JOURNAL of Applied Economic Sciences

JAES

Journal of Applied Economic Sciences

Volume VII
Issue 3(21)

Fall 2012

I.S.S.N. 1843-6110

JOURNAL of Applied Economic Sciences

Quarterly Journal

Publisher:

Spiru Haret University
Faculty of Financial Management Accounting Craiova
Brazda lui Novac Street, no 4 Craiova, Dolj, Romania
Phone: +40 251 598265 Fax : + 40 251 598265

European Research Center of Managerial Studies in Business Administration
http://www.cesmaa.eu
Email: jaes_secretary@yahoo.com *Web:* http://cesmaa.eu/journals/jaes/index.php

Journal of Applied Economic Sciences

Journal of Applied Economic Sciences is a young economics and interdisciplinary research journal, aimed to publish articles and papers that should contribute to the development of both the theory and practice in the field of Economic Sciences.

The journal seeks to promote the best papers and researches in management, finance, accounting, marketing, informatics, decision/making theory, mathematical modelling, expert systems, decision system support, and knowledge representation. This topic may include the fields indicated above but are not limited to these.

Journal of Applied Economic Sciences be appeals for experienced and junior researchers, who are interested in one or more of the diverse areas covered by the journal. It is currently published quarterly with three general issues in Winter, Spring, Summer and a special one, in Fall.

The special issue contains papers selected from the International Conference organized by the European Research Centre of Managerial Studies in Business Administration (www.cesmaa.eu) and Faculty of Financial Management Accounting Craiova in each October of every academic year. There will prevail the papers containing case studies as well as those papers which bring something new in the field. The selection will be made achieved by:

Journal of Applied Economic Sciences is indexed in SCOPUS www.scopus.com CEEOL www.ceeol.org, EBSCO www.ebsco.com, RePEc www.repec.org and in IndexCopernicus www.indexcopernicus.com databases.

The journal will be available on-line and will be also being distributed to several universities, research institutes and libraries in Romania and abroad. To subscribe to this journal and receive the on-line/printed version, please send a request directly to jaes_secretary@yahoo.com

Journal of Applied Economic Sciences

ISSN 1843-6110

Table of Contents

THE ACTIVE MANAGEMENT OF THE COMPANY'S TREASURY, A SOLUTION FOR AVOIDING THE CRISIS SITUATIONS

Floarea GEORGESCU
Spiru Haret University, **Romania**
georgescuflori@yahoo.com

Abstract:

One of the most important roles of a company's management is to forecast the future economic conditions in which the company will develop its activity. Based on these forecasts and taking into account the economic, technical and competitive environments, the management establishes the position of future activities. Therefore, the financial forecasted previsions stimulate the results expected by the management.

The working capital management involves on one hand the management of the current assets (stocks, debts, short term investments, liquidities) and on the other hand the management of the current passives (debts to suppliers, employees, banks, state budget), activities which take up the financial management's time.

Keywords: working capital management, current assets, current passives, required financing, operating cycle.

JEL Classification*:* M 21, M 41

Introduction

Let's image that in the last years a company has registered an increasing of the production, reflected on the turnover and profit, but does not have the necessary liquidities to pay its debts. Thus, the solution would be to undertake short term credits. Is this situation in which the profit is significant but there aren't enough resources to pay the debts even possible? Yes. Obtaining a positive result does not necessary implicates the existing of liquidities, a phenomenon explicable by the existence of the un-monetary revenues and expenses (which do not affect the treasury) and at the same time by the delaying between the recording of the revenues and expenses in the accounting and their collection/payment. Therefore, how can it be avoided the absence of cash? Through an active management of the company's treasury, a useful solution not only for avoiding the crisis situations generated by the lack of cash, namely by the unfavourable delaying between the payments and collections delaying, a fact which influences the company to appeal on short term credits and implicitly paying the afferent interests, but also the over-sizing of the cash from treasury or account, which generates opportunity costs.

In order for the company to obtain positive cash flow, a good correlation with the collection/payment deadlines should exists and eventual supplementary resources should be determined.

The short term administration is linked to the performance of the entire activity and takes into account two complementary activities: first of all, the determination of the current assets, so the determination of the temporary needs of capital and second, the determination of the financing sources of the current assets necessary, respectively the temporary sources for the operating cycle.

The financing necessary of the operating cycle expresses the total need for capital which determines an efficient development of the operating cycle. Establishing the base of the financing necessary of the operating cycles represents an important stage in the short term financial equilibrium planning, because it provides the information on the size of the capital investments in the current assets. The next step would be the establishment of the current assets resources needed to cover the financing necessary of the operating cycle.

Conclusions

The creditor sold of treasury, at the beginning of trimester I (2.250.000 lei), was the one from the balance sheet at 31.XII.N-1. The treasury surplus from quarter I of 727.500 lei represents the volume of credits which are going to be paid in the following quarter. Thus, the level of credits with sold in quarter II will be 1.522.500 lei (2.250.000- 727.500). The treasury deficit from quarter II of 276.500 lei represents the level of new credits that the enterprise can undertake in that period, over the level of those from the previous quarter (1.522.500 lei). In these conditions, the level of treasury credits in quarter III will be 1.799.000 lei (1.522.500 + 276.500). For quarter III, similar as in quarter I, the treasury surplus of 120.800 lei will determine a volume of treasury credits for quarter IV of 1.678.200 lei (1.799.000 -120.800). In these conditions, for quarter IV the financing necessary will become equal to the resources.

Analysing the treasury's activity, on the period analysed, but also the results obtained through the treasury plan, we realized a summary of the weak and forte points and eventual recommendations for the manager that can improve the economic situation of the company generally and the treasury administration especially.

References

[1] Bogdan, A.M. 2011. European Union funds - a solution for the Romanian economic recovery. *Journal of Applied Economic Science*, Vol. VI, Issue 2 (16): 115-120.

[2] Bistriceanu, Gh.D., Adochiţei, M.N., Negrea, E. 2001. *The finances of economic agents*. Economica Publishing House, Bucharest.

[3] Bojian, O. 2004. *The financial accounting of the enterprise*. Universitară Publishing House, Bucharest

[4] Brezeanu, P. (coord.). 2006. *Financial analysis*. Meteor Press Publishing House, Bucharest.

[5] Brezeanu, P. (coord.). 2003. *Financial diagnosis. Tools for financial analysis*. Economica Publishing House, Bucharest.

[6] Bran P. 2003. *The enterprise's finances. The management of the micro financial phenomenon*, Second Edition. Economica Publishing House, Bucharest.

[7] Georgescu, F. 2010. The forecasted analysis and diagnosis of the cash flows, paper published in the *Economic Tribune, No.* 21/May 2010, pp. 62-65 and pp. 69, No. 22/May 2010, pp. 63-65, No. 23/ June 2010, pp. 66-69, No. 24/June 2010, pp. 68-69, Section Efficient.

[8] Helfert, E. 2006. *Financial analysis techniques – a guide to create value*, BMT Publishing House, 11th Edition, pp. 169-198, pp.241-267, pp.415-446.

[9] Ilie, D. 2011. New frontiers in credit risk analysis. *Journal of Applied Economic Science*, Vol. VI, Issue 1 (15): 28-32.

[10] Ilincuţă, L.D., Mareş, D.M., Mareş, V. 2010. *Accounting of the withdrawn assets or the non-current assets from the current using and available for sale*, 17th International Economic Conference – IECS 2010, The Economic World' Destiny: Crisis and Globalization, ULB, Sibiu, Romania, May 13-14.

[11] Nicolescu, O., Nicolescu, L. 2006. *The economy, company and management based on knowledge*. Economica Publishing House, Bucharest.

[12] Şerban, M., Ştefan, R.M. 2011. *Project Management Software*. University Alma Mater – Sibiu, International Conference, 24-26 March.

[13] Ştefan, R.M, Şerban, M. 2011. *Simulation modelling as decision-support tools*, Papers of the Sibiu Alma Mater University International Conference, March 2011.

[14] Ştefãnescu, A., Ţurlea, E. 2004. *Principles and models to reflect the company performance in the sintetis documents*. ASE Publishing House, Bucharest.

[15] Vintila, G. 2010. *The financial administration of the company*. Didactica şi Pedagogica Publishing House, Bucharest, pp. 329-348.

***The collection of specialized magazines: *Economic Tribune, Finances, Credit and Accounting, General Magazine on accounting and expertise, Accounting, Expertise and Audit of the Business.*

***Ministry of Finances, *Accounting regulations according to the European Directives*, 2008.

*** www.accaglobal.com

*** www.cnp.be

*** www.iasb.org.uk

*** www.accaglobal.com

*** www.focusifrs.com

*** www.iasplus.com

*** www.pwcglobal.com

THE EFFECT OF ACCRUALS ON SECURITY ANALYSTS' TARGET PRICE FORECAST PERFORMANCE

Cho JOONG-SEOK
School of Business Administration, Hanyang University, **Korea**
joongseok@hanyang.ac.kr

Abstract:

Using a sample of U.S. security analysts' target price forecasts issued over the period 2000-2010, we examine how accounting accruals and accrual components affect security analysts' target price forecast performance. In this study, we find that analysts' target price forecasts for firms with higher accruals level are less accurate and have lower possibilities of being met or beat at some time during or at the end of the forecast horizon. With the deposition of accruals into short- and long-term accruals, our results show that both types of accruals lower the possibility of achieving analysts' target prices at the end of the forecast horizon. However, only short-term accruals affect negatively the possibility of achieving analysts' target prices at some time during the forecast horizon. These results suggest that the analysts fail to incorporate correctly the implications of the accrual information.

Keywords: analysts, target price, accounting accruals.

JEL Classification: M4, G17.

Introduction

Past research has shown that accrual components of earnings improve cash flows as a measure of firms' performance (e.g. Watts 1977; Watts, and Zimmerman 1986; Dechow 1994; Dechow *et al*. 1998). Through the matching and revenue recognition principles, accruals reflect timing differences of past and future cash flows and incorporate them into current earnings. Accruals are classified as short-term (current) and long-term (non-current) components. Short-term accruals, such as inventory, accounts receivable and accounts payable, are those whose effects generally reverse within one fiscal period. Long-term accruals, such as depreciation and warrant provisions, reflect timing differences that extend beyond two fiscal periods.

Since accruals are an important source of information for analysts in formulating their' equity reports including target prices, we focus on the effect of the level of accruals on analysts' target price forecast performance. Accrual components of earnings improve cash flows as a measure of firms' performance through the matching and revenue recognition principles. The effects of short- and long-term accruals could differ because they have different time horizon in the matching and revenue recognition principles. We compute total accruals and derive short- (current) and long-term (noncurrent) accruals for each firm in year t. We construct three measures to capture target price forecasting performance based on Bradshaw *et al*. (2012).

Conclusion

We study the relation between firms' accrual level and security analysts' target price forecast performance. Recently, security analysts have increasingly disclosed target prices along with their stock recommendations and earnings forecasts. Despite the most concise and explicit statement on the firm's expected value and popularity, research on target prices has remained largely unexplored.

Since accruals are an important source of information for analysts in formulating their' equity reports including target prices, we focus on the effect of the level of accruals on analysts' target price forecast performance. Accrual components of earnings improve cash flows as a measure of firms' performance through the matching and revenue recognition principles. The effects of short- and long-term accruals could differ because they have different time horizon in the matching and revenue recognition principles. If security analysts do not fully understand the persistence of the accruals and their forecasts do not incorporate the predictable future earnings declines associated with high accruals, their target price forecast performance will suffer.

Using a sample of U.S. security analysts' target price forecasts issued over the period 2000-2010, we compute total accruals and derive short- (current) and long-term (noncurrent) accruals for each firm in year t. We construct three measures to capture target price forecasting performance based on Bradshaw *et al.* (2012).

Our study shows that analysts' target price forecasts for firms with higher level of accruals are less accurate and have lower possibilities of being met or beat at some time during or at the end of the forecast horizon. With the deposition of accruals into short- and long-term accruals, our results show that both types of accruals lower the possibility of achieving analysts' target prices at the end of the forecast horizon. However, only short-term accruals affect negatively the possibility of achieving analysts' target prices at some time during the forecast horizon.

These results are consistent with that the level of accruals has a significant impact on analysts' target price performance and that the lower level of accruals results in more accurate target price forecasts. They show that analysts do not fully understand the persistence of accruals and suggest that they fail to incorporate correctly the implications of the accrual information into their target price forecasts.

References

[1] Abarbanell, J.S., Bushee, B.J. 1997. Fundamental analysis, future earnings and stock prices. *Journal of Accounting Research* 35: 1-24.

[2] Asquith, P., Mikhail, M., Au, A. 2005. Information content of equity analyst reports. *Journal of Financial Economics*, 75: 245−282.

[3] Bandyopadhyay, S., Brown, L., Richardson, G. 1995. Analysts' use of earnings forecasts in predicting stock returns: forecast horizon effects. *International Journal of Forecasting*, 11:429−445.

[4] Block, S. 1999. A study of financial analysts: practice and theory. *Financial Analysts Journal*, 55: 86−95.

[5] Bradshaw, M.T., Lawrence, D.B., Kelly, H. 2012. Do sell-side analysts exhibit differential target price forecasting ability? *Working Paper*, Boston College, Boston: 1-41.

[6] Bradshaw, M.T., Richardson, S., Sloan, R. 2001. Do analysts and auditors use information in accruals? *Journal of Accounting Research* 39: 45-74.

[7] Brav, A., Lehavy, R. 2003. An empirical analysis of analysts' target prices: short-term informativeness and long-term dynamics. *Journal of Finance*, 58: 1933−1968.

[8] Dechow, P. 1994. Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics*, 18: 3-42.

