowspan="2">4 papers</td><td rowspan="2">Mentioned in bankruptcy and failure context</td><td colspan="2">Without providing assessment methodology</td><td>Josefy, et al., 2017; Böckli, et al., 2017; Kljucnikov, et al., 2018.</td></tr>
<tr><td colspan="2">Insolvency prediction models</td><td>Rodríguez-Rad, et al., 2017.</td></tr>
<tr><td rowspan="4">4 papers</td><td rowspan="4">Not mentioned in bankruptcy and failure context</td><td rowspan="2">Solvency ratio (based on financial's statement items)</td><td>Capital (equity) to total assets</td><td>Novokmet, Rogošić, 2017.</td></tr>
<tr><td>Total liabilities to total assets</td><td>Zhang, et al., 2018.</td></tr>
<tr><td>Solvency ratios (based on balance sheet items)</td><td>Total assets/Total equity; Total liabilities/Total assets; current liquidity and Indebtedness</td><td>Vintilă, et al., 2018.</td></tr>
<tr><td colspan="2">Do not provide ratio</td><td>Šaponja, et al., 2017.</td></tr>
<tr><td>2 papers</td><td>The meaning of solvency cannot be reached</td><td colspan="2">Do not provide assessment methodology</td><td>García-Gallego, Chamorro Mera, 2017; Elmore, 2018.</td></tr>
</table>

All the papers using the solvency ratio or a set of "solvency ratios" based on balance sheet items, which means without including any profitability ratio in the solvency assessment are written by authors from Roman law countries (Romania, Serbia, and Croatia), or authors from a legal system primarily based on the Roman law (China). So no author from a Common Law country has used solvency ratio(s) for assessing solvency, while some authors from a Roman Law country (Spain) have used a methodology design for solvency assessing. Authors from both legal systems did not provide in their papers a solvency assessment methodology.

6.4. "Management" category

In the WoS category "Management", five papers mentioned the term (in)solvency.

Table 6

Definition, ie meaning of corporate solvency in papers in the "Management" category

Mentioned in bankruptcy and failure context (3 papers)		Mare, et al., 2017; Josefy, et al., 2017; Klepáč, Hampel, 2018.
Not mentioned in bankruptcy and failure context (2 papers)	As an indicator of credit capacity	Novokmet, Rogošić, 2017.
	As variable used for the economic value calculation	Gómez-Navarro, et al., 2018.

All the papers where solvency is not mentioned in the context of bankruptcy or failure are written by authors from a Roman law country (Croatia and Spain&Germany). The authors from Common Law countries (UK, USA) mentioned "solvency" in the context of bankruptcy and failure, as well as some authors from a Roman law country (Czech Republic).

Table 7

Solvency assessment in papers published in the "Management" category

Used in bankruptcy and failure context	Insolvency prediction model (z-score)		Mare, et al., 2017.
	Not explained		Josefy, et al., 2017.
	Solvency ratio	(Net Income + Depreciation)/ Liabilities	Klepáč, Hampel, 2018.
Not mentioned in bankruptcy and failure	Solvency ratio	Capital (equity) to total assets	Novokmet, Rogošić, 2017.
		Not explained	Gómez-Navarro, et al., 2018.

All the papers using the solvency ratio are written by authors from Roman law countries (Czech Republic, Croatia and Spain & Germany). The authors that used solvency in bankruptcy and failure context introduce a solvency ratio based which includes items from the income statement and balance sheet.

All the authors from Common Law countries have used a methodology design for solvency assessing (UK) or did not provide in their papers a solvency assessment methodology (UK & USA).

6.5. "Economy" category

In the WoS category "Economy", fifteen papers mentioned the term (in)solvency.

