

12th International Strategic Management Conference, ISMC 2016, 28-30 October 2016, Antalya, Turkey

## Cash vs. net working capital as strategic tools for the long-term relation between bank credits and liquidity: Inequalities in Turkey

Sudi Apak<sup>a\*</sup>, Ali Faruk Açıkgöz<sup>b</sup>, Ertuğrul Recep Erbay<sup>b</sup>, Güngör Tuncer<sup>c</sup>

<sup>a</sup> *Istanbul Esenyurt University, Esenyurt, Istanbul, Turkey.*

<sup>b</sup> *Namık Kemal University, Degirmenaltı, Tekirdag, Turkey.*

<sup>c</sup> *Emeritus, Sisli, Istanbul, Turkey.*

### Abstract

Cash and net working capital are among corporate liquidity indicators which are generally compared with the short-term bank credits. The study reveals both the short and the long-term bank credits and their reflections on the cash, working capital and the short-term liabilities of the businesses in the long-run. The bank credits as a financing resource of the real sector (nonfinancial) businesses in Turkey with their effects on cash and net working capital are assessed in order to make comparisons on the total data of the businesses selected from all of the sectors for the case of Turkey in the long-run (1996-2014) in the study. The study endorses the strategic relation between bank credit usage and liquidity levels of the businesses so as to improve timely accessibility and creditability. In the findings, we confirm that cash-cash equivalents and net working capital have impacts on the level of bank credits in the long-term. Finally, the study endorses the strategic relation of bank credit and liquidity by inequalities.

© 2016 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the organizing committee of ISMC 2016.

*Keywords:* Strategic business finance, cash, net working capital, bank credits, inequalities.

### 1. Introduction

Corporate working capital is always being among the most considered variables of liquidity. The literature on corporate liquidity analyses working capital (Beaver, 1966) and net liquid assets ever since Altman (1968). Working capital (Altman and Narayan, 1997) or NWC as the difference of current assets and short-term liabilities, sufficient

\* Corresponding author. Tel.: +(90) 532 436 7258; fax: +(90) 212 699 0990.

*E-mail address:* [sudiapak@esenyurt.edu.tr](mailto:sudiapak@esenyurt.edu.tr)

liquidity (Chen et al., 2011), and liquidity ratios are among credit score determiners of credit worthiness for the firms of any scale (Abdou and Pointon, 2011). In addition, measuring only the cash may not be sufficient in order to comprehend future paying circumstances (Al-Attar and Hussain, 2004). Nevertheless, net working capital and short term liabilities as in net working capital to total assets ratio (NWC / TA) are among the liquidity indicators which are valid in all industries (Drever and Hutchinson, 2007). Higher short term liabilities result in unstable liquidity (Min and Lee, 2008). Liquidity complications may force businesses to seek bank credit. As the scale of the business is smaller, however, the firms are very sensitive to credit fluctuations and therefore they appear to be bank dependent (Gorton and He, 2008). Banks may even provide credits for risky firms for which liquidity problems are assessed to be temporary (Behr and Güttler, 2007).

Liquidity and its strategic aspects are subject to be utilized as financial criteria. In this context, cash and cash equivalents with net working capital of any business may have effects on corporate bank credit usage in time.

Since cash and net working capital are cited among the most famous liquidity indicators and consist of the assets which are naturally financed by the short-term liabilities and bank credits, the study reveals both the short and the long-term bank credits and their reflections on the cash, working capital and the short-term liabilities of the businesses in the long-run. Therefore in the study, the bank credits as a financing resource of the real sector (nonfinancial) businesses in Turkey and their effects on cash and net working capital are assessed in order to make comparisons on the total data of the businesses selected from all of the sectors for the case of Turkey in the long-run (1996-2014).

The study tries to disclose the level of bank credit used by the businesses through cash and net working capital as well as the comparisons of these liquidity indicators in the long-run upon inequalities. In the findings, we try to confirm that cash-cash equivalents and net working capital have impacts on the level of bank credits used by the businesses in the long-term. Thus, banks may consider the level of cash and net working capital as signs of liquidity for an affirmative and potential creditability in the future. Furthermore, the businesses may also ponder cash holdings and net working capital performance as signs of liquidity requirements to determine potential bank credit need for which they would possibly seek in the future. In the conclusion, the study endorses the strategic relation between bank credit usage and liquidity levels of the businesses through inequalities so as to improve monitoring tools, timely accessibility and creditability. We believe that strategical perspective in corporate finance is to revisit the significance of cash and net working capital in order to determine bank credit potential of the businesses of all scale. Banks, on the other hand, are to enhance detailed valuation for cash holdings and net working capital in their assessment procedures of corporate creditworthiness. However, there is not any direct and technical criterion for this type of evaluation in the related literature.