[9] Dechow, P., Kothari, S., Watts, R. 1998. The relation between earnings and cash flows, *Journal of Accounting & Economics* 25: 133-168.

[10] Dechow, P., Sloan, R., Sweeney, A. 1995. Detecting earnings management. *The Accounting Review*, 70 (2): 193-225.

[11] Demirakos, E., Strong, N., Walker, M. 2004. What valuation models do analysts use? *Accounting Horizons*, 18(4): 221−240.

[12] Fama, E.F., French, K. 1997. Industry costs of equity. *Journal of Financial Economics*, 43: 153-193.

[13] Jegadeesh, N., Kim, J., Krische, S.D., Lee, C. 2004. Analysing the analysts: when do recommendations add value? *The Journal of Finance,* 59: 1083–1124.

[14] Loftus, J.A., Sin, S. 1997. The role of current and non-current accruals in the relation between stock returns and earnings. *Accounting and Finance* 37: 147-161.

[15] Ou, J., Penman, S. 1989. Financial statement analysis and the prediction of stock returns, *Journal of Accounting & Economics* 11: 295-329

[16] Previts, G., Bricker, R., Robinson, T., Young, S. 1994. A content analysis of sell - side financial analyst company reports. *Accounting Horizons*, 8: 55−70.

[17] Sloan, R.G. 1996. Do Stock Prices Fully Reflect Information in Accruals and Cash Flows about Future Earnings? *The Accounting Review* 71: 289-315.

[18] Stober, T.L. 1992. Summary Financial Statement Measures and Analyst Forecast of Earnings. *Journal of Accounting and Economics* 15: 347-372.

[19] Watts, R.L. 1977. Corporate financial statements, a product of the market and political processes. *Australian Journal of Management* 2 (April): 53-75.

[20] Watts, R.L., Zimmerman, J.L. 1986. *Positive Accounting Theory*. Englewood Cliffs, NJ: Prentice-Hall.

TESTING WEAK FORM MARKET EFFICIENCY OF EMERGING MARKETS: A NONLINEAR APPROACH

Ece C. KARADAGLI
Cankaya University, Faculty of Economics and Administrative Sciences, **Turkey**
ece@cankaya.edu.tr
Nazlı C. OMAY
Cankaya University, **Turkey**
nazli.sungur@hotmail.com

Abstract

This paper examines weak form efficiency in eight CEE emerging markets by testing whether the stock price series of these markets contain unit root. The unpredictability of stock returns indicates that stock prices follow random walk and hence are characterized by a unit root. For this purpose, we employ unit root and nonlinear unit root tests along with their panel extensions. The results indicate weak form efficiency in linear sense. However the findings of nonlinear unit root test suggest inefficiencies for Russian, Romanian and Polish stock markets. Furthermore, nonlinear panel unit root test support inefficiency for the sample we investigated.

Keywords: emerging markets, market efficiency, linear and nonlinear unit root and linear and nonlinear panel unit root

JEL Classification: G14, C3

Introduction

The Efficient Market Hypothesis states that security prices fully reflect all available information at any time and the concept of market efficiency is mainly based on the reaction of stock price to new information. Since the market absorbs all relevant information as it becomes available, a stock price change requires a new information release. Following the argument that the stock prices already incorporate all available information and the stock price changes require a news release which is itself unpredictable by definition, then price changes should be unpredictable and random. Then, it follows that as in an efficient market prices reflect all the available information, investors are unlikely to beat the market, except by chance. Thus, in an efficient market, price changes can be argued to follow a "random walk". Because new information is randomly favourable or unfavourable relative to expectations, changes in stock prices in an efficient market should be random, resulting in the well-known "random walk" in stock prices (Jones, and Netter 2008). If stock prices follow a random walk which is satisfied by the unpredictability of stock returns, then stock prices are characterized by a unit root (Hasanov, and Omay 2007).

Conclusion

In this paper we have tested whether Bulgarian, Greek, Hungarian, Polish, Romanian, Russian, Slovenian and Turkish stock price series contain unit root, consistent with the weak form market efficiency and attempt to contribute to the limited and controversial literature on the efficient market hypothesis which carries important implications for all economic agents. The weak form market efficiency requires the security prices to be characterized by random walk based on past price movements. For this purpose we carried out conventional ADF and PP unit root tests as well as KSS nonlinear unit root test. The results of ADF and PP indicate that Bulgarian, Greek, Hungarian, Polish, Romanian, Russian, Slovenian and Turkish stock price series contain unit root. However KSS nonlinear unit root test suggests weak form inefficiencies for Russian, Romanian and Polish stock price series. Moreover, we applied linear and nonlinear panel unit root tests to this group of countries. The linear panel unit root test suggests that as a group, they form a weak form efficient market where as nonlinear panel unit root test suggests the combined market is inefficient.

Thus, one of the findings of our study is that it may be possible to outperform the market by analysing the past price information and hence technical analysis may work in Russian, Romanian and Polish stock markets while for the Bulgarian, Greek, Hungarian, Slovenian and Turkish stock markets past price information is found to be already reflected into the stock price so technical analysis seems to provide no extra return in these markets. But this result should be concluded preciously and consciously, as nonlinear panel unit root test suggests that these markets when considered together are not weak form efficient. Anyway, one important conclusion that can be drawn from the results of this study is that, it would be wiser to employ nonlinear methods in stock price forecasting in the emerging markets of the CEE countries, as linear methods seems to provide no room, other than by chance, to beat the market and earn speculative gains.

An important implicit conclusion that can be argued from the results of this study by comparing the findings obtained by the nonlinear unit root and nonlinear panel unit root tests is that, since nonlinear unit root test indicates that only Russian, Romanian and Polish markets are inefficient, the major source of inefficiency of European emerging markets is due to the inefficiencies pertaining in the structural characteristics of the so called transition economies. So, it can be argued that any market that has structural similarities to transition economies carry a high potential of market inefficiency, especially inherited in the sources of nonlinearity in the financial data.

Following the argument that well-functioning equity markets provide beneficial effects on the economic growth of developing countries, another implicit implication of our results that may worth noting is that the Bulgarian, Greek, Hungarian, Slovenian and Turkish economies can be argued to have stronger growth opportunities.

Another overall conclusion in accordance with the above arguments can be the fact that, although almost all of the examined countries experienced rapid developments in the corporate governance aspects, they still have to take further measures to overcome market imperfections.

References

[1] Abrosimova, N., Dissanaike, G., and Linowski, D. 2005. Testing the weak form efficiency of the Russian Stock Market. Working Paper, Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=302287 (accessed April 25, 2011).

[2] Aga, M., and Kocaman, B. 2006. An empirical investigation of the relationship between inflation, P/E ratios and stock price behaviours using a new series called Index-20 for Istanbul Stock Exchange. *International Research Journal of Finance and Economics* 6: 133-165.

[3] Aga, M., and Kocaman, B. 2008. Efficient market hypothesis and emerging capital markets: empirical evidence from Istanbul Stock Exchange. *International Research Journal of Finance and Economics* 13: 131-144.

[4] Atan, M., Atan, S., and Ozdemir, Z. A. 2009. Hisse Senedi Piyasasında Zayıf Formda Etkinlik: IMKB Uzerine Ampirik Bir Calısma. *Dokuz Eylül Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi* 24 (2): 33-48.

[5] Atje, R., and Jovanovic, B. 1993. Stock markets and development. *European Economic Review* 37: 632-640.

[6] Bajaj, M., and Vijh, A. 1990. Dividend clienteles and the information content of dividend changes. *Journal of Financial Economics* 26: 193-219.

[7] Bajaj, M., and Vijh, A. 1995. Trading behaviour and the unbiasedness of the market reaction to divided announcements. *Journal of Finance* 50: 255-279

[8] Bamber, L. 1987. Unexpected earnings, firm size, and trading volume around quarterly earnings announcements. *The Accounting Review* 62: 510-532

[9] Breusch, T.S., and Pagan, A.R. 1980. The Lagrange multiplier test and its application to model specifications in econometrics. *Review of Economic Studies*, 47: 239-253.

[10] Brigham, E.F., and Gapenski, C.G. 1994. *Financial Management: Theory and Practice*. The Dryden Press: U.S.A.

[11] Cajueiro, D.O., and Tabak, B.M. 2006. Testing for predictability in equity returns for European transition markets. *Economic Systems* 30: 56-78.

[12] Campbell, J.Y., Lo A.W., and MacKinlay A. C. 1997. *The Econometrics of Financial Markets*. Princeton University Press: NJ, U.S.A.

[13] Celik, T.T., and Tas, O. 2007. Etkin Piyasa Hipotezi ve Gelişmekte olan Hisse Senedi Piyasaları. *Istanbul Teknik Universitesi Dergisi/b Sosyal Bilimler* 4(2): 11-22.

[14] Copeland, T. 1979. Liquidity Changes Following Stock Splits. *Journal of Finance* 34: 115-141.

[15] Dickey, D.A., and Fuller, W. A. 1981. Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Econometrica* 49: 1057–1072.

[16] Dima, B., and Milos, L.R. 2009. Testing the efficiency market hypothesis for the Romanian stock market. *Annales Universitatis Apulensis Series Oeconomica* 11(1): 402-415.

[17] Dockery, E., and Vergari, F. 1997. Testing the random walk hypothesis: evidence for the budapest stock exchange. *Applied Economics Letters* 4: 627-629.

[18] Dumas, B. 1992. Dynamic equilibrium and the real exchange rate in a spatially separated world. *Review of Financial Studies* 5: 153–180.

[19] Emerson, R., Hall, S.G., and Zalewska-Mitura, A. 1997. Evolving market efficiency with an application to some Bulgarian shares. *Economics of Planning* 30: 75–90.

[20] Franses, P.H., and van Dijk, D. 2000. *Non-Linear Time Series Models in Empirical Finance.* Cambridge University Press: Cambridge.

[21] Gilmore, C.G., and McManus, G.M. 2003. Random Walk and Efficiency Tests of Central European Equity Markets. *Managerial Finance* 29(4): 42-61.

[22] Granger, C.W.S., and Terasvirta, T. 1993. *Modelling Nonlinear Economic Relationships*. Oxford University Press: Oxford.

[23] Harrison, B., and Paton, D. 2004. Transition, the evolution of stock market efficiency and entry into eu: the case of Romania. *Economics of Planning* 37: 203-223.

[24] Hasanov, M., and Omay, T. 2007. Are the transition stock markets efficient? Evidence from non-linear unit root tests. *Central Bank Review* 2: 1-12.

[25] Hasanov, M., and Omay, T. 2008. Non-linearities in emerging stock markets: evidence from europe's two largest emerging markets. *Applied Economics* 40(23): 2645-2658.

[26] Hassan, K.M., Haque, M., and Lawrence, S. 2006. An empirical analysis of emerging stock markets of Europe. *Quarterly Journal of Business and Economics* 45 (1): 31-52.

[27] He, H., and Modest, D. 1995. Market frictions and consumption-based asset pricing, *Journal of Political Economy* 103: 94-117.

[28] Holthausen, R., Leftwich, R., and Mayers, D. 1987. The effect of large block transactions on security prices: a cross-sectional analysis. *Journal of Financial Economics* 19: 237-267.

[29] Im, K.S., Pesaran, H., and Shin, Y. 2003. Testing for Unit Roots in heterogeneous panels. *Journal of Econometrics* 115: 53–74.

[30] Jones, D.S., and Netter, J.M. 2008. *Efficient Capital Markets*, The Concise Encyclopedia of Economics. David R. Henderson, ed. Liberty Fund, Inc., Library of Economics and Liberty Available at http://www.econlib.org/library/Enc/EfficientCapitalMarkets.html (accessed August 10, 2011).

[31] Kahraman, D., and Erkan, M. 2005. Istanbul Menkul Kıymetler Borsası'nda Tesadüfi Yürüyüş Testi. *Yönetim ve Ekonomi* 12(1): 11-24.

[32] Kapetanios, G., Shin, Y., and Snell, A. 2003. Testing for a Unit Root in the nonlinear STAR Framework. *Journal of Econometrics* 112: 359-379.

[33] Kim, O., and Verrecchia, R. 1991a. Trading volume and price reactions to public announcements. *Journal of Accounting Research* 29: 302-321.

[34] Kim, O., and Verrecchia, R. 1991b. Market reaction to anticipated announcements. *Journal of Financial Economics* 30: 273-309.

[35] Kraus, A., and Stoll, H. 1972. Price impacts of block trading on the New York stock exchange. *Journal of Finance* 27: 569-588.

[36] Lakonishok, J., and Vermaelen, T. 1990 Anomalous Price Behaviour around Repurchase Tender Offers. *Journal of Finance* 45: 455-478.

[37] Legoarde-Segot, T., and Lucey, B.M. 2008. Efficiency in Emerging Markets - Evidence from MENA Region. *Journal of International Financial Markets, Institutions and Money* 18(1): 94-105.

[38] Levine, R., and Zervos, S. 1998. Stock Markets, Banks and Economic Growth, *American Economic Review* 88: 537-558.

[39] Liu, X., Song, H., and Romilly, P. 1997. Are Chinese Stock Markets Efficient? A Cointegration and Causality Analysis. *Applied Economics Letters* 4: 511-515.

[40] Magnusson, M.A., and Wydick, B. 2002. How Efficient are Africa's Emerging Stock Markets? *The Journal of Development Studies* 38: 141-156.

[41] Mobarek, A., and Keasey, K. 2002. Weak Form Market Efficiency of an Emerging Market: Evidence from Dhaka Stock Market of Bangladesh. Available at http://www.pdf4me.net/pdf-data/weak-form-emerging-market.php (accessed May 2, 2011).