All the papers where solvency is not mentioned in the context of bankruptcy or failure are written by authors from a Roman law country (Serbia, Romania, Spain, North Macedonia, and Croatia). The authors from Common Law countries mentioned "solvency" in the context of bankruptcy and failure (USA, UK), as well as some authors from Roman law countries (Croatia, Austria and Czech Republic&Slovakia&Lithuania). One paper written by authors from a Roman law country (Chile) defined solvency "as the ability of a company to cover its long-term obligations", which is close to the bankruptcy and failure meaning but not totally the same. The papers where the meaning of solvency cannot be reached are written by authors from a Common law county (USA).

Table 8

Definition, ie meaning of corporate solvency in papers in the “Economy” category

<table>
<tr><td colspan="2">Mentioned in bankruptcy and failure context (7 papers)</td><td>Šverko Grdić, et al, 2017; Kapeller, et al, 2017; Gorton, 2018; Kljucnikov, et al, 2018; Klepáč, Hampel, 2018; le Van, et al, 2019; Bardoscia, et al, 2019.</td></tr>
<tr><td colspan="2">Mention as the ability of a company to cover its long-term obligations (1 paper)</td><td>Caldentey, et al, 2019.</td></tr>
<tr><td rowspan="5">Not mentioned in bankruptcy and failure context (6 papers)</td><td>Used as an objective of business operation</td><td>Šaponja, et al, 2017.</td></tr>
<tr><td>Used as a firm characteristic</td><td>Vintilă, et al, 2018.</td></tr>
<tr><td>Proportion of Equity to Total liabilities</td><td>Fernández-Guadaño, López-Millán, 2019.</td></tr>
<tr><td>The share of capital in total assets</td><td>Kjosevski, et al, 2019.</td></tr>
<tr><td>Not specified</td><td>Brlečić Valčić, Bagarić, 2017; Dimitrić, et al, 2019.</td></tr>
<tr><td colspan="2">The meaning of solvency cannot be reached (1 paper)</td><td>Frimpong, et al, 2019.</td></tr>
</table>

Table 9

Solvency assessment in papers published in the “Economy” category

<table>
<tr><td rowspan="3">Mentioned in bankruptcy and failure context (7 papers)</td><td colspan="3">Without providing assessment methodology (5 papers)</td><td>Bardoscia, et al, 2019; le Van, et al, 2019; Gorton, 2018; Kljucnikov, et al, 2018; Kapeller, et al, 2017.</td></tr>
<tr><td colspan="3">Insolvency prediction models (1 paper)</td><td>Šverko Grdić, et al, 2017</td></tr>
<tr><td>Solvency ratio (1 paper)</td><td>Solvency ratio based on income statement’s and balance sheet items</td><td>(Net Income + Depreciation)/ Liabilities</td><td>Klepáč, Hampel, 2018</td></tr>
<tr><td>Mention as the ability of a company to cover its long-term obligations</td><td>Solvency ratios (1 paper)</td><td>Solvency ratios based on income statement’s and balance sheet items)</td><td>Interest coverage ratio; Debt-to-equity ratio; Short-term-debt-to-total-debt ratio</td><td>Caldentey, et al, 2019.</td></tr>
<tr><td rowspan="5">Not mentioned in bankruptcy and failure context (6 papers)</td><td rowspan="4">Solvency ratio(s) (6 papers)</td><td rowspan="2">Solvency ratio based on balance sheet items</td><td>Equity to total assets</td><td>Dimitrić, et al, 2019; Kjosevski, 2018</td></tr>
<tr><td>Equity to total liabilities</td><td>Fernández-Guadaño, López-Millán, 2019.</td></tr>
<tr><td>Solvency ratios based on balance sheet items</td><td>Total assets/Total equity; Total liabilities/Total assets; current liquidity and Indebtedness</td><td>Vintilă, et al, 2018.</td></tr>
<tr><td colspan="2">Do not provide ratio</td><td>Šaponja, et al, 2017</td></tr>
<tr><td colspan="3">Do not provide assessment methodology</td><td>Brlečić Valčić, Bagarić, 2017.</td></tr>
<tr><td>The meaning cannot be reached</td><td colspan="3">Do not provide assessment methodology</td><td>Frimpong, et al, 2019</td></tr>
</table>

All the papers using the solvency ratio(s) are written by authors from Roman law countries (Czech Republic, Chile, Croatia, North Macedonia, Spain, Romania, and Serbia). All the authors from Common Law countries did not provide in their papers a solvency assessment methodology (USA, UK), as some authors from Roman Law countries (Austria, Czech Republic, Slovakia, Lithuania).