## 2. Methodology

The CBRT (the Central Bank of the Republic of Turkey) real sector data consisting of a selection of various business types operating in Turkey are the raw data of the study. We analyzed the series of past three year financial table aggregate totals and aggregate ratios of the businesses for 19 years (1996–2014). We consider randomly selected research data which consists of the values of 51 observations from a total of 152,348 firms and from an average of 8,018 firms for each year in the evaluated time period.

After the considerations, the study discusses the findings of the data set in contemporary data processor software and the calculations of the authors with the related literature and alleges its suggestions on the rankings and differences among the inequalities of the appraised variables with their most repeated rankings, minimums, maximums, and averages in the long-run.

The ratios and financial terms used in the study as the nomenclature are given below.



### Nomenclature

STL	Short Term Liabilities
C&CER	Cash and Cash Equivalents (as a percentage of STL) Ratio
NWC	Net Working Capital (as a percentage of STL)
STBC	Short Term Bank Credits
TBC	Total Bank Credits
TA	Total Assets
LTBC	Long Term Bank Credits

The ratios used in the study are generally taken as a percentage of STL since STL is the vital indicator of liquidity. The study also uses data formulas of CBRT as the key formulas (Formulas 1 and 2) in the ratios of corporate bank credit used by the businesses in the CBRT data archives as below:

$$\text{STBC to STL Ratio} = \left( \frac{\text{STBC} + \text{capital instalments and interest of LTBC}}{\text{STL}} \right) \quad (1)$$

$$\text{TBC to TA Ratio} = \left( \frac{\text{STBC} + \text{capital instalments and interest of LTBC} + \text{LTBC}}{\text{TA}} \right) \quad (2)$$

The study shares inequalities of the comparisons on the long-term data and relatively gives all of the ranking for the minimums, averages and maximums along the time span examined.

### 3. Findings and Discussions

Net working capital and cash & cash equivalents are the signs of corporate liquidity which is best measured over short-term liabilities. Thus, they are more meaningful as if they are stated in ratios or as a percentage of short-term liabilities. Suitable levels of cash and liquidity, available working capital, and easy access to finance help firms to satisfy their obligations on due as expected and reassure sustainability (Coyle, 2000a; Coyle, 2000b). The businesses are obligated to hold more cash where potential opportunities and risks exist, however they operate with less cash in the circumstances of big scale and high creditability where they have easier admittance to credit (Opler *et al.*, 1999), higher size preserve sufficient level of collateral which reduces the cost of finding credit directly from banks (Booth and Booth, 2006). Bank credits or others, once they are allocated, paying back will depend on the financial state of the borrower (Sohn and Kim, 2013). Trade credit as the other financing alternative becomes higher for the lower sized firms which have financial difficulties (Gupta *et al.*, 2014). Whenever the firm gets larger in size, liquidity may incline to its minimums (Ponikvar *et al.*, 2009). Even though, some firms may keep their total debt ratio steady in time (D'Mello and Farhat, 2008), a risky debtor may seek for more trade credit but not bank credit (Chong and Yi, 2011). Trade credit may also be a supplement to bank credit (Psillaki and Eleftheriou, 2015). As an alternative however, bank credits intensify pressures on corporate liquidity in the short-run. Furthermore smaller firms may live additional difficulties in borrowing from banks in the recession tide of the economic circumstances (Chakravarty and Yilmazer, 2009), particularly in the short-run. Moreover, long-term bank credits have also reflections in the short-run as the cumulative capital instalments and interest payments in a year time period. As liquidity is more meaningful with STL, so are bank credits with total assets or liabilities, especially with the STL. And there we set the connection of corporate liquidity and bank credit usage. Bank credits may be both the reason and the solution for any liquidity incompetence whereas liquidity may be accumulated for repaying back the bank credits or credit lines used earlier. Nevertheless, the lower is the STL the healthier will be the firm both in liquidity and in bank credit usage.

For corporate bank credits in both short and long-run, NWC, and C&CER as a percentage of short-term liabilities in the long-run (1996-2014) in Turkey, see Fig. 1.