[42] Moustafa, M.A. 2004. Testing the Weak Form Efficiency of the United Arab Emirates Stock Market. *International Journal of Business* 9(3): 31-52.

[43] Obstfeld, M. 1994. Risk-Taking, Global Diversification and Growth. *American Economic Review* 84: 1310-1329.

[44] Omay, T. 2010. A Nonlinear New Approach to Investigating Crisis: A Case from Malaysia," MPRA Paper 20738, University Library of Munich: Germany.

[45] Omay, T., and Kan, E.O. 2010. Re-Examining the Threshold Effects in the Inflation–Growth Nexus with Cross-Sectionally Dependent Non-Linear Panel: Evidence from Six Industrialized Economies. *Economic Modelling* 27(5): 996-1005.

[46] Pesaran, M.H. 2004. General Diagnostic Tests for Cross-Section Dependence in Panels. Cambridge Working Papers in Economics CWPE 0435. Available at http://www.econ.cam.ac.uk/dae/repec/cam/pdf/cwpe0435.pdf (accessed December 10, 2011).

[47] Phillips, P.C.B., and Perron, P. 1988. Testing for Unit Root in Time Series Regression. *Biometrica* 75: 335-346.

[48] Rockinger, M., and Urga, G. 2001. A Time Varying Parameter Model to Test for Predictability and Integration in Stock Markets of Transition Economies. *Journal of Business and Economic Statistics* 19: 73-84.

[49] Shleifer, A. 2000. *Inefficient Markets: An Introduction to Behavioural Finance*. Clarendon Lectures in Economics. Oxford University Press: Oxford.

[50] Seiler, M.J., and Rom, W. 1997. A Historical Analysis of Market Efficiency: Do Historical Returns Follow a Random Walk. *Journal of Financial and Strategic Decisions* 10: 49-57.

[51] Smith, G., and Ryoo, H.J. 2003. Variance Ratio Tests of the Random Walk Hypothesis for European Emerging Stock Markets. *The European Journal of Finance* 9: 290-300.

[52] Teräsvirta, T. 1994. Specification, Estimation, and Evaluation of Smooth Transition Autoregressive Models. *Journal of the American Statistical Association* 89: 208-218.

[53] Uçar, N., and Omay, T. 2009. Testing for Unit Root in Non-linear Heterogeneous Panels. *Economics Letters* 104(1): 5-8.

[54] Yılancı, Veli. 2012. Detection of Nonlinear Events in Turkish Stock Market. *Journal of Applied Economic Sciences Vol VII,* 1(19)/Spring: 93-96.

[55] Zalewska-Mitura, A., and Hall, S.G. 1999. Examining the First Stages of Market Performance: A Test for Evolving Market Efficiency. *Economics Letters* 64: 1-12.

PREDICTING AUDITOR SWITCHES BY APPLYING DATA MINING

Efstathios KIRKOS
Department of Accounting, ATEI of Thessaloniki, **Greece**
stkirk@acc.teithe.gr

Abstract:

Auditor dismissals are considered to be a threat to audit quality. Several studies have examined auditor switches by applying typical statistical analysis. In the present study we deal with the auditor switching problem by applying data mining methodologies. Publicly available financial statement and auditing data are used as predictors. The optimum vector of significant input variables is defined by employing feature selection. A number of data mining classification methods are used to develop models capable of predicting the auditor change cases. The methods are compared against the widely used Logistic Regression. According to the results, all the data mining methods outperform Logistic Regression. Significant factors associated with auditor changes are revealed. The results can be useful to auditing firms, managers, investors, creditors and corporate regulators.

Keywords: Auditor switching, auditing, data mining.

JEL Classification: C38, C45, M42.

Introduction

Modern corporations separate ownership and management. This separation creates incentives for non-owner managers to act in their own interests at the expense of shareholders and creditors. In order to reduce information asymmetry among managers, shareholders and creditors, companies hire independent auditors. However, the conduct of an external audit does not ensure that all material misstatements have been reported. In fact, auditing can be of varying quality. DeAngelo (1981) defines audit quality as the probability that an auditor will both discover a breach in the accounting system and report the breach. When accomplishing their tasks, the auditors may be influenced by several factors which constitute corresponding threats for audit quality. The ICAEW (Institute of Chartered Accountants in England and Wales, Members Handbook 2001) categorizes these threats as 1) the self-interest threat, i.e. the interest of not losing the client 2) the self-review threat, when reviewing prior-year's audits 3) the advocacy threat, when the auditor advocates the position of a client, and 4) the familiarity threat, when the auditor is over-influenced by senior executives. The self-interest threat arises from a very real and certain fact. This fact is that, although the auditor must remain independent and protect investors and creditors, it is the auditor's management that determines the appointment, retention and audit fees.

Since auditor dismissal constitutes a threat for audit quality, the auditor switching problem is a well-recognized research topic. In the past, several studies have addressed the auditor change problem (Johnson, and Lys 1990; DeFond 1992; Krishnan *et al.* 1996; Lennox 2000; Carcello, and Neal 2003; Hudaib, and Cooke 2005; Lin, and Liu 2010). All these studies employ traditional statistical techniques like Principal Components Analysis, Probit or Logistic Regression. However, the new Data Mining (DM) techniques offer considerable advantages over the statistical ones. Studies that applied DM techniques in several auditing related fields report better accuracy rates (Lin, and McClean 2001; Tsakonas *et al.* 2006; Boyacioglou *et al.* 2009; Koh 2004; Kirkos *et al*. 2007a; Gaganis *et al*. 2007; Fanning, and Cogger 1998; Kotsiantis *et al*. 2006; Kirkos *et al*. 2007b; Kirkos *et al.* 2010). Traditional data analysis formulates a hypothesis and tests this hypothesis against the data, whereas the new techniques extract the patterns directly from the data. In addition, DM proposes methods that cover all the stages of the knowledge discovery process, including the selection of the task relevant features, the development of models, the evaluation of the models' performance against unknown data and the interpretation of the models. Such methodologies have not yet been applied in the field of auditor switching research.

The motivation of the present study is to assess the applicability of DM methodologies for the purpose of predicting auditor switching cases. We claim that the publicly available financial statement and auditing data contain enough information to develop models capable of predicting auditor switching cases. Financial ratios and auditing data are used to formulate an initial set of independent variables. Feature selection is applied to select an optimum set of predictors. Several classification methods, including decision trees, neural networks, Bayesian networks, k-nearest neighbours and support vector machines, are employed and corresponding models are developed. These models are tested against the widely used Logistic Regression. The results provide evidence that the DM models outperform Logistic Regression. The performance is evaluated against previously unseen patterns. Decision trees, which provide an interpretable model, highlight significant factors associated with auditor switching practices. The data set contains data about 338 publicly traded British and Irish companies half of which changed auditor during the period 2003-2005. This study adds to the understanding of the auditor procurement process by proposing models capable of predicting the auditor switching cases. The results can be useful to auditing firms, managers, investors, creditors and corporate regulators.

The paper is organized as follows: Section 2 reviews relevant former research. Section 3 includes a brief presentation of the employed classification methods. Section 4 presents the research methodology and the results. Finally, Section 5 comprises the concluding remarks.

Conclusions

In order to reduce information asymmetry among managers, shareholders and creditors, companies hire independent auditors. However, it is the auditee's management that determines the appointment, retention and audit fees. The threat of a potential dismissal may act as an incentive for auditors to compromise their independence and report favourably in order to retain clients. Moreover, a company may switch auditor if expects that the new auditor will issue a more friendly report. Since auditor dismissal constitutes a threat for audit quality, several studies have examined the auditor switching problem. These studies performed typical statistical analysis.

In the present study we deal with the auditor switching problem by employing data mining methodologies. Our sample contains data about 338 UK and Irish companies half of which changed auditor during 2003-2005. The initial independent variables concern account values and financial ratios, audit qualifications and the type of the auditing firm. By applying feature selection we obtained the optimum set of independent variables which can be used as predictors. These variables refer to profitability, debt, inventory and the type of the auditor.

Data mining classification methods have been applied in order to develop models capable of predicting the auditor switching cases. These methods are Decision Trees, Neural Networks, Bayesian Networks, k-Nearest Neighbours and Support Vector Machines. The models are compared against the widely used Logistic Regression in terms of several performance measures. According to the results of the 10-fold cross validation evaluation, all the data mining methods outperform Logistic Regression. The Bayesian Network achieves the highest accuracy rate, followed by the Decision Tree model (84.6% and 78.7% respectively). The Decision Trees method, which provides an interpretable model, highlights the variable Gross Profit as the variable that best separates the two class values.

The present study can be used as a stepping stone for further research. All the independent variables used are publicly available financial statement and auditing data. By enriching the input vector with variables referring to corporate governance characteristics and other managerial issues the performance of the models may be improved. Higher accuracies could also be achieved with the employment of performance improvement techniques like bagging or the development of more elaborated classifiers like ensembles. Industry-specific studies could reveal industry-specific indicators. We hope that the research presented in this paper will therefore stimulate additional work regarding these important topics

References

[1] Altman, E. 1983. *Corporate Financial Distress: A Complete Guide to Predicting, Avoiding, and Dealing with Bankruptcy*, John Wiley, New York, USA.

[2] Beattie, V., and Fearnley, S. 1995. The Importance of Audit Firm Characteristics and the Drivers of Auditor Change in UK Listed Companies. *Accounting and Business Research*, 25: 227-239.

[3] Boyacioglou, M.A., Kara, Y., and Baykan, O. 2009. Predicting bank financial failures using neural networks, support vector machines and multivariate statistical methods: A comparative analysis in

the sample of savings deposit insurance fund (SDIF) transferred banks in Turkey. *Expert Systems with Applications*, 36: 3355-3366.

[4] Branson, J., and Breesch, D. 2004. Referral as a determining factor for changing auditors in the Belgian auditing market: An empirical study. *The International Journal of Accounting*, 39: 307-326.

[5] Carcello, J.V., and Neal, T.L. 2003. Audit Committee Characteristics and Auditor Dismissals following 'New' Going-Concern Reports. *The Accounting Review*, 78: 95-117.

[6] Chow, C., and Rice, S. 1982. Note: Qualified Audit Opinions and Auditor Switching. *The Accounting Review*, 37: 326-335.

[7] Citron, D., and Taffler, R. 1992. The Audit report under going concern uncertainties: An empirical analysis. *Accounting and Business Research*, 22: 337-345.

[8] DeAngelo, L. 1981. Auditor size and audit quality. *Journal of Accounting and Economics*, 3: 183-199.

[9] DeBerg, C.L., Kaplan, S.E., and Pany, K. 1991. An Exanimation of some Relationships between Non-Audit Services and Auditor Change. *Accounting Horizons*, 5: 17-28.

[10] DeFond, M.L. 1992. The Association between Changes in Client Firm Agency Costs and Auditor Switching. *Auditing: A Journal of Practice and Theory*, 11: 16-31.

[11] DeFond, M.L., and Subramanyam, K.R. 1998. Auditor changes and discretionary accruals. *Journal of Accounting and Economics*, 25: 35-67.

[12] Dopuch, N., Holthausen, R.W., and Leftwich, R.W. 1987. Predicting Audit Qualifications with Financial and Market Variables. *The Accounting Review*, 62: 431-454.

[13] Eichenseher, J.W., and Shields, D. 1989. Corporate capital structure and auditor 'fit'. *Advances in Accounting (*Supplement*)*: 39-56.

[14] Fanning, K.M., and Cogger, K.O. 1998. Neural Network Detection of Management Fraud Using Published Financial Data. *Intelligent Systems in Accounting Finance and Management*, 7: 21-41.

[15] Gaganis, C., Pasiouras, F., Spathis, C., and Zopounidis, C. 2007. A comparison of nearest neighbors, discriminant and logit models for auditing decisions. *Intelligent Systems in Accounting Finance and Management*, 15: 23-40.

[16] Hall, M.A. 1998. *Correlation-based Feature Subset Selection for Machine Learning*, Hamilton, New Zealand.

[17] Han, J., and Camber, M. 2000. *Data Mining Concepts and Techniques*, Morgan Kaufman, San Diego, USA.

[18] Hudaib, M., and Cooke, T.E. 2005. The impact of managing Director Changes and Financial Distress on Audit Qualification and Auditor Switching. *Journal of Business Finance and Accounting*, 32: 1703-1739.

[19] Icerman, R., and Hillison, W. 1991. Disposition of auditor–detected errors: some evidence on evaluative materiality. *Auditing: A Journal of Practice and Theory*, 10: 22-34.

[20] Johnson, W.C., and Lys,T. 1990. The market for audit services evidence from voluntary auditor changes. *Journal of Accounting and Economics*, 12: 281-308.

[21] Kirkos, E., Spathis, C., Nanopoulos, A., and Manolopoulos, Y. 2007a. Predicting Qualified Auditors' Opinions: A Data Mining Approach. *Journal of Emerging Technologies in Accounting*, 4: 183-197.

[22] Kirkos, E., Spathis, C., and Manolopoulos, Y. 2007b. Data mining techniques for the detection of Fraudulent Financial Statements. *Expert Systems with Applications*, 32: 995-1003.

[23] Kirkos, E., Spathis, C., and Manolopoulos, Y. 2010. Audit-firm group appointment: an artificial intelligence approach. *Intelligent Systems in Accounting, Finance and Management*, 17: 1-17.

[24] Koh, H.C. 2004. Going concern predictions using data mining techniques. *Managerial Auditing Journal*, 19: 462-476.

[25] Kotsiantis, S., Koumanakos, E., Tzelepis, D., and Tampakas, V. 2006. Predicting fraudulent financial statements with machine learning techniques. *Lecture Notes in Computer Science*, 3955: 538-542.