6.6. All observed categories

The overall analysis consists of 32 papers. Due to the fact that some articles are categorised in a few categories, the total result is different from the sum of the results per category.

Table 10

Definition, ie meaning of corporate solvency in overall papers

Mentioned in bankruptcy and failure context (17 papers)		Bardoscia, et al, 2019; le Van, et al, 2019; Lamieri, Sangalli, 2019; Ringe, 2018; Kljucnikov, et al, 2018; Gorton, 2018; Klepáč, Hampel, 2018; Josefy, et al, 2017; Böckli, et al, 2017; Rodríguez-Rad, et al, 2017; Mselmi, et al, 2017; Mare, et al, 2017; Šverko Grdić, et al, 2017; Kapeller, et al, 2017; Fox, 2017; Simkovic, 2017; Park, Samples, 2017.
Mention as the ability of a company to cover its long-term obligations (1 paper)		Caldentey, et al, 2019.
Not mentioned in bankruptcy and failure context (9 papers)	Used as an objective of business operation	Šaponja, et al, 2017.
	Used as a firm characteristic	Vintilă, et al, 2018.
	Used as an indicator of credit capacity	Novokmet, Rogošić, 2017.
	Used as a variable for the economic value calculation	Gómez-Navarro, et al, 2018.
	Explained as a proportion of Equity to Total liabilities	Fernández-Guadaño, López-Millán, 2019.
	Explained as the share of capital in total assets	Kjosevski, et al, 2019.
	Not specified	Arias, et al, 2017; Brlečić Valčić, Bagarić, 2018; Dimitrić, et al, 2019.
The meaning cannot be reached (5 papers)		García-Gallego, Chamorro Mera, 2017; Baig, Winters, 2018; Elmore, 2018; Zhang, et al, 2018; Frimpong, et al, 2019.

Table 11

Solvency assessment in papers published in overall papers

Mentioned in bankruptcy and failure context (17 papers)	Without providing assessment methodology (11 papers)			Bardoscia, et al, 2019; le Van, et al, 2019; Kljucnikov, et al, 2018; Ringe, 2018; Gorton, 2018; Kapeller, et al, 2017; Josefy, et al, 2017; Böckli, et al, 2017; Fox, 2017; Simkovic, 2017; Park, Samples, 2017.
	Insolvency prediction models (4 papers)			Lamieri, Sangalli, 2019; Rodríguez-Rad, et al, 2017; Mare, et al, 2017; Šverko Grdić, et al, 2017.
	Solvency ratio (2 papers)	(Net Income + Depreciation)/Liabilities		Klepáč, Hampel, 2018.
		Not specified solvency ratio		Mselmi, et al, 2017.
Mention as the ability of a company to cover its long-term obligations (1 paper)	Solvency ratios	Solvency ratios based on balance sheet's items	Interest coverage ratio; Debt-to-equity ratio; Short-term-debt-to-total-debt ratio	Caldentey, et al, 2019.