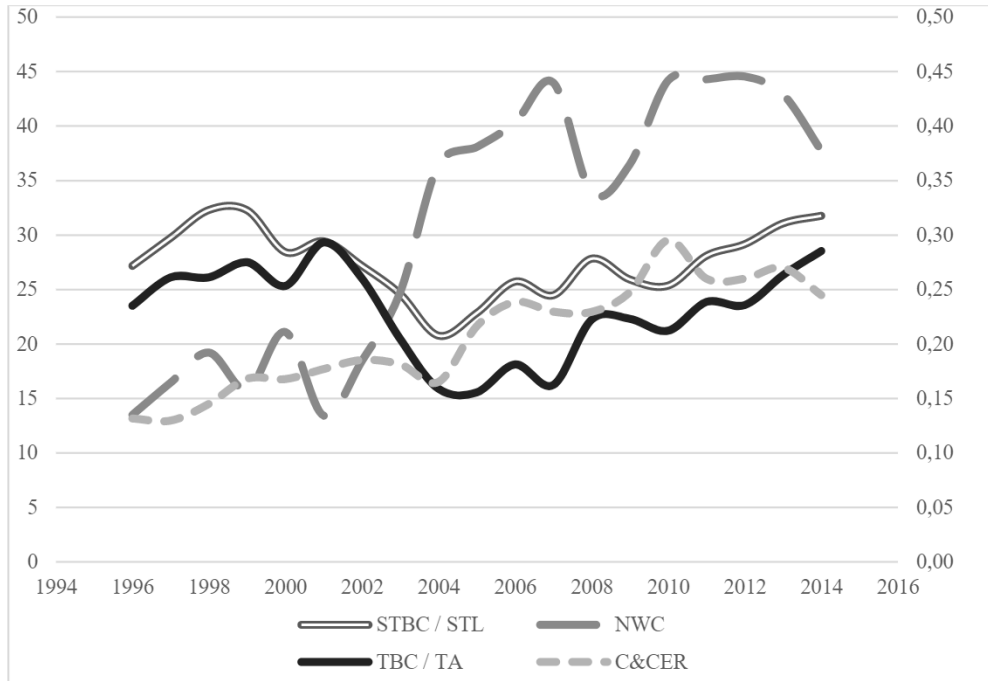


Fig. 1.; Bank credits, NWC, C&CER as a percentage of short-term liabilities in the long-run (1996-2014) in Turkey. Source: CBRT and the calculations of the authors.

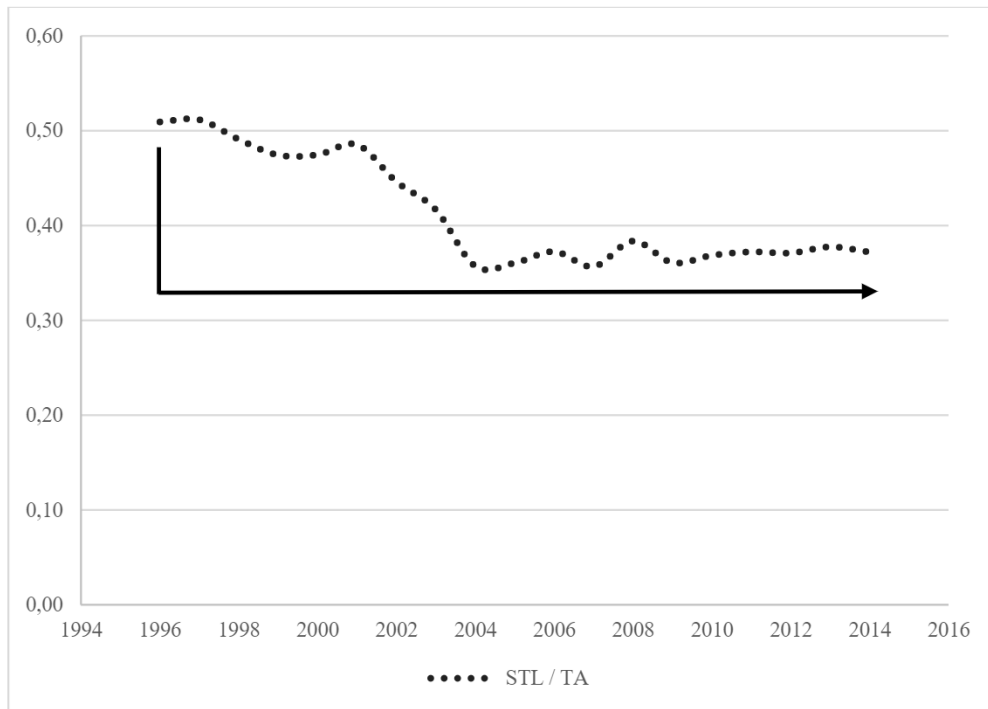


Fig. 2.; Short-term liabilities as a percentage of total assets in the long-run (1996-2014) in Turkey. Source: CBRT and the calculations of the authors.