[26] Krishnan, J., Krishnan, J., and Stephen, R.G. 1996. The Simultaneous relation between auditor switching and audit opinion: An empirical analysis. *Accounting and Business Research*, 26: 224-236.

[27] Krishnan, J., and Stephens, R.G. 1995. Evidence on opinion shopping from audit opinion conservatism. *Journal of Accounting and Public Policy*, 14: 179-201.

[28] Lennox, C. 2000. Do companies successfully engage in opinion-shopping? Evidence from the UK. *Journal of Accounting and Economics*, 29: 321-337.

[29] Lin, F.Y., and McClean, S. 2001. A data mining approach to the prediction of corporate failure. *Knowledge Based Systems*, 14: 189-195.

[30] Lin, Z.J., and Liu, M. 2010. The determinants of auditor switching from the perspective of corporate governance in China. *Advances in Accounting, incorporating Advances in International Accounting*, 26: 117-127.

[31] Nasser, A.T., Wahid, E.A., Nazri, S.N., and Hudaib, M. 2006. Auditor - client relationship: the case of auditor tenure and auditor switching in Malaysia. *Managerial Auditing Journal*, 21: 724-737.

[32] Maimon, O., and Rokash, L. (eds). 2005. *The data mining and knowledge discovery handbook*, Springer, New York, USA.

[33] Ohlson, J. 1980. Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*, 18: 109-131.

[34] Palmrose, Z. 1984. The demand for quality-differentiated audit services in an agency-cost setting: An empirical investigation. *Proceedings of the Sixth Symposium on Auditing Research*, Champaign, Illinois, USA: 229-252.

[35] Reed, B., Trombley, M.A., and Dhaliwal, D.S. 2000. Demand for audit quality: The case of Laventhol and Horwath's auditees, *Journal of Accounting, Auditing and Finance*, 15: 183-206.

[36] Schwartz, K.B., and Menon, K. 1985. Auditor Switches by Failing Firms. *The Accounting Review*, 60: 248-261.

[37] Sinanson, D.H., Jones, J.P., and Shelton, S.W. 2001. An investigation of auditor and client tenure. *Mid-American Journal of Business*, 16: 31-40.

[38] Tsakonas, A., Dounias, G., Doumpos, M., and Zopounidis, C. 2006. Bankruptcy prediction with neural logic networks by means of grammar-guided genetic programming. *Expert Systems with Applications*, 30: 449-461.

[39] Vapnik, V.N. 1995. *The nature of statistical learning theory*, Springer Verlag, New York, USA.

[40] Watts, R.L., and Zimmerman, J.L. 1986. *Positive accounting theory*, Prentice Hall Inc, Engelwood Cliffs, USA.

[41] Willenborg, M. 1999. Empirical analysis of the economic demand for auditing in the initial public offering market. *Journal of Accounting Research*, 37: 225-239.

***Institute of Chartered Accountants in England and Wales. 2001. *Members Handbook 2001*, ICAEW, London, UK.

A CASE STUDY ON INVESTORS' FINANCIAL LITERACY IN INDIAN SCENARIO

K. Senthil KUMAR
School of Management, *SASTRA* University, **Thanjavur**
ksenthilresearch@gmail.com
C. VIJAYABANU
SASTRA University, **Thanjavur**
vijayabanu@mba.sastra.edu
R. AMUDHA
SASTRA University, **Thanjavur**
amudha@mba.sastra.edu

Abstract

Financial literacy is the ability of the individual to make appropriate financial decisions personally. The ability includes understanding the financial products, financial concepts, discussing the financial problems, making choices between managing, spending and saving money and responding to the current reforms in financial market. With the increased risk of global markets and introduction of more innovative financial products, investors are required to make well informed decisions with their money. So, financial Literacy had gained its importance across the globe. The objective of the study is to analyse the influence of the financial literacy level on individual investment decisions. A sample of 469 investors from Tiruchirapalli was selected by way of stratified random sampling method. The primary data collected were analysed with the help of percentage analysis and chi-square test using MS Excel. The result shows that except the gender, there are relationships between the socio-economic factors and the level of financial literacy possessed by the respondents. Following the age and health, responsibilities come as a third factor, which is clubbed with the family commitments. This clearly states that our Indian society is always built based on love and affection bound with generations.

Keywords: Financial literacy, financial objectives, investment avenues and investment decisions.

JEL Classification: G02

Introduction

Financial literacy is the ability to understand finance. More specifically, it refers to the set of skills and knowledge that allows an individual to make informed and effective decisions through their understanding of finances. Adequate financial knowledge if improved to investors can result in good and uniform benefit among gender and geographical regions. Financial knowledge equips the individual to distribute his/her wealth according to the nature of his/her risk taking ability, prevailing economic condition and other personal factors. Moreover financial literacy helps to keep ones retirement life in a comfortable manner. Morris (2001) states that in a world of escalating financial complexity, there is an increasing need for financial knowledge and at least basic financial skills.

Basu (2005) quotes the definition of financial literacy given by the US Financial Literacy and Education Commission as "the ability to make informed judgments and to take effective actions regarding the current and future use and management of money". It had gained its importance after the deregulation of the financial markets and introduction of new financial product. Financial knowledge also helps investors to save their taxes on the returns from their investments and for a smart retirement life. In today's financial world, lot of ability is needed by the investor to navigate through the life cycle of a financial product in vagaries of economic condition. With good knowledge about the financial product it is even better to understand the analysis and advice of experts.

Shalini Kalra Sahi (2009) states that the need for promoting financial education among Indians arises on account of various demographic, market driven (economic and financial), technological and social factors. Imparting financial literacy education is very important for the nation's economic growth and development and hence the successful implementation of the financial literacy programmes would lead to various benefits such as increase in financial confidence, better planning for future needs, consumer protection and financial inclusion.

According to ING Consumer Resourcefulness Survey conducted in January 2011, Indians have better financial literacy levels than most others globally and rank second out of 10 leading nations in having a basic financial literacy level. The nations under study covers India, the USA, Mexico, The Netherlands, Romania, Poland, Belgium, Spain, Korea and Japan. Indians literacy level is 55% just behind Japanese. A majority of Indian consumers have not only shown better skills in managing their household financial budget but are also confident of facing any financial impediments in future as compared to citizens of nine other countries. The survey shows that 84% of Indians prefer buying life insurance products as compared to 54% globally. 87% of the households in India have an emergency fund for two months or more as against 33% globally.

Spisak, and Sperka (2011) say that the transaction costs can be increased by the off-market regulation (in the form of taxes) on market stability, the overall volume of trade and other market characteristics. S. Sveshnikov, and Bocharnikov (2009) state that behaviour of financial indexes depends on psychological sentiments of players (investors, traders) and their inclination to buy or sell financial tools.

Boujelbene Abbes, M., Boujelbene, Y., and Bouri, A. (2009) state that self-attribution bias, conditioned by right forecasts, increases investors overconfidence and trading volume. F. Mierzejewski (2009) says that macroeconomics; financial economics and actuarial sciences fuse together in a unified theoretical framework, which can be applied as an alternative to the utility maximisation approach. L. Ungureanu, and I.V. Matei (2008) state that since money has a capacity to connect the present and the future, conflicts among long-run and short-run economic goals and uncertainties of the future make economic decisions very complicated.

Conclusion

Financial literacy is the ability of the individual to make appropriate financial decisions personally. The ability includes understanding the financial products, financial concepts, discussing the financial problems, making choices between managing, spending and saving money and responding to the current reforms in financial market. The sophisticated financial markets offer continuously new financial products in the market. The increase in the level of financial literacy will also result in the financial inclusion which is the need of the present Indian economy.

Case Questions:

1. How do the socio-economic factors influence the level of financial literacy?
2. Which source of information influence the decision of individuals in different investment avenues?
3. Which personal factor influences the decision of individuals in investing?
4. Elucidate the problems faced by individuals and the situations which need an investment plan review.

References

[1] Anderson, S.G., Zhan, Min, and Scott, J. 2004. Targeting Financial Management Training at Low income Audiences: Bits, Briefs, and Applications. *Journal of consumer affairs,* Vol. 38, No. 1, pp. 167-177.

[2] Basu, S. 2005. *Financial literacy and the life cycle*. Washington, DC: Financial Planning Association.

[3] Boujelbene Abbes, M., Boujelbene, Y., and Bouri, A. 2009. Overconfidence bias: Explanation of market anomalies French market case. *Journal of Applied Economic Sciences*, Vol. IV, Issue 1(7) Spring, pp.12-25.

[4] Chen, H., and Volpe, R.P. 2005. Financial literacy, education and services in the workplace. A Journal of Applied Topics in Business and Economics, (online), (Accessed: 2 Feb 2006) http://www.westga.edu/~bquest/2005/workplace.pdf.

[5] Cutler, N.E. 1997. The false Alarms and Blaring Sirens of Financial Literacy: Middle - Agers Knowledge of Retirement income, Health finance and long term care. *Generations*, Vol. 21, No.2, pp. 34-40.

[6] Dimitris, C., Jappelli, T., and Padula, M. 2010. Cognitive abilities and portfolio choice. *European Economic Review*, Vol. 54, pp.18-38.

[7] Hastings, J., and Tejeda-Ashton, L. 2008. Financial literacy, information and demand Elasticity: Survey and Experimental Evidence from Mexico. NBER Working paper No. 14538.

[8] Hilgert, M.A., and Hogarth, J.M. 2003. Household Financial Management: The connection between Knowledge and Behaviour. *Federal Reserve Bulletin* July, pp. 309-22.

[9] Kinnunen, U, and Pulkkinen, L. 1998. Linking economic stress to marital quality among finish marital couples. *Journal of Family Issues*, 1998; 19(6):705- 724.

[10] Lusardi, A., and. Mitchell, O.S. 2007a. Baby boomer retirement security: The role of planning, financial literacy and housing wealth. *Journal of Monetary Economics*, Vol. 54, pp. 205-224.

[11] Lusardi, A., and. Tufano, P. 2009. Debt literacy, financial experiences, and overindebtedness. NBER Working paper no. 14808.

[12] Mierzejewski, F. 2009. Towards a general theory of liquidity preference. *Journal of Applied Economic Sciences*, Vol. IV, Issue 2(8) Summer, pp.261-272.

[13] Morris, L. 2001. *An investigation into the financial knowledge levels of New Zealand senior secondary school students*, Wellington: Enterprise New Zealand Trust.

[14] Rosen, H.S., Wu, S. 2004. Portfolio choice and health status. *Journal of Financial Economics*, Vol.72, No.3, pp. 457-484.

[15] Sahi, S.K. 2009. Financial literacy education for the Indian consumer: the road to economic development. *International Journal of Indian Culture and Business Management*, Vol. 2, No. 5, pp. 493-518.

[16] Schagen, S, and Lines, A. 1996. Financial Literacy in Adult life: A Report to the NAtwestGroup Charitable Trust, Slough, Berkshire: National Foundation for Educational Research.

[17] Singh, J.P. 2004. *The contemporary Indian Family, Handbook of world families*, Bert N. Adams, Jan Trost, (Eds.), Sage Publications India Private Ltd, New Delhi, pp129-166.

[18] Spisak, M., and Sperka, R. 2011. Financial market simulation based on intelligent agents- case study. *Journal of Applied Economic Sciences*, Vol. VI, Issue 3(17) Fall, pp.249-256.

[19] Sveshnikov, S., and Bocharnikov, V. 2009. Forecasting financial indexes with model of composite events influence. *Journal of Applied Economic Sciences*, Vol. IV, Issue 3(9) Fall, pp. 425-440.

[20] Ungureanu, L., and Matei, I. V. 2008. Advances in decision analysis. Efficient methods in finance. *Journal of Applied Economic Sciences*, Vol. III, Issue 4(6) Winter, pp. 471-478.

[21] van Rooij, M., Lusardi, A., and Alessie, R. 2011. Financial literacy and stock market participation. *Journal of Financial Economics, forthcoming*.

[22] Wolcott, I., and Hughes, J. 1999. Towards understanding the reasons for divorce, Working paper No. 20, Australian Institute of Family Services, Melbourne.

***Adult Financial literacy Advisory group (Adflag). 2000. Report to the secretary of state for Education and employment (online), department of Education and skills, London, available: http://www.dfes.gov.uk/adflag/(accessed 10 Sep, 2005).

***http://www.financialexpress.com/news/financial-literacy-india-is-worlds-no.-2/737508/1

***http://en.wikipedia.org/wiki/Financial_literacy

SOURCES OF EXCHANGE RATE VOLATILITY IN THE EUROPEAN TRANSITION ECONOMIES. EFFECTS OF ECONOMIC CRISIS REVEALED

Rajmund MIRDALA
Faculty of Economics, Technical University of Kosice, **Slovakia**
rajmund.mirdala@tuke.sk

Abstract:

Negative macroeconomic performance issues represent one of the key effects of crisis period. Due to many economic crisis related side effects countries became more vulnerable to various types of endogenous and exogenous shocks. Exchange rates of the European transition economies became much more volatile as a result of increased uncertainty on the financial markets as well as changed behaviour of structural shocks affecting exchange rates path during the crisis period. As a result we expect a contribution of the structural shocks to the exchange rates path has changed.

In the paper we analyse sources of exchange rate fluctuations in the European transition economies. We estimate the contribution of nominal, supply and demand shocks to NEER and REER variability implementing SVAR methodology. Long run restrictions are applied to unrestricted VAR model to identify structural shocks. Variance decomposition and impulse-response functions are computed for each individual country for the period 2000-2007 and 2000-2011. Comparison of results for both periods is crucial for identification of the role of economic crisis in determining exchange rate volatility in the European transition economies.

Keywords: exchange rates, exogenous structural shocks, structural vector autoregression, variance decomposition, impulse-response function.