Not mentioned in bankruptcy and failure context (10 papers)	Solvency ratio (8 papers)	Solvency ratio (based on balance sheet's items) (5 papers)	Total liabilities to total assets	Zhang, et al, 2018.
			Equity to total assets	Dimitrić, et al, 2019; Kjosevski, 2018; Novokmet, Rogošić, 2017.
			Equity to total liabilities	Fernández-Guadaño, López-Millán, 2019.
		Not explained solvency ratio (3 papers)		Arias, et al., 2017; Šaponja, et al, 2017; Gómez-Navarro, et al., 2018.
	Solvency ratios (1 paper)	Solvency ratios based on balance sheet's and income statement's items	Total assets/Total equity; Total liabilities/Total assets; current liquidity and Indebtedness	Vintilă, et al, 2018.
	Do not provide assessment methodology			Brlečić Valčić, Bagarić, 2017.
The meaning cannot be reached (4 papers)	Do not provide assessment methodology			García-Gallego, Chamorro Mera, 2017; Baig, Winters, 2018; Elmore, 2018; Frimpong, et al, 2019.

Table 12

Definition, ie meaning of corporate solvency in by authors origin

Authors origin		Anglo Saxon authors (USA/UK)	Common-Law countries authors		
			Authors from "Old Europe"	Authors from former communist East -European countries	Authors from Non-European countries
Mentioned in bankruptcy and failure context (17 papers)		10	4	3	-
Mention as the ability of a company to cover its long-term obligations		-	-	-	1
Not mentioned in bankruptcy and failure context (10 papers)	Used as an objective of business operation	-	-	1	-
	Used as a firm characteristic	-	-	1	
	Used as an indicator of credit capacity	-	-	1	-
	Used as a variable for the economic value calculation	-	1	-	-
	Explained as a proportion of Equity to Total liabilities	-	1		-
	Explained as the share of capital in total assets	-	-	1	-
	Not specified	-	1	2	
The meaning of solvency cannot be reached – Do not provide assessment methodology (5 papers)		3	1	-	1

Table 13

Solvency assessment methodology by authors origin

Authors origin		Anglo Saxon authors (USA/UK)	Common Law contries authors		
			Authors from "Old Europe"	Authors from former communist East - European countries	Authors from Non-European countries
Mentioned in bankruptcy and failure context (17 papers)	Without providing assessment methodology (11 papers)	9	1	1	0
	Insolvency prediction models (4 papers)	1	2	1	-
	Solvency ratio (2 papers)	-	1	1	-
Mention as the ability of a company to cover its long-term obligations	Solvency ratios based on balance sheet's items	-	-	-	1
Not mentioned in bankruptcy and failure context (10 papers)	Solvency ratio (based on balance sheet's items) (5 papers)	-	1	3	1
	Solvency ratios based on balance sheet's and income statement's items	-	-	1	-
	Not explained solvency ratio	-	2	1	-
	Do not provide assessment methodology	-	-	1	-
The meaning of solvency cannot be reached - Do not provide assessment methodology (4 papers)		3	-	1	-

Table 14

Using solvency ratio(s) by authors origin

Authors origin	Anglo Saxon authors (USA/UK)	Common-Law countries authors		
		Authors from "Old Europe"	Authors from former communist East - European countries	Authors from Non-European countries
Papers where solvency ratio(s) is mentioned	-	3	8	2
In %	-	23%	62%	15%

7. Discussion

Our research confirms that the term (in)solvency is always appropriately used, i.e. in the bankruptcy and failure context, by authors from the scientific field "Law". Authors from the scientific field "Business Finance", who should be familiar with accounting terminology as well with bankruptcy and failure issues, in general, do not use the term (in)solvency and particularly do not use it in an inappropriate manner. Namely, just one paper in this category does not use the term in(solvency) in its legal meaning.

Authors in fields of science that do not necessarily imply a better knowledge of accounting terminology and bankruptcy and failure issues have generally used the term (in)solvency more frequently and have used it contrary to its legal meaning.

Results also show that Anglo-Saxon authors always appropriately used the term (in)solvency, i.e. in the bankruptcy and failure context, while authors from Roman law countries sometimes used it in an inappropriate manner. Among them, authors from former communist East-European countries used it inappropriately more frequently, particularly authors from the Balkan Peninsula, than the authors from Old Europe. This conclusion is particularly reinforced by the fact that authors from former communist East-European countries published, and particularly authors from the Balkan Peninsula, a small part of the total published papers in the observed scientific fields. So we can conclude that in total, very few papers from Roman law Old European countries inappropriately used the term (in)solvency.