Figure 2 demonstrates the downward and then stable levels (see the straightforward part of the arrow) of short-term liabilities as a percentage of the total assets in the long-run (1996-2014) in Turkey. Table 1 gives the facts in inequalities on the selected liquidity indicators and bank credit usage of the businesses in Turkey in the long-run.

Table 1. Ranking of inequalities on liquidity and bank credit usage of businesses in Turkey in the long-run

Year	Inequalities on liquidity and bank credit usage as a percentage of TA or STL
1996	$(STL / TA) > (STBC / STL) > (TBC / TA) > (NWC) > (C\&CER)$
1997	$(STL / TA) > (STBC / STL) > (TBC / TA) > (NWC) > (C\&CER)$
1998	$(STL / TA) > (STBC / STL) > (TBC / TA) > (NWC) > (C\&CER)$
1999	$(STL / TA) > (STBC / STL) > (TBC / TA) > (C\&CER) > (NWC)$
2000	$(STL / TA) > (STBC / STL) > (TBC / TA) > (NWC) > (C\&CER)$
2001	$(STL / TA) > (STBC / STL) > (TBC / TA) > (C\&CER) > (NWC)$
2002	$(STL / TA) > (STBC / STL) > (TBC / TA) > (C\&CER) > (NWC)$
2003	$(STL / TA) > (NWC) > (STBC / STL) > (TBC / TA) > (C\&CER)$
2004	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$
2005	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$
2006	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$
2007	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$
2008	$(STL / TA) > (NWC) > (STBC / STL) > (C\&CER) > (TBC / TA)$
2009	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$
2010	$(NWC) > (STL / TA) > (C\&CER) > (STBC / STL) > (TBC / TA)$
2011	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$
2012	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$
2013	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$
2014	$(NWC) > (STL / TA) > (STBC / STL) > (TBC / TA) > (C\&CER)$
Most recurrent (1996-2014)	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$
Most recurrent (2004-2014)*	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$

\* Note that the stability of STL (STL/TA ratio as a percentage of TA) at the lower level starts by 2004 and continues up to 2014 (see Fig. 2).  
Source: CBRT and the calculations of the authors.

For the rankings of the inequalities on liquidity and bank credit usage in the long-term as minimums, maximums and averages see Table 2, 3, and 4 respectively.

Table 2. Ranking of long-term minimums for inequalities on liquidity and bank credit usage in the long-run

Inequalities of long-term minimums on liquidity and bank credit usage as a percentage	
Minimums (1996-2014)	$(STL / TA) > (STBC / STL) > (TBC / TA) > (NWC) > (C\&CER)$ $(35.67) > (20.77) > (15.57) > (13.44) > (12.98)$
Minimums (2004-2014)	$(STL / TA) > (NWC) > (STBC / STL) > (C\&CER) > (TBC / TA)$ $(35.67) > (33.89) > (20.77) > (16.53) > (15.57)$

Source: CBRT and the calculations of the authors.

Table 3. Ranking of long-term maximums for inequalities on liquidity and bank credit usage in the long-run

Inequalities of long-term maximums on liquidity and bank credit usage as a percentage	
Maximums (1996-2014)	$(STL / TA) > (NWC) > (STBC / STL) > (C\&CER) > (TBC / TA)$ (51.18) > (44.54) > (32.31) > (29.53) > (29.35)
Maximums (2004-2014)	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$ (44.54) > (38.36) > (31.77) > (29.53) > (28.55)

Source: CBRT and the calculations of the authors.

Table 4. Ranking of long-term averages for inequalities on liquidity and bank credit usage in the long-run

Inequalities of long-term averages on liquidity and bank credit usage as a percentage	
Averages (1996-2014)	$(STL / TA) > (NWC) > (STBC / STL) > (TBC / TA) > (C\&CER)$ (41.38) > (30.83) > (27.60) > (23.08) > (20.76)
Averages (2004-2014)	$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA)$ (40.27) > (36.84) > (26.65) > (24.16) > (21.28)

Source: CBRT and the calculations of the authors.