JEL Classification: C32, E52

Introduction

Current economic crises deteriorated overall macroeconomic performance of the European transition economies. At the same it caused their exchange rates to become much more volatile as a result of increased uncertainty on the financial markets as well as changed behaviour of structural shocks affecting exchange rates path during the crisis period.

Decreased predictability of (especially) short-term exchange rates path affected not only countries with their own currencies (Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland and Romania in our sample) but also member countries of the Economic and Monetary Union (EMU) (Slovak Republic and Slovenia in our sample). In general, exchange rate stability is considered to be one of the most significant outcomes of the Eurozone membership especially for smaller and opened transition economies. On the other hand economic and debt crisis related problems negatively contributed to the exchange rate stability of the euro. Under such circumstances exogenous character of sudden exchange rate shifts in currency unions become a viable vehicle of undesired external shocks especially in small open economies.

In the paper we analyse sources of exchange rate fluctuations in the European transition economies. We estimate the contribution of nominal, demand and supply shocks to NEER and REER variability implementing SVAR methodology. Long run restrictions are applied to unrestricted VAR model to identify structural shocks. Variance decomposition and impulse-response functions are computed for each individual country for the period 2000-2007 and 2000-2011. Comparison of results for both periods is crucial for identification of the role of economic crisis in determining exchange rate volatility in the European transition economies.

Conclusion

Exogenous structural shocks determined exchange rates in the European transition economies in the line with the general empirical investigations though we observed some specific implications and related distorting effects of structural shocks during the crisis period leading to the unpredicted exchange rate shifts that may be a subject of a further academic discussion focusing on the specific causalities of the economic crisis. Variance decompositions and impulse-response functions computed from estimated VAR model revealed notable differences in the behaviour of real and nominal exchange rates after being hit by the one standard deviation positive nominal, demand and supply shocks as well as in their contribution to the real and nominal exchange rate conditional variability.

In general, our results mostly confirmed our expectations of the exogenous shocks determination potential related to the real and nominal exchange rate conditional variance in our sample of ten transition economies during the pre-crisis period. While the role of demand shock seems to be crucial in determining the real exchange rate path (not only in the short period) in all ten countries, its contribution to the variability of nominal exchange rate has decreased in general (Slovenia, the Slovak Republic) or with lag (the Czech Republic, Lithuania, Romania). The role of nominal shock and supply shocks in determining nominal and real exchange rate differed reasonably in many cases. While nominal shocks changed their contribution especially in the short period, the role of supply shocks increased mainly with rising lag.

Crisis period significantly affected the role of shocks in determining REER and NEER leading path in all countries but Hungary and partially in Poland (though minor differences are present in these countries too). We emphasize obvious reduction in contribution of demand shock to REER variance in Bulgaria, the Czech Republic, Romania and the Slovak Republic associated with increased role of supply shock in the Czech Republic, Romania and Slovak Republic and of nominal shock in Bulgaria. This trend is also present in NEER variance decomposition though with reduced intensity. We suggest the “swap-trigger effect” between two shocks (decreasing role of demand shocks versus increasing role of supply shocks) may be considered as the most significant side effect of the crisis related causalities that should be the subject of the further rigorous investigation.

Following our expectations nominal and demand shocks caused immediate REER and NEER appreciation in most countries from the group of the European transition economies. Prevailing high short-run sensitivity of exchange rates to demand shock resulted in significant vulnerability of REER and NEER to sudden shifts caused by substantial aggregate demand components (especially in external demand) that seems to be a crucial subject of interest mainly in small opened economies (especially the Czech republic, Slovenia, the Slovak republic and Baltic countries). On the other hand increasing medium-term and long-term importance of supply shock in determining REER reflects increasing role of domestic sources of supply shocks including changes in relative competitiveness and productivity.

Responses of REER and NEER due to crisis effects reflected changed contribution of structural shocks to the exchange rate leading path during the crisis period in all ten European transition economies. We emphasize short-term destabilizing effects of nominal shocks to REER path in the Czech Republic, Hungary and Poland as well as permanent effects of supply shocks on REER path in Bulgaria and the Czech Republic as well as NEER path in Slovenia and the Slovak Republic. Although it may be difficult to understand and interpret early benefits of Eurozone membership due to common crisis effects we suggest our results may contribute to the discussion about short-term and long-term effects of sacrificing monetary sovereignty in small open transition economies while still leaving room for further empirical investigation.

Acknowledgement

This paper was written in connection with scientific project VEGA no. 1/0973/11. Financial support from this Ministry of Education’s scheme is also gratefully acknowledged.

References

[1] Artis, M.J., Ehrman, M. 2000. The Exchange Rate - A Shock-absorber or Source of Shocks? A Study of Four Open Economies. Robert Schuman Centre for Advanced Studies, Working Paper No. 38/2000. San Domenico di Fiesole, European University Institute, 39 p.

[2] Borghijs, A., Kuijs, A. 2004. Exchange Rates in Central Europe. International Monetary Fund, Working Paper, No. 2/2004. Washington D.C., International Monetary Fund, 29 p.

[3] Bayoumi, T.A., Eichengreen, B. 1992. Shocking Aspects of European Monetary Unification. NBER Working Paper, no. 3949. Cambridge, National Bureau of Economic Research.

[4] Ben Arfa, N. 2009. Analysis of Shocks Affecting Europe: EMU and some Central and Eastern Acceding Countries. *Panoeconomicus*. 1(56): 21-38.

[5] Borghijs, A., Kuijs, L. 2004. Exchange rate in the Central Europe. IMF Working Paper, no. 04/02. Washington, International Monetary Fund.

[6] Calvo, G., Reinhart, C. 2002. Fear of Floating. *Quarterly Journal of Economics* 117(2): 379-408.

[7] Chowdhury, I.S. 2004. Sources of Exchange Rate Fluctuations: Empirical Evidence from Six Emerging Market Countries. *Applied Financial Economics*, 14(10): 697-705.

[8] Clarida, R., Gali, J. 1994. Sources of Real Exchange Rate Fluctuations: How Important Are Nominal Shocks? Carnegie-Rochester Conference Series on Public Policy 41, p. 1-56.

[9] Fidrmuc, J., Horváth, R. 2007. Volatility of Exchange Rates in Selected New EU Members: Evidence from Daily Data. CESifo, Working Paper No. 2107. Munich, CESifo, 31 p.

[10] Fidrmuc, J., Korhonen, I. 2001. Similarity of supply and demand shocks between the Euro area and the CEECs, BOFIT Discussion Papers 14/2001, Bank of Finland, Institute for Economies in Transition.

[11] Enders, W., Bong-Soo, L. 1997. Accounting for Real and Nominal Exchange Rate Movements in the post-Bretton Woods Period, *Journal of International Money & Finance*, 16(2): 233-254.

[12] Égert, B., Halpern, L., MacDonald, R. 2005. Equilibrium Real Exchange Rates in Transition Economies. William Davidson Institute, Working Paper, No. 793. Michigan, William Davidson Institute, 50 p.

[13] Frait, J., Komárek , L. 2001. Real Exchange Rate Trends in Transitional Countries. University of Warwick, Economic Research Paper No. 596. Warwick, University of Warwick, 35 p.

[14] Hamori, S., Hamori, N. 2007. Sources of real and nominal exchange rate movements for the Euro. *Economics Bulletin*, 6(32): 1-10.

[15] Kollmann, R. 2001. The Exchange Rate in a Dynamic-Optimizing Business Cycle Model with Nominal Rigidities: A Quantitative Investigation. *Journal of International Economics*, 55(2): 243-262.

[16] Kutan, A.M., Dibooglu, S. 1998. Sources of real and nominal exchange rate fluctuations in transition economies. Federal Reserve Bank of St. Louis, Working Paper No. 22/1998. St. Louis, Federal Reserve Bank of St. Louis, 21p.

[17] Lastrapes, W.D. 1992. Sources of fluctuations in real and nominal exchange rates, *Review of Economics & Statistics*, 74(3): 530-539.

[18] Mirdala, R. 2008. *Exchange Rate and Output Vulnerability in Selected CEECs (SVAR Approach)*, Journal of Economics (Ekonomický časopis), 56(8): 745-763.

[19] Mirdala, R. 2012. Macroeconomic aspects of real exchange rate volatility in the Central European Countries. *Journal of Applied Economic Sciences*, 7(2):163-178.

[20] Stazka, A. 2006. Sources of real exchange rate fluctuation in Central and Eastern Europe. CESifo Working Paper, no. 1876. Munich, CESifo GmbH.

THE IMPACT OF GROWTH ON BIODIVERSITY: AN EMPIRICAL ASSESSMENT[1]

Roberta DE SANTIS
Istat and Luiss University, Rome, **Italy**
rdesantis@istat,rdesantis@luiss.it

Abstract

Several studies investigating environmental Kuznets curve (EKC) relationship for biodiversity, suffer from limitations and the empirical evidence is inconclusive. More specifically, with few exceptions, the previous EKC studies for biodiversity looked into the diversity of a particular species or a number of species rather than a broader measure of biodiversity. In addition, these studies do not control for some economic factors that could directly or indirectly affect the biodiversity stock such as trade and foreign direct investments. The innovative features of this paper are its attempts to estimate an ECK for biodiversity using an overall index of biodiversity and the inclusion in the traditional ECK equation of proxies for trade and FDI. We also tested the impact on biodiversity of the membership in agreements for biodiversity protection. According to our estimates the ECK is partially verified. Rising incomes are associated with increasing biodiversity then with decreasing biodiversity and eventually with increasing biodiversity again.

Keywords: Biodiversity risk, trade, FDI, environmental Kuznets curve.

JEL Classification: O40, Q50, C23, C52

Introduction

Since it first appeared as a formal concept in the early 1990s, the environmental Kuznets curve (EKC) hypothesis[2] has engendered significant debate within academic and policy literature.

Whether the Environmental Kutznets curve relationship holds for biodiversity loss or not is a particularly challenging issue to investigate. In fact, there may be some biodiversity losses that cannot be continuously substituted with better production technology and thus the ECK hypothesis would be rejected.

The empirical literature investigating the EKC relationship for biodiversity is not particularly recent, suffers from some limitations and it is inconclusive. With few exceptions, the previous EKC studies for biodiversity looked into the diversity of a particular species or a number of species rather than into a broader measure of biodiversity. In addition, these studies do not account for some economic factors that could directly or indirectly affect species diversity such as trade and foreign direct investments (FDI). International trade, in fact, could influence the biodiversity trough the effects on economic growth, on production specialization and on technological innovation diffusion. The presence or not of FDI in a country, on the other hand, could help in assessing the "pollution haven" stating that foreign investors from industrial countries are attracted to weak environmental regulations in other countries. This principle says that a company would want to locate in a country with the lowest environmental standards for using less environmental friendly production techniques. This hypothesis, if verified, has obvious negative feedbacks on biodiversity.

The innovative features of this paper are its attempts to estimate ECK for biodiversity using an overall index of biodiversity terrestrial and marine and the inclusion in the traditional ECK equation of proxies for trade and FDI for the main OECD countries in the time period 1990-2010. We also tested the impact on biodiversity of the membership in international agreements for biodiversity protection and in particular the Convention for Biological Diversity.

The paper is organized as follows. The first section conducts a critical survey of the most recent empirical literature, the second and the third sections describe the empirical strategy, the equation and the dataset and the estimation results. Conclusions follow.

---

[1] The views expressed in this paper are those of the author and do not necessarily represent the institutions with which the author is affiliated. Any error or mistake remains authors' sole responsibility.

[2] The hypothesis states that environmental degradation will increase with economic development up to a point, upon which additional development will lead to a decline in environmental degradation.

Conclusions

Whether the Environmental Kutznets curve relationship holds for biodiversity loss or not is a particularly challenging issue to investigate. In fact, there may be some biodiversity losses that cannot be continuously substituted with better production technology. The studies investigating the EKC relationship for biodiversity, with few exceptions are subject to various limitations. First of all, different authors use heterogeneous measures of biodiversity making the comparison among the different empirical findings impossible and therefore the empirical evidence is inconclusive.

In this paper we measure biodiversity in terms of percentage of terrestrial and marine area under conservation, to make possible for the indicator to both decrease and increase in order to test the ECK hypothesis. If we would have measured biodiversity in terms of the number of animal or plant species, an increase might not be possible, at least not on a timescale of interest. Furthermore, for the specific purpose of this paper, a proper measure of biodiversity had to be able to account for other factors that directly affect species diversity such as trade and FDI.

According to our estimates for 34 OECD countries in the period 1990-2010 the ECK hypothesis is verified. Rising incomes are first associated with increasing biodiversity (decreasing ES) then with decreasing biodiversity (increasing ES) and eventually with increasing biodiversity again (decreasing ES).

The non-monotonic relationship could be explained by the fact that a certain level of income (production) there may be some biodiversity losses that cannot be continuously substituted with "economically accessible" environmental-friendly production technology due to ecological threshold and the unique nature of the damage. The following new increase of biodiversity could be explained by the fact that at a certain level of income it is possible to restore/ increase biodiversity also using very expensive environmental-friendly production technology.

We also find a positive and significant relationship between CBD membership and biodiversity level. Thus it seems that rather than passively relying on simple economic growth to protect biodiversity, taking direct policy actions at national and international level can have positive impacts (i.e., international treaties and protocols).

We included in our regression interaction terms between the environmental regulations dummy and the other regressors (table 2). With the inclusion of these terms, the estimated coefficients indicate the difference in effects of the variable on the dependent variable between countries that had signed the CBD and those that had not.

We found a positive and significant coefficient for per capita GDP and for the percentage of urban population. This evidence seems to show that for OECD countries having signed the CBD increased the positive impact of the per capita GDP and partly mitigated (by the amount of the estimated coefficient) the negative impact on biodiversity of the urban population pressure.