Assessing solvency when solvency is seen as an economic variable used for economic value calculation or when solvency is seen just as one of a firm characteristic among other characteristics (productivity, efficiency, profitability, liquidity, etc.) cannot be justified. Scholars who use solvency in that manner obviously used solvency as a synonym for indebtedness. This point of view is quite common in accounting and finance textbooks, particularly among non-Anglo-Saxon authors. The result of this point of view is considering the leverage ratio as the solvency ratio. Considering solvency as a long term business objective cannot be justified as well. The objectives could be to: maximise/improve/enhance shareholders' returns/value; provide sustainable or risk-adjusted returns for shareholders; protect or enhance the interests of shareholders; provide long-term returns for shareholders; provide satisfactory returns for shareholders; and to manage for or in the interests of shareholders. (Ramsay, Sandonato, 2018, p. 108.) In some papers, scholars use the syntagma "long-term solvency". In our sample, in one paper this syntagma was used interchangeably with "financial solvency" and "solvency. (Fernández-Guadaño, López-Millán, 2019). It seems that this opinion of what solvency is a consequence of imprecise modification of the IASB's solvency definition. Namely, the "availability of cash over the longer term to meet financial commitments as they fall due" (IASC, Conceptual Framework 1989, par. 16) implies the availability of cash over the shorter period as well. As it could be seen, in its definition of solvency, the IASB included insolvency caused by illiquidity, because it does not mention long-term liabilities, but "availability of cash over longer term". Reducing solvency just on the ability to meet long-term obligations when they come due open the dilemma of whether illiquidity causes insolvency.

The results show that authors from the scientific field "Law" do not provide a solvency assessment methodology, contrary to the authors from other observed scientific fields. That was quite expected because the insolvency law defines criteria for insolvency but does not provide the methodology for assessing insolvency. Accounting professional regulation does not provide it either. In this domain, financial analysis plays a crucial role (Simkovic, 2017, p. 309).

Results also show that Anglo-Saxon authors did not use an inappropriate solvency assessment methodology. The solvency ratio or a set of solvency ratios based on balance sheet's items, which imply assessing solvency without considering the firm's profitability, is used the most frequently by authors wich published papers in the categories of "Business" and "Management", and particularly by authors from former communist East-European countries, mainly by authors from the Balkan Peninsula. Namely, six of eight of those papers are written by authors from the Balkan Peninsula. We can also see that some authors from Old Europe appropriately used the term solvency, but included a solvency ratio for solvency assessment, while authors from former communist East-European countries generally defined the term solvency in the term of the solvency ratio that they used. The solvency ratio appears in these papers in various forms, but always shows the same thing.

Not having the possibility to attain the meaning of solvency, which is the case in a huge number of papers, renders the reader incapable of understanding what the scholars meant by using that term. It should be noticed that the semantic content that is given by scholars to the term (in)solvency is not exhausted by the mentioned points of view.

8. Conclusion

Despite, "each shift in bankruptcy court practice followed shifts in financial services industry practice and developments in academic finance" (Simkovic, 2017, p. 309), numerous scholars, including ones from the accounting and finance fields do not consider the term solvency in its legal meaning. Defining solvency differently than the legal text does, lead to the paradox of considering an entity solvent despite the fact that the insolvency court declares this entity insolvent. (Pavlović, Milačić, 2013, p. 463)

Instead of analysing solvency in its legal purpose, numerous scholars analysed solvency in different contexts and for different purposes. Considering solvency differently has, as a consequence, different solvency assessment methodologies. The confusion about what solvency means, i.e. what is the meaning of the solvency analysis spread out on investors, creditors and other stakeholders.