#### 4. Conclusions

Cash and net working capital are characteristically financed by the short-term bank credits. However, the amount of short term bank credits covers short term instalments of the long-term bank credits as well. In the evidence of Turkey, we tried to determine cash-cash equivalents and net working capital of any business as two useful strategic tools both for the credit giving banks and the financial management of the business itself. Since these financial criteria have effects on corporate bank credit usage in time, the study reveals both the short and the long-term bank credits and their reflections on the cash, net working capital and particularly the short-term liabilities of the businesses in the long-run in Turkey. Multi-dimensional ranking relations among these factors disclose that ongoing types of inequalities among variables enlighten the potential credit usage not only to monitor the level of bank credits used by the businesses but also to give evidence so as to rely on future expectations on that potential.

Revealing the facts behind Figure 1 and 2 given above and disclosing the level of bank credit used by the businesses through cash and net working capital, the study also divulges ongoing and typical inequalities among these liquidity indicators by the help of long-run comparisons.

We confirm that cash-cash equivalents and net working capital have impacts on the level of bank credits used by the businesses in the long-term after evaluating the findings. Therefore, we generalize the inequalities of the variables or ratios in percentages considered by the most recurrent ranking as in Formula 3 below:

$$(NWC) > (STL / TA) > (STBC / STL) > (C\&CER) > (TBC / TA) \quad (3)$$

Moreover, we conclude that the above given inequality is typically valid in minimums, maximums and averages in the long-run (1996-2014) as well as for the time span from 2004 to 2014 as Tables 2, 3, and 4 demonstrate, except minor liquidity shortages in NWC and/or C&CER.

The widespread inequality in the evidence of Turkey reveals the long-term outlook in two different parts as well (see Formulas 3.1 and 3.2):

$$(STL / TA) > (TBC / TA) \quad (3.1)$$

$$(NWC) > (STBC / STL) > (C\&CER) \quad (3.2)$$

Whenever the stability of STL (STL/TA ratio as a percentage of TA) at the lower levels occurs and endures, we suggest the *first strategic tool* for future expectations on the relation of liquidity and bank credit usage as in the subsequent inequality (Formula 4):

$$(NWC) > (STL / TA) \quad (4)$$

We also suggest the *second strategic tool* for monitoring liquidity shortages before and aftermath of bank credit usage as in the succeeding inequality (Formula 5):

$$(STBC / STL) > (C\&CER) > (TBC / TA) \quad (5)$$

Thus, banks may consider the level of cash and net working capital as signs of liquidity for an affirmative and potential creditability in the future.

Cash & cash equivalents ratio is rather a strategic tool to monitor the bank credits. On the other hand, net working capital may be used as a strategic tool to predict the potential bank credit usage by the businesses in the future.

In the case that cash-cash equivalents and net working capital are used as strategic tools, bank credit usage of the businesses could be easily observed, because of the reasons cited below:

- Indicating the potential, bank credit usage of the businesses stands in specific intervals in the long-run.
- Banks may make use of these above given facts in their assessment procedures for corporate credit demand.
- Businesses may be aware of their limits in using bank credits.
- The order of inequalities may be used as strategic tools to monitor liquidity shortages and estimate the potential usage of bank credits in the future.

Furthermore, the businesses may also contemplate cash holdings and net working capital performance as signs of liquidity requirements to determine potential bank credit for which they would possibly pursue in the future.

As a conclusion, the study endorses the strategic relation between bank credit usage of the businesses so as to improve timely accessibility with creditability and liquidity levels to empower strategic business finance and management. Thus, strategical perspective in corporate finance is to revisit the significance of cash and net working capital in order to determine bank credit potential of the businesses of all scale. Banks, on the other hand, are to add detailed valuation for cash and net working capital in their assessment procedures that they practice for corporate creditworthiness.

We agree that the study has limitations on the methodology of financial ratio analysis, and the use of local long-term data.

Nonetheless, we expect that the study shall be a starting point for the future research and further studies on the issue. Thus, the understanding on the relationship of bank credits and corporate liquidity will be improved by the use of newly suggested strategic tools as the novelties of the study with the concluding remarks given above.