References

[1] Asafu-Adjaye, J. 2003. Biodiversity Loss and Economic Growth: A Cross-Country Analysis. *Contemporary Economic Policy* **21**:173-185.

[2] Dasgupta, P. 2000. *Valuing biodiversity, encyclopaedia of biodiversity'*, edited by Simon Levin, New York: Academic Press.

[3] Dasgupta, S., Laplante, B., Wang, H., and Wheeler, D. 2002. Confronting the environmental Kuznets curve. *Journal of Economic Perspectives*, Vol. 16, No. 1, pp. 147- 168.

[4] De Santis, R. 2012. Impact of environmental regulations on trade in the main EU countries: conflict or synergy? *The World Economy* vol. 35 issue 7.

[5] Dietz, S., and Adger, W.N. 2001. Economic growth, biodiversity loss and conservation effort. CSERGE Working Paper No. ECM 01-03, University of East Anglia, Norwich.

[6] Grossman, G, and Krueger, B. 1996. The Inverted-U: What Does IT Mean? *Environment and Development Economics*, Vol. 1, No. 2, pp. 119-122.

[7] Harbaugh, B., Levinson, A., and Wilson, D. 2002. Re-examining the empirical evidence for an Environmental Kuznets Curve. *Review of Economics and Statistics*, Vol. 84, No. 3, pp. 541-551.

[8] Jie He. 2007. Is the environmental Kuznets curve hypothesis valid for developing countries? A survey. Gredi WP, 07-03.

[9] Kuznets, S. 1955. Economic growth and income inequality. *American Economic Review*, Vol. 45, No.1, pp. 1-28.

[10] Mozumder, P., Berrens, R.P., and Bohara, A.K. 2006. Is There an Environmental Kuznets Curvefor the Risk of Biodiversity Loss? *The Journal of Developing Areas*, **39**: pp.175-190.

[11] McPherson, M., and Nieswiadomy, M.L. 2000. Environmental Kuznets curve study of threatened species. Paper Presented at 75th Annual Conference of the Western Economic Association International, Vancouver, British Columbia, Canada.

[12] Naidoo, R., and Adamowicz, W.L. 2001. Effects on economic prosperity on numbers of threatened species. *Conservation Biology*, Vol. 15, No. 4, pp. 1021-1029.

[13] Omer, A., Pascual, U., and Russell, N. 2003. Agricultural Intensification and Biodiversity Loss: Is There and Agri-EKC?, The School of Economics Discussion Paper No. 0317, The University of Manchester, Manchester, UK.

[14] Panayotou, T. 1993. Empirical tests and policy analysis of environmental degradation at different stages of economic development. World Employment Program Research Working Paper WEP2-22/WP 238.

[15] Rothman, D., and Khanna, N. 2008. Macro- and micro-perspectives on economic development and Biodiversity. Binghamton University Economics Department Working Paper 0801.

[16] Ryers, B., and James, A.N. 1999. An upgraded national biodiversity risk assessment index. *Biodiversity and Conservation*, Vol. 8, No. 11: 1555-1560.

[17] Ryers, B., Van Jaarsveld, A.S., McGeoch, M.A., James, A.N. 1998. National biodiversity risk assessment: A composite multivariate and index approach. *Biodiversity and Conservation*, Vol. 7, No. 7: 945-965.

[18] Rock, M. 1996. Pollution Intensity of GDP and Trade Policy: Can the World bank be Wrong?. *World Development*, Vol. 24, No. 3: 471-47.

[19] Rothman, D.S., and Khanna, N. 2008. Macro- and Micro- perspectives of economic development and biodiversity: Binghamton University Economics Department Working Paper 0801.

[20] Stern, D.I. 1998. Progress on the Environmental Kuznets Curve. Environment and *Development Economics*, Vol. 3, No. 2: 175-198.

[21] Stern, D.I., and Common, M.S. 2001. Is there an environmental Kuznets curve for Sulfur? *Journal of Environmental Economics and Management*, Vol. 41, No. 2: 162-178.

[22] Suri, V., and Chapman, D. 1998. Economic growth, trade and the energy: implications for the environmental Kuznets curve. *Ecological Economics* 25: 195 -208.

[23] Turner, R.K., Pearce, D., and Bateman, I. 1993. *Environmental Economics: An Elementary Introduction*. The John Hopkins University Press, Baltimore.

REVIEW ON ACCOUTING OF REVENUE RELATED TO NET TURNOVER OF THE SMEs

Silvia SIMIONESCU
Spiru Haret University, **Romania**
silviasimionescu@yahoo.com

Abstract:

The categories or types of income included in the turnover characterize the profile of the basic business and, naturally, have the largest share in the total income of the entity.

Analysing the layout of the profit and loss we see that the net turnover also includes the operating subsidies reflected through the 7411 "Income from subsidies related to turnover" account.

In our opinion proceeds from the sale of goods cannot be recognized in case of the internal operations within companies, such as: the transmission of products and goods for sale in own shops, the use of goods for the internal needs of the company etc.

Keywords: net turnover, profit and loss, income earned, revenue from services rendered, finished products, waste products, royalties, income from work, trade discounts offered.

JEL Classification: M12, M54, J53

Introduction

In the accounts related to revenues on sales of goods the entries are made in the moment of delivery of goods to customers, of deliveries based on invoice or in other conditions stipulated in the contract so that the transfer of ownership to the customer is confirmed.

The income from sales of goods is reflected in the books of accounts using synthetic accounts of first degree which constitute the group 70 "Net turnover" namely 701 "Sales of finished products", 702 "Sale of semi-finished products", 703 "Sales of residual products", 704 "Services rendered", 705 "Revenues from research studies", 706 "Rental and royalty income", 707 "Sale of goods purchased for resale", 708 "Revenues from sundry activities" and 709 "Trade discounts offered".

Conclusion

The analysis of the abovementioned criteria allows us to consider that the proceeds from the sale of goods cannot be recognized in case of the internal operations within companies, such as: the transmission of products and goods for sale in own shops, the use of goods for the internal needs of the company etc. However this rule is not always respected in practice.

Analysing the operation of the two accounts, according to the specifications made by the Chart of accounts, we notice that the category of goods include also the finished products obtained from own production subsequently transferred to own stores to be sold directly to consumers, both businesses and individuals.

In principle, the accounting of revenue from combined transactions is not a complicated operation; important is the separation of incomes by their nature.

References

[1] Iacob, C., Ionescu, I., Goagără, D. 2007. *Contabilitate de gestiune conformă cu practica internaţională.* Editura Universitaria, Craiova, p. 84, in *Romanian.*

*** GO nr. 99/August 29, 2000 on the marketing of products and market services, republished in the Official Gazette nr. 603/31 august 2007, approved by Law 650/December 7, 2002 published in the Official Gazette nr. 914/December 16, 2002, amended by Law 211/2008.

*** EXW – Ex Works is the most convenient delivery condition for the seller as it provides minimum requirements for it; the buyer has to bear all risks and costs involved in taking over the goods at the agreed place.

*** OMPF 1826 for approving the Specifications regarding some measures for the organization and of management of accounting management, Official Gazette 23/2004

*** OMPF 3055/2009 for the approval of the Accounting regulations in compliance to the European Directives, Official Gazette, Part I, nr.766 of November 10, 2009

*** http://www.contabilizat.ro/dictionar_economic_si_financiar~termengarantie_de_terminare.html

A SIMPLIFIED MODEL OF AN INTERACTION DYNAMICS IN WORK GROUPS

Petr SNAPKA
VSB-Technical University of Ostrava, **Czech Republic**
petr.snapka@vsb.cz
Josef KASIK
VSB-Technical University of Ostrava, **Czech Republic**
josef.kasik@vsb.cz

Abstract:

The aim of the paper is to draw up a simplified model of an interaction dynamics in work groups. A work group in this model is considered to be a system whose behaviour can be expressed through four variables which are functions of time; to be specific, by means of: the interaction intensity among the work group members, level of friendly relations among the work group members, level of activity and initiative of the work group members and the level of external pressure of the workgroup's surroundings exerted on the group members. Further, the proposed system of interaction in work groups is investigated from the view of the general theory of system regulation. A regulated system is considered to be a group of workers and the regulated quantity is the level of friendly relations among the group members and/or the level of activity and initiative among the group members. A regulating system consists of a system of conditions present in the group in a certain period of time which affect achieving the equilibrium state of the system. Some dependences resulting from the proposed model are also interpreted.

Keywords: model, interaction, work group, information exchange, negative feedback system, work relations

JEL Classification: M12, M54, J53

Introduction

Theorists have been puzzling over human group and its dynamics for centuries (Homans 1951; Jardillier 1980; Shaw 1980; Wheelan, and Todd 2003; Hogg, and Vaughan 2008; Engleberg, and Wynn 2009). In spite of their endeavour they are not of one mind even when it comes to defining the word group (Forsyth 2009). There have been many researches that explore patterns of work group interaction since 1960 (Likert 1961; Tuckman 1965; Townsend *et al.* 1968; Gersick 1988; Perlow *et al.* 2004). The purpose of our paper is to describe a simplified model of an interaction dynamics in work groups that will help us to understand more clearly what we are observing in organizations.

Conclusion

Conclusions drawn from the investigation into the equilibrium state and stability of the system of "interaction in work groups" are also in line with empirical knowledge obtained from research relating properties of highly effective work groups, i.e. groups characterized by harmonic behaviour.

Based on the research (Cartwright, and Zander 1953; Likert 1961; Perlow *et al*. 2004; Tuckman 1965; Wheelan, and Todd 2003) it was found that it is typical of an effective group, for example, that it exists for a sufficient period of time, which results in the fact that the workers in this group could create an adequate level of interaction among the group members. In view of the presented model, time is one of the factors influencing the achievement of the value of both individual variable models and the coefficients α, β, a, and b, as well as the coefficient c in such a value that the system is stable and the group behaves harmonically.

Further, there is a high degree of confidence among the members of highly effective groups and their leadership. This fact is again reflected by the model in the way that the equilibrium state of the investigated system is dependent upon the positive relations of group members to external pressure, because here $A_0 > E_0$ and the system equilibrium is stable.

A highly effective group is also characterized by the fact that the values and goals of the group are sufficient integration and reflection of their members' mutual values and needs. The group members are highly motivated to persist in main values and the achieving of significant goals of the group. In the group, there is a lot of activity and initiative exerted by the group members in order to fulfil the group's goals and thus the goals of the individuals in the group. As a result, a high value of the spontaneity coefficient 1/β is achieved, which is desirable for the stability of the system equilibrium. This could be an interpretation of other dependences found on the basis of the behavioural analysis of the created regulation circuits and then the individual causes, which result in making the values of the basic parameters characterizing the group, either as a group able to achieve the equilibrium state and stability in their behaviour, i.e. a group with effective harmonic behaviour, or as a low effective group, can be synthesized.

We are also aware of the fact that the model of the system – "interaction in work groups" – is simplified compared to the complexity of relations in interaction among members of a work group. Despite this fact, the model helps to clarify the concept of investigation into independence or dependence of the factors affecting this process in the group and it also helps to derive new statements, which can, having been verified in practice, support comprehension of the behaviour of work groups. This procedure of research into the interaction process in the group also shows the possibilities of utilization the general theory of system regulation for investigation into dependences in human behaviour.

References

[1] Cartwright, D., and Zander, A.1953. *Group dynamics research and theory*. Tavistock Publications Limited.

[2] Engleberg, I.N., and Wynn, D.R. 2009. *Working in groups.* 5th Ed, Allyn & Bacon.

[3] Forsyth, D.R. 2009. *Group dynamics.* 5th Ed, Wadsworth Publishing.

[4] Gersick, C.J.G. 1988. Time and Transition in Work Teams: Toward a New Model of Group Development. *The Academy of Management Journal.* Vol. 31, No. 1, pp. 9-41.

[5] Hogg, M.A., and Vaughan, G. 2008. *The social psychology.* 5th Ed, Pearson Education Limited.

[6] Homans, G.C. 1951. *The human group.* Routledge.

[7] Jardillier, P. 1980. *L'Organisation humaine du travail*. Presses Universitaires de France.

[8] Likert, R. 1961. *New Patterns of management.* McGraw Hill.

[9] Perlow, A.L., Gittell, J.H., and Katz, N. 2004. Contextualizing patterns of work group interaction: toward a nested theory of structuration. *Organization Science*, Vol. 15, No. 5, pp. 520-536.

[10] Shaw, M.E. 1980. *Group dynamics: The Psychology of Small Group Behaviour*. McGraw Hill.

[11] Townsend, M.A. *et al*. 1968. Virtual teams: technology and the workplace of the future. *Academy of Management Executive*, Vol. 12, No. 3, pp. 17-29.

[12] Tuckman, B.W. 1965. Developmental sequence in small groups. *Psychological Bulletin*, Vol. 63, No. 6, pp. 384-399.

[13] Wheelan, S.A., and Todd, W. 2003. Mapping dynamic interaction patterns in work groups. *Small Group Research,* Vol. 34, No. 4, pp. 443-467.

DO M&A ENHANCE VALUES? MIXED METHODS AND EVIDENCE

Amporn SOONGSWANG
School of Management, *Shinawatra* University, **Thailand**
amporn@siu.ac.th

Abstract

This study features the impact of takeovers on the event firms traded on the Stock Exchange of Thailand (SET). The study investigates a long-window abnormal return, or during a period of twelve months before and after the announcements using several metrics. The traditional models and the latest research method were employed for the abnormal return estimation for the bid period. These are the market and market-adjusted models and the matched reference portfolio of firms. The cumulative abnormal return (CAR), buy-and-hold abnormal return (BHAR) and monthly average abnormal return methods were used for the measurement of the returns of the two sets of firms. Both parametric and non-parametric test statistics were also used. The results suggest that target firm's shareholders gain substantial and positive abnormal returns; meanwhile bidding firm's shareholders realize positive rather than negative abnormal returns. The total gains are positive at 37.63% explaining takeovers create values.