It should be expected that solvency analysis is used to assess solvency. Using solvency assessment methodologies for other purposes than for assessing solvency seems to be quite illogical. So, analysing the performance of a company, that is not considered risky to failure and bankruptcy should not include the solvency analysis. That is the case for most researches of companies' performance analysis (Zimmer, et al., 2019; Vuković, et al., 2020).

The question which naturally arises from this research is: from where did all this confusion about solvency in scientific papers came from? The answer could be: Because they have uncritically taken the interpretations from textbooks. Namely, all this confusion came from accounting and corporate finance textbooks. The Anglo Saxon authors usually do not use the term solvency, rather they use the term "long term liquidity" (Damodoran, 2005; Alexander, Nobes, 2004; Weil, Schipper, 2006), or use this term descriptively, like the ability to meet the debts or the ability to meet long term debts which is much more common in textbooks. Some Anglo Saxon authors who use the term solvency give a definition of solvency in line with the definition of this term in the legal texts and professional regulation in accounting. The definition mentioned by these authors refers to the "ability to meet the liability when comes due" (Higgins, 2007, p. 396), or "the availability of cash to meet financial commitments as they fall due." (Weetman, 2006, p. 164). Therefore, solvency assessment and solvency ratios are almost not mentioned by them. They rather talk about assessing "the ability to meet debts when due" (Higgens, 2007) or about analysis of short and long term liquidity risks (Damodoran, 2005), ratio analysis for the long term creditors (Garrison, Noreen, Brewer, 2006), analysis of long term liquidity risk (Weil, Schipper, 2006), while some authors talk about financial structure analysis (Palepu, Bernar & Peek, 2007) and financial leverage analysis (Peterson, Fabozzi, 2006; Harper, 2002). However, some Anglo Saxon authors mention solvency assessment in their textbooks (Horngren, Sundem, Elliott, 2002, p. 575). On the other hand, solvency is frequently used in textbooks written by Continental European academicians, and the solvency ratio appears in most of the cases.

The question from where all this confusion in textbooks came from would be much more difficult to answer. Pavlović and Milačić (2013) suggest that in the origin of this confusion could be the fact that the term solvency has been used for centuries (it probably appeared for the first time in France, in a document of the city of Reims in 1328, but it was undoubtedly in use before because its meaning is not explained in the document) (Doc. des Archives administratives de la ville de Reims, 1328: 560a; Pavlović, Milačić, 2013, p. 457). At that time, it was not possible to analyse profitability which is the ground block of the solvency analysis. The Income Statement appeared much later, and it took a long time until the financial results from successive Income Statement became comparable, which is the presumption of the profitability analysis. Back in time, when the term solvency appeared, the net worth (owners' capital) was considered to be a guarantor for paying debts to creditors. It seems quite logical for this period, not just because the Income statement did not exist at that time, but also because the majority of assets shown in the Balance sheet could be easily sold (Pavlović, Milačić, 2013) Consequently, the solvency ratio in the form of debt to assets could be justified. But it seems that the "solvency ratio" established a long time ago led to the misunderstanding of solvency today. It appears that the "solvency ratio", which was supposed to help to assess solvency, determined the meaning of solvency incorrectly, assuming that the entity is solvent if the assets shown in the Balance sheet exceed liabilities.

The leverage ratio(s) which is(are) often miscalled as solvency ratio(s) is(are) an important indicator(s) of solvency. In the case of declining sales, the company is more likely to become insolvent if the proportion of debt is higher. The banks do not approve credits if the leverage ratio is too high because they are concerned that the company could have a problem to pay it off on time. But that fact does not mean that taking a leverage ratio(s) as a synonym to solvency ratio(s) can be justified. Although it is clear to everyone, that the fact that assets are exceeding liabilities does not necessarily mean that the company will be able to meet liabilities when they come due, the solvency ratio(s) is still very common in the textbooks and scientific papers as well.