## Acknowledgements

We hereby would like to state our acknowledgements to *Economic Research Foundation of Turkey* for the working paper and online article (processing) of Acikgoz *et al.* (2016) “A long-term appraisal of the relation between short-term bank credits and cash & cash equivalents for the businesses in Turkey” giving the inspiration with the raw and meta data. Nevertheless, we really appreciate the efforts of the outstanding works of all the authors listed in the references below and the team of CBRT for the real sector data archives.

## References

- Abdou, H. A., & Pointon, J. (2011). Credit scoring, statistical techniques and evaluation criteria: a review of the literature. *Intelligent Systems in Accounting, Finance and Management*, 18, 59–88.
- Acikgoz, A. F., Apak, S., & Erbay, E. R. (2016). A long-term appraisal of the relation between short-term bank credits and cash & cash equivalents for the businesses in Turkey (Turkish). Working paper and online article (processing), *Economic Research Foundation of Turkey*.
- Al-Attar, A., & Hussain S. (2004). Corporate data and future cash flows. *Journal of Business Finance & Accounting*, 31 (7) & (8), 861–903.
- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance*, 23 (4), 589–609.
- Altman, E. I., & Narayan P. (1997). An international survey of business failure classification models. *Financial Markets, Institutions & Instruments*, 6, 2, 1–57.
- Beaver, W. H. (1966). Financial ratios as predictors of failure. *Journal of Accounting Research*, 4 (Empirical Research in Accounting: Selected Studies), 71–111.
- Behr, P., & Güttler A. (2007). Credit risk assessment and relationship lending: An empirical analysis of German small and medium-sized enterprises. *Journal of Small Business Management*, 45, 2, 194–213.
- Booth, J. R., & Booth L. C. (2006). Loan collateral decisions and corporate borrowing costs. *Journal of Money, Credit, and Banking*, 38, 1, 67–90.
- CBRT (Central Bank of the Republic of Turkey) (2016). *CBRT Real Sector Statistics*, Real Sector Balance Sheet Data and Archives 1996–2015, retrieved from <http://www.tcmb.gov.tr> on 23.10.2015 and 02.03.2016.
- Chakravarty, S., & Yilmazer T. (2009). A multistage model of loans and the role of relationships. *Financial Management*, winter 2009, 781–816.
- Chen, T., Liao H., & Lu C. (2011). A flow-based corporate credit model. *Rev Quant Finan Acc.*, 36, 517–532.
- Chong, B., & Yi H., (2011). Bank loans, trade credits, and borrower characteristics: Theory and empirical analysis. *Asia-Pacific Journal of Financial Studies*, 40, 37–68.
- Coyle, B. (2000a). *Corporate Credit Analysis*. Glenlake Publishing Company Ltd, Chicago, London, New Delhi, AMACOM, American Management Association (AMA) Publications, The Chartered Institute of Bankers, New York.
- Coyle, B. (2000b). *Cash Flow Forecasting and Liquidity*. Glenlake Publishing Company Ltd, Chicago, London, New Delhi, AMACOM, American Management Association (AMA), The Chartered Institute of Bankers, New York.
- D’Mello, R., & Farhat J., (2008). A comparative analysis of proxies for an optimal leverage ratio. *Review of Financial Economics*, 17, 213–227.
- Drever, M., & Hutchinson P., (2007). Industry differences in the determinants of the liquidity of Australian small and medium sized enterprises. *Small Enterprise Research*, 15, 1, 60–76.
- Gorton, G. B., & He P., (2008). Bank credit cycles. *The Review of Economic Studies*, 75, 1181–1214.
- Gupta, J., Wilson N., Gregoriou A., & Healy J., (2014). The effect of internationalization on modelling credit risk for SMEs: Evidence from UK market. *Journal of International Financial Markets, Institutions & Money*, 31, 397–413.
- Min, J. H., & Lee Y., (2008). A practical approach to credit scoring. *Expert Systems with Applications*, 35, 1762–1770.
- Opler T., Pinkowitz L., Stulz R., & Williamson R., (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 52, 3–46.
- Ponikvar, N., Tajnikar M., & Pušnik K., (2009). Performance ratios for managerial decision-making in a growing firm. *Journal of Business Economics and Management*, 10, 2, 109–120.
- Psillaki, M., & Eleftheriou K., (2015). Trade credit, bank credit, and flight to quality: evidence from French SMEs. *Journal of Small Business Management*, 53, 4, 1219–1240.
- Sohn, S. Y., & Kim Y. S., (2013). Behavioral credit scoring model for technology-based firms that considers uncertain financial ratios obtained from relationship banking. *Small Business Economics*, 41, 931–943.