Keywords: M&A, takeover, total gain, shareholder wealth, event study, Thailand.

JEL Classification: G14, G34

Introduction

Forms of the event study methodology has been the predominant method used to measure stock price responses to merger or takeover announcements, and most studies suggest that target firm shareholder returns are on average significantly positive; meanwhile, the evidence on bidding firms is far less conclusive (e.g., Campa, and Hernando 2004; Eckbo 2009). Consequently, even though a number of studies report positive total abnormal returns, or total gains; some argue that takeovers have negative effects (e.g., Jensen 2006; Martynova, and Renneboog 2011; part of results reported by Akbulunt, and Matsusaka 2010).

Thus, this research was undertaken to explore this issue in a Thai context: whether or not takeovers result in positive or negative effects on target and bidding firms' shareholders and subsequently their total gains. The study primarily based on a sample of successful tender offers. The analysis emphasized abnormal performance measurement by using monthly stock price data. Several more metrics were used. In addition to the market and market-adjusted models, the matched reference portfolio method, which is the latest research method, was employed for the abnormal return estimation for the long-term (bid period). The cumulative abnormal return (CAR), buy-and-hold abnormal return (BHAR) and monthly average abnormal return methods were also used for the measurement of the returns to the target and bidding firms. This study provides evidence that the takeovers, occurring in the Thai stock market result in substantially positive total gains to the event firms. This study enriches the financial literature on emerging markets in terms of greatly enhancing variety results and provides a further comparison with developed stock markets.

Conclusion

This study gives light to many results which are robust. The findings are consistent with each other, particularly in terms of the return direction, when comparisons are made amongst the market, market-adjusted models and the matched reference portfolio method; between the CAR and BHAR methods and also with the monthly average abnormal return method. The results are thus internally consistent when compared within this study itself, and also with most of the findings of previous studies of the developed stock markets and the limited existing studies of emerging stock markets, with respect to the different samples, methods and time periods of the investigations.

This research contributes to the understanding more of the impact of takeover effects on the target and bidding firms traded on the SET. The main findings suggest that a Thai takeover announcement results in substantial abnormal returns to the event firms. The average total gains are considerable and positive at 37.63% indicating takeovers create values. The results add to the literature on emerging markets in terms of enhancing the existing literature, given the limited number of prior studies involved and limited ways of applying research methodologies, and international comparisons of takeover effects on the Thai stock market.

References

[1] Akbulut, M.E., and Matsusaka, J.G. 2010. Fifty years of diversification announcements. *Financial Review* 45(2): 231-262.

[2] Aktas, N., de Bodt, E., and Declerck, F. 2002. Is there information leakage around business combinations on the French market. SSRN Working Paper.

[3] Baker, R.D., and Limmack, R.J. 2001. UK takeovers and acquiring company wealth changes: The impact of survivorship and other potential selection biases on post-outcome performance. Working Paper. University of Stirling.

[4] Beitel, P., Schiereck, B., and Wahrenburg, M. 2002. Explaining the M&A - success in European bank mergers and acquisitions. Working Paper. Institute for Mergers and Acquisitions. University of Witten/Herdecke.

[5] Bhagat, S., Dong, M., Hirshleifer, D., and Noah, R. 2005. Do tender offers create value? New methods and evidence. *Journal of Financial Economics* 76(1): 3-60.

[6] Bouwman, C., Fuller, K., and Nain, A. 2003. The performance of stock-price driven acquisitions. Working paper. University of Michigan.

[7] Bradley, M., Desai, A., and Kim, E.H. 1988. Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms. *Journal of Financial Economics* 21: 3-40.

[8] Brown, P., and da Silva Rosa, R. 1998.Research method and the long-run performance of acquiring firms. *Australian Journal of Management* 23(1): 23-38.

[9] Brown, S.J., and Warner, J.B. 1980. Measuring security price performance. *Journal of Financial Economics* 8: 67-120.

[10] Brown, S.J., and Warner, J.B. 1985. Using daily stock returns: The case of event studies. *Journal of Financial Economics* 14: 3-31.

[11] Bruner, R.F. 2002. Does M&A pay? A survey of evidence for the decision-maker. *Journal of Applied Finance* 12: 48-68.

[12] Burkart, M., and Panunzi, F. 2006. Takeovers. ECGI-Finance Working Paper. No. 118/2006.

[13] Campbell, C.J., and Wasley, C.E. 1993. Measuring security price performance using daily NASDAQ returns. *Journal of Financial Economics* 33: 73-92.

[14] Campa, J.M., and Hernando, I. 2004. Shareholder value creation in European M&As, *European Financial Management* 10(1): 47-81.

[15] Claessens, S., Djankov, S., Fan, J.P.H., and Lang, L.H.P. 1998. Diversification and efficiency of investment by East Asian corporations. World Bank Working Paper.

[16] Cowan, A.R., and Sergeant, A.M.A. 2001. Interacting biases, non-normal return distributions and the performance of tests for long-horizon event studies. *Journal of Banking and Finance* 25: 741-765.

[17] Cybo-Ottone, A., and Murgia, M. 2000. Mergers and shareholder wealth in European banking. *Journal of Banking and Finance* 24: 831-859.

[18] Da Silva Rosa, R., Izan, H.Y., Steinbeck, A., and Walter, T. 2000. The method of payment decision in Australian takeovers: An investigation of causes and effects. *Australian Journal of Management* 25(1): 67-94.

[19] Datta, D.K., Pinches, G.E., and Narayanan, V.K. 1992. Factors influencing wealth creation from mergers and acquisitions: A meta-analysis. *Strategic Management Journal* 13: 67-84.

[20] Dodd, P., and Ruback, R. 1977. Tender offers and stockholder returns. *Journal of Financial Economics* 5: 351-373.

[21] Dumontier, P., and Petitt, B.S.P. 2002. Determinants of returns of acquiring firms around tender offer announcements: Evidence from French control-oriented and parent-subsidiary offers. Working Paper. ESA Universite de Grenoble.

[22] Dyckman, T., Philbrick, D., Stephan, J., and Ricks, W.E. 1984. A comparison of event study methodologies using daily stock returns: A simulation approach. *Journal of Accounting Research* 22: 1-33.

[23] Eckbo, B.E. 1983. Horizontal mergers, collusion, and stockholder wealth. *Journal of Financial Economics* 11: 241-273.

[24] Eckbo, B.E. 2009. Bidding strategies and takeover premiums: A review. *Journal of Corporate Finance* 15: 149-178.

[25] Eckbo, B.E., and Thorburn, K. 2000. Gains to bidder firms revisited: Domestic and foreign acquisitions in Canada. *Journal of Financial and Quantitative Analysis* 35(1): 1-25.

[26] Ellert, J.C. 1976. Merger antitrust law enforcement, and stockholder returns. *Journal of Finance* 31: 715-732.

[27] Estrada, J., Kritzman, M., and Page, S. 2006. Countries versus industries in emerging markets: A normative portfolio approach. *Journal of Investing* 15(4): 19-28.

[28] Fama, E.F. 1998. Market efficiency, long-term returns, and behavioural finance. *Journal of Financial Economics* 49: 283-306.

[29] Fan, J.P.H., and Goyal, V.K. 2006. On the patterns and wealth effects of vertical mergers. *Journal of business* 79(2): 877-902.

[30] Fauver, L., Houston, J., and Naranjo, A. 2003. Capital market development, integration, legal systems, and the value of corporate diversification: A cross-country analysis. *Journal of Financial and Quantitative Analysis* 38 (1) (March): 135-157.

[31] Fernandes, N. 2005. What level of portfolio disaggregation in emerging market investments? *Journal of Portfolio Management* 31: 41-49.

[32] Fields, L.P., Fraser, D.R., and Kolari, J.W. 2007. Bidder returns in bank assurance mergers: Is there evidence of synergy? *Journal of Banking & Finance* 31: 3646-3662.

[33] Firth, M. 1997. Takeovers in New Zealand: Motives, stockholder returns, and executive share ownership. *Pacific-Basin Finance Journal* 5: 419-440.

[34] Floreani, A., and Rigamonti, S. 2001. Mergers and shareholders wealth in the insurance industry. Working Paper. Universita Cattolica del S. Cuore.

[35] Franks, J., Harris, R., and Titman, S. 1991. The post-merger share-price performance of acquiring firms. *Journal of Financial Economics* 29: 81-96.

[36] Ghosh, A. 2001. Does operating performance really improve following corporate acquisitions? *Journal of Corporate Finance* 7: 151-178.

[37] Ghosh, A. 2004. Increasing market share as a rational for corporate acquisitions. *Journal of Business Finance & Accounting* 31(1-2): 209-247.

[38] Goergen, M., and Renneboog, L. 2002. Shareholder wealth effects in large European takeover bids. Working Paper. University of Manchester Institute of Science and Technology.

[39] Goergen, M., and Renneboog, L. 2004. Shareholder wealth effects of European domestic and cross-border takeover bids. *European Financial Management Journal* 10(1): 9-45.

[40] Gregory, A., and McCorriston, S. 2002. Foreign acquisitions by UK limited companies: Long-run performance in the US, continental Europe and the rest of the world. Working paper. Financial Markets Research Centre. University of Exeter.

[41] Healy, P.M., Palepu, K.G., and Ruback, R.S. 1992. Does corporate performance improve after mergers? *Journal of Financial Economics* 31: 135-175.

[42] Herman, E., and Lowenstein, L. 1988. The efficiency effects of hostile takeovers. In John Coffee, Jr., Louis Lowenstein, & Susan Rose-Ackerman (Eds.). Knight, Raiders and Targets. Oxford: Oxford University Press.

[43] Holmen, M., and Knopf, J. 2004. Minority shareholder protections and the private benefits of control for Swedish mergers. *Journal of Financial and Quantitative Analysis* 39(1): 167-91.

[44] Hou, K., Olsson, P., and Robinson, D. 2000. Does takeover increase stockholder value? Working paper. University of Chicago.

[45] Houston, J.F., James, C.M., and Ryngaert, M.D. 2001. Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders. *Journal of Financial Economics* 60: 285-331.

[46] Jarrell, G.A., Brickley, J.A., and Netter, J.M. 1988. The market for corporate control: The empirical evidence since 1980. *Journal of Economic Perspectives* 2(1): 49-68.

[47] Jensen, M.C. 2006. Takeovers: The controversy and the evidence. SSRN Working Paper.

[48] Jensen, M.C., and Ruback, R.S. 1983. The market for corporate control. *Journal of Financial Economics* 11: 593-638.

[49] Kang, J.K, Shivdasani, A., and Yamada, T. 2000. The effect of bank relations on investment decisions: An investigation of Japanese takeovers bids. *Journal of Finance* 55: 2197-2218.

[50] Khanna, T., and Palepu, K. 2000. Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups. *Journal of Finance* 55: 867-891.

[51] King, M.R. 2009. Pre-bid run-ups ahead of Canadian takeovers: How big is the problem? *Financial Management* 38(4): 699-726.

[52] Kothari, S.P. 2001. Capital markets research in accounting. *Journal of Accounting and Economics* 31(March): 105-231.

[53] Kothari, S.P., and Warner, J.B. 1997. Measuring long-horizon security price performance. *Journal of Financial Economics* 43: 301-339.

[54] Kuipers, D., Miller, D., and Patel, A. 2002. Shareholder wealth effects in the cross-border market for corporate control. Mimeo. Indiana University.

[55] Lang, L.H.P., Stulz, R.M., and Walkling, R.A. 1989. Managerial performance, Tobin's q, and the gains from successful tender offers. *Journal of Financial Economics* 24: 137-154.

[56] Lins, K., and Servaes, H. 2002. Is corporate diversification beneficial in emerging markets? *Financial Management* Summer: 5-31.

[57] Loughran, T., and Vijh, A.M. 1997. Do long-term shareholders benefit from corporate acquisitions? *Journal of Finance* 52: 1765-1790.

[58] Mandelker, G. 1974. Risk and return: the case of merging firms. *Journal of Financial Economics* 1: 303-335.

[59] Martijn, C., Vinay, B., and Kose, J. 2009. Takeovers and the cross-section of returns. *The Review of Financial Studies* 22(4): 1409-1445.

[60] Martynova, M., and Renneboog, L. 2008a. A century of corporate takeovers: What have we learned and where do we stand? *Journal of Banking & Finance* 32(10): 2148-2177.

[61] Martynova, M., and Renneboog, L. 2011. The performance of the European market for corporate

control: Evidence from the 5th takeover wave. *European Financial Management* 17(2): 208-259.

[62] Moeller, S.B., Schlingemann, F.P., and Stulz, R.M. 2005. Wealth destruction on a massive scale? A study of acquiring-firm return in the recent merger wave. *Journal of Finance* 60(2): 757-782.

[63] Mulherin, J.H., and Boone, A.L. 2000. Comparing acquisitions and divestitures. *Journal of Corporate Finance* 6(2): 117-139.

[64] Parrino, J.D., and Harris, R.S. 1999. Takeovers, management replacement, and post-acquisition operating performance: Some evidence from the 1980s. *Journal of Applied Corporate Finance* 11(4): 88-97.

[65] Rosen, R.J. 2006. Merger momentum and investor sentiment: The stock market reaction to merger announcements. *Journal of Business* 79(2): 987-1017.

[66] Schwert, G.W. 1996. Mark-up pricing in mergers and acquisitions. *Journal of Financial Economics* 41: 153-192.