According to Pavlović and Milačić (2013), probably due that the bankruptcy regulations in the Anglo-Saxon world are contented in the law named "Insolvency law", the Anglo Saxon authors usually do not use the term solvency contrarily to its legal meaning. Contrary, in states based on the continental legal system, the bankruptcy law is not named "Insolvency law". Even more, in some Roman law states, the bankruptcy law often does not even contain the term "solvency" (Pavlović, Milačić, 2013)

So, it seems that the solvency ratio, which was, as explained, for a long time the only instrument for assessing solvency mostly contribute to the solvency corundum today in

Roman Law states in which bankruptcy law is not called "Insolvency law". This "solvency ratio" has been passed down from generation to generation of scholars and it seems that in some points as the result of not being familiar with its legal sense and why the leverage ratio could be the only way to assess solvency in the past, some scholars started to believe that solvency means just "a firm characteristic", "an indicator of credit capacity", "a variable for the economic value calculation" or an "objective of business operation". But some scholars, such as Vernimmen, Quiry, and Le Fur (2010) or Ranković (1997), are still completely aware of what solvency is, and that considering the leverage ratio as the solvency ratio cannot be justified as the consequence that the leverage ratio is just one indicator of solvency, still used it under this name.

On the other side, all Anglo-Saxon scholars are aware of what solvency means due to the fact that bankruptcy law is called "Insolvency law".

The resistance to change mindset is a well-known psychological phenomenon, widely explored in the corporate world as well. (Martin, 2017; Dent, Goldberg, 1999). This study reinforces the findings of Oriji and Amadi (2016) which claim that changing mindsets is needed between resistant scholars as well. Scholars should embrace a critical approach to literature.

As a consequence of not reviewing the acquired knowledge, there are many illogical occurrences in the textbooks and legislative which are primarily a consequence of the penetration of the Anglo-Saxon theory and practice in a region otherwise based on Continental European practice. For example, the parliament of Montenegro in late 2002 brought a new law for bankruptcy issue, which under the influence of Anglo-Saxon law had been called "*Company Insolvency Law*" (Zakon o insolventnosti privrednih društava, "Sl. list RCG", No. 06/02, 01/06 and 02/07) and introduced in that way the term "insolvency" in the title of the law aims to regulate the bankruptcy issues. But in this law, the term insolvency was not even defined. Paradoxically, in the first article of this law which regulates the conditions and procedure of the event of insolvency, the term insolvency was not even mentioned. In January 2011, Montenegro passed a new law (Zakon o stečaju, "Službeni list Crne Gore", No. 1/2011 and 053/16) in which the term "solvency" was avoiding non just in the title of the Law, but as well in the entire legal text.

It's even more paradoxical that in some countries in which laws regulate bankruptcy, the insolvency term is used neither in the legal text nor in the title of the law, but on the other hand, the term solvency has been used in other laws that do not treat bankruptcy issues. In those laws, solvency is treated in the same way as it was treated by Anglo-Saxon law and international regulation. This is the case of Serbia and Croatia. Croatia has been an EU member state, while Serbia is an EU candidate country. It seems that confusion spreads around the EU arena.

The situation is quite similar to some other accounting terms where not only academics but also regulators resist using the terms correctly (Pavlović, et al., 2018).

The problem of giving inadequate semantic content to the term "solvency" contributes to the confusion about this term in some laws as well, which deepens this problem further (Pavlović, Knežević, Milačić, 2016). On the contrary to the previous one, in the new The Conceptual

Framework for Financial Reporting of IASB (2018), the term "solvency" is not defined, probably because the IASB members thought that the meaning of this term is clear. Our findings suggest that this term should be defined. Namely, it is obvious that "assessing solvency" could be interpreted differently.

As the result of the solvency conundrum, some scholars, who are aware of the different meanings are given to this term today, believed that corporate solvency has different meanings.

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