[67] Schwert, G.W. 2002. Anomalies and market efficiency. Working Paper. No. FR 02-13. University of Pennsylvania.

[68] Smith, R., and Kim, J. 1994. The combined effects of free cash flow and financial slack on bidder and target stock returns. *Journal of Business* 67(2): 281-310.

[69] Varaiya, N.P. 1985. A test of Roll's hubris hypothesis of corporate takeovers. Working Paper. Southern Methodist University.

AGENT-BASED DESIGN OF BUSINESS INTELLIGENCE SYSTEM ARCHITECTURE

Roman ŠPERKA
Silesian University in Opava, School of Business Administration in Karvina
Department of informatics, **Czech Republic**
sperka@opf.slu.cz

Abstract:

Business intelligence is a business management term used to describe applications and technologies which are used to gather, provide access to, and analyse data and information about the organization, to help make better business decisions. The multi-agent approach provides a feasible solution for construction of the business intelligence system. This paper firstly briefly introduces the traditional business intelligence architecting principles and multi-agent approach. Secondly, a design of business intelligence system architecture is proposed, which is composed of the system framework, agent description and system workflow. This design allows to reduce effectively the construction costs of business intelligence systems and to extend the applied scope of business intelligence by minimizing the amount of data transfer and data storage. Using the predictive functionality of the system can bring a significant competitive advantage of business units. The paper presents a new approach for business intelligence architecture modelling, representing an extension over existing systems.

Keywords: multi-agent, business intelligence, software agent, architecture, MAS.

JEL Classification: C63; C88; Y80; M29

Introduction

Business intelligence (BI) is a business management term used to describe the applications and technologies used to gather, provide access to, and analyse data and information about an enterprise, in order to help them to gain more competitiveness. (Nicholls 2006)

BI technologies include traditional data warehousing technologies such as the reporting, ad-hoc querying, and online analytical processing (OLAP). More advanced BI tools also include data-mining, predictive analysis using simulations, web services and advanced visualization capabilities. Traditionally, BI systems have been architected with the focus on the back-end, which is usually powered by data warehousing technologies. Lately, architectures for BI have evolved towards distributed multi-tier analytic applications. (Wu, Barash, and Bartolini 2011)

In this paper we describe the architecture of BI system based on the multi-agent approach (Spišák, and Šperka 2011). The existing approaches to construction of the BI system seriously hampered the popularization and development of BI because of the high construction costs. This work introduces multi-agent technology into the design of BI system to provide the prediction possibilities and to effectively reduce the construction costs of BI system.

This paper is structured as follows. Section 2 briefly introduces the traditional BI architecting principles and the BI framework is explained in more detail. In section 3 the multi-agent approach is presented. In order to explain the use of mobile agents in our proposal the advantages of this type of agents are declared. Section 4 presents the design of the BI architecture based on the multi-agent approach in detail.

Conclusion

This paper proposes the architecture of BI system based on the multi-agent approach. Presented architecture is described in three elements in detail, namely BI system framework, agent description and BI system workflow. The application of designed system can effectively reduce the construction costs of BI systems and extend the applied scope of BI by minimizing the amount of data transfer and data storage. Using the predictive functionality of the proposal can be a significant competitive advantage of business units.

The outline of the architecture can be seen as a basis for the further research especially in the specifying the algorithms used for prediction and in order to develop such implementation for the real existing companies.

References

[1] Alshammri, G. 2009. Investigation of agent or multi-agent technologies in e-commerce systems. IJCSNS International *Journal of Computer Science and Network security*, Vol. 9, No. 10.

[2] Ariyachandra, T., and Watson, H. 2005. Key factor in selecting a data warehouse architecture. *Business Intelligence Journal*, Vol. 10, No. 2, pp. 19-26.

[3] Ariyachandra, T., and Watson, H. 2006. Which data warehouse Architecture is most successful. *Business Intelligence Journal*, Vol. 11, No. 1, pp. 4-6.

[4] Burian, J. 2010. Multiagentní modely sociálních organizací. Vysoká škola ekonomická, Prague, pp. 6. Available from: https://eldar.cz/honza/articles/burian_agents.doc

[5] Bussler, C. 2003. *B2b Integration*. Springer-Verlag, New York, USA.

[6] Fasli, M. 2006. *Agent Technology for e-Commerce*. Wiley & Sons, Chichester.

[7] Fazlollahi, R. 2004. Multi-agent DSS for supporting e-commerce decisions. *The Journal of Computer Information Systems.*

[8] Inmon, W.H. 2000. Building the Data Warehouse: Getting Started. Billinmon.com. Available from: http://inmoncif.com/inmoncif-old/www/library/whiteprs/ttbuild.pdf

[9] Kubík, A. 2004. *Inteligentní agenty: Tvorba aplikačního software na bázi multiagentových systémů*. Computer Press, Brno.

[10] Nicholls, C. 2006. BI 2.0 – how real time Business Intelligence is irrevocably changing the way that we do business – In Search Inside. Available from: www.seewhy.com

[11] Odell, J. 2010. *Agent Technology: An Overview*. jamesodell.com.

[12] Putman, J., and Boehm, B.2000. *Architecting with RM-ODP*. Prentice Hall, ISBN: 0130191167.

[13] Rui, J.G. 2006. The study of flexible business intelligence platform based on multi-agent for Small and Medium-sized Enterprises. *Commercial Research,* Vol. 346, pp. 43-46.

[14] Spišák, M., and Šperka, R. 2011. Financial market simulation based on intelligent agents – Case Study. *Journal of Applied Economic Sciences,* Volume VI, Issue 3(17).

[15] Tamura, H., Tanno, K., Tanaka, H., and Zhang, Z.2008. Bi-directional function learning method for time series prediction. ICIC Express Letter, Vol. 2, Num. 4, pp. 401-407.

[16] Watson, H., and Wixom, B. 2007. *The current state of business intelligence*. IT Systems Perspectives, pp. 96-99.

[17] Wooldridge, M. 2009. *MultiAgent Systems: An Introduction to*. 2nd edition, John Wiley & Sons Ltd, Chichester, ISBN: 978-0470519462.

[18] Wu, L., Barash, G., and Bartolini, C. 2011. A service-oriented architecture for business Intelligence. HP Software Laboratories. Available from: http://www.hpl.hp.com/personal/ Claudio_Bartolini/download/soca07.pdf.

[19] Yong, Feng, Liu, Yang, Li Xue-Xin, Gao, Chuang, and Xu Hong-Yan. 2010. Design of the low-cost Business Intelligence System Based on multi-agent. Information Science and Management Eingeneering (ISME), International Conference of, ISBN: 978-1-4244-7669-5, pp. 291-294.

FACTORS THAT DETERMINE SUCCESS OF SMALL AND MEDIUM ENTEPRISES. THE ROLE OF INTERNAL AND EXTERNAL FACTORS

Wadim STRIELKOWSKI
National University of Ireland Galway, **Republic of Ireland**
Charles University in Prague, **Czech Republic**
strielkowski@fsv.cuni.cz

Abstract

The paper investigates how the success of an enterprise, particularly a small enterprise, can be measured and quantified. The methodology undertakes a review of the state-of-the-art and comes with own suggestions for defining factors (or indicators) that determine success of small and medium enterprises (SMEs). The paper presents different approaches to defining enterprise success and discusses whether subjective or objective measures should be applied.

Our findings directly inform the theoretical model presented in this study. The literature review enabled to draw both the theoretical model and the economic model that would test the success factors and their potential impact.

This study offers an insight into the SMEs issue and their functioning on the market. The results have significant implications for the researches and policy-makers and can become a basis for preparing relevant enterprise support policies.

Keywords: small and medium enterprises, theory of the firm, internal and external factors of enterprise success, economic modelling.

JEL Classification: L25, L26, P36, Q01, Q10, R10

Introduction

This paper presents an overview and an insight of both internal and external factors that form the small enterprise success. Amongst various definitions of firm's success that are outlined and discussed in research literature, one can identify factors influencing small and medium enterprise success.

In general, two groups of factors (those internal to the firm and external to the firm) can be outlined. In addition, factors that could potentially have some positive impact on enterprise growth and success might be further selected for an additional analysis and tested by the means of the econometric model.

This paper is organized as follows. Section 2 presents an overview of the definition of a small enterprise success. Section 3 describes the indicators of success. Section 4 discusses some potential pitfalls in using various measures of success. Section 5 introduces the internal and external factors of enterprise success and assessed their impacts. Section 6 outlines an economic model for testing the small enterprise success. Section 7 summarizes the main findings and draws main conclusions and discussions.

Conclusions

This paper presented analysed the theories of enterprise success and the determinants of its success. Although many measures of success are used in research literature, the most robust and commonly used factors are: enterprise profits, employment and turnover change over a given period.

Throughout the analysis conducted in this study the research literature was reviewed to find factors influencing enterprise success. Two groups of factors (those internal to the firm and external to the firm) have been outlined and described in detail. In addition, factors that could potentially have some positive impact on enterprise growth and success have been selected for further analysis. The literature that has been reviewed directly informs the theoretical model and methodology used in this study. All these gave us the grounds to formalize both the theoretical model and the econometric model of determining the factors that influence success of small and medium enterprises.

References

[1] Acs, Z., Audretsch, D. 1989. Birth and firm size. *Southern Economic Journal*, No. 55: 467-475

[2] Acs, Z.J., Audretsch, D.B., Evans, D.S. 1991. *The Determinants of Variations in Self Employment Rates Across Countries and Over Time*, National Economic Research Associates, Cambridge, MA

[3] Altman, E. 1968. Financial ratios, discriminant analysis and the prediction of the corporate Bankruptcy. *Journal of Finance*, vol. 23, No. 4: 189-209

[4] Amemiya, T. 1984. Tobit models: a survey. *Journal of Econometrics*, 24: 3-61

[5] Audretsch, D.B., Thurik, A.R., Verheul, I., and Wennekers, A.R.M. 2002. *Entrepreneurship: Determinants and policies in the new economy*. Boston/Dordrecht: Kluwer Academic Publishers.

[6] Barkham, R., Gudgin, G., Hart, M., and Hanvey, E. 1996. *The determinants of small firms' growth: and inter-regional study in the United Kingdom 1986-1990*, Jessica Kingsley, London, Regional Studies Association

[7] Barringer, B.R., Jones, F., Neubaum, D. 2005. A quantitative content analysis of the characteristics of rapid-growth firms and their founders. *Journal of Business Venturing* 20: 663–687.

[8] Begley, T., and Boyd, D. 1987. Psychological characteristics associated with performance in entrepreneurial firms and smaller businesses. *Journal of Business Venturing*, 2: 79-93.

[9] Besser, T. 1999. Community involvement and the perception of success among small business operators in Small Towns. *Journal of Small Business Management*, 37(4): 16-30.

[10] Boden, Jr., R.J., Nucci, A.R. 2000. On the survival prospects of men's and women's new business venture. *Journal of Business Venturing* 15 (4): 347–362.

[11] Bogdanoiu, C.L. 2008. Risk taking in economical – financial activity. *Journal of Applied Economic Sciences*, Vol. III, Issue 2 (4): 79-84.

[12] Burgel, O., Murray, G. *et al*. 1998. The Internationalization of British and German start-up companies in high-technology industries Centre for European Economic Research (ZEW), Mannheim.

[13] Callanan, S., Lijun, Cuddy, M. 2003. *Rural enterprise development and sustainability: innovative approach to the need of rural SMEs*, REDS WP, NUIG, Republic of Ireland.

[14] Callanan, S. 2005. Factors Influencing Irish Rural SME Growth, Thesis submitted to the National University of Ireland for the degree of Doctor of Philosophy, July.

[15] Carter, N.M., Williams, M., Reynolds, P.D. 1997. Discontinuance among new firms in retail: the influence of initial resources, strategy, and gender. *Journal of Business Venturing* 12 (2): 125–145.

[16] Chagantim, R., Chaganti, R. 1989. Profitable small business strategies under different types of competition, *Entrepreneurship Theory and Practice*, 13(3): 21-35.

[17] Chmiel, J. 1999. Problemy statystycznego pomiaru a analiza tendencji rozwojowych sektora prywatnych przedsiebiorstw w Polsce w latach 1990-1998. CASE, Warszawa.

[18] Chmiel, J. 2002. *Stan sektoru MSP w Polsce*, CASE, Warszawa.

[19] Davidsson, P. 1994. Small firms as job creators - myth or fact. Paper presented at the RENT VIII, Tampere, Finland.

[20] Davidsson, P., and Wiklund, J. 2001. Levels of analysis in entrepreneurship research: Current research practice and suggestions for the future. *Entrepreneurship Theory and Practice*, 25(4): 81–100.

[21] Dess, G., Robinson, R. 1984. Measuring organizational performance in the absence of objective measures: The case of the privately held firm and the conglomerate business unit. *Strategic management journal*, 5: 265-273.

[22] Dobson, S., Gerrard, B. 1989. Growth and profitability in the Leeds engineering sector. *Scottish Journal of Political Economy*, 36: 334-352.

[23] Driessen, M.P., Zwart, P.S. 2006. *The role of the entrepreneur in small business success: the Entrepreneurship Scan*, University of Groningen, Netherlands.

[24] Du Rietz, A., Henrekson, M. 2000. Testing the female under performance hypothesis. *Small Business Economics*, Vol. 14 (1): 1-10.

[25] Erocal, D. 2005. *Case study of successful companies in the services sector and lessons for public policy*, STI WP 2005/7.

[26] Evans, D.S. 1987. Tests of alternative theories of firm growth. *Journal of Political Economy*, 95: 649-670.

[27] Fratostiteanu, C. 2010. Guidelines for promoting science, technology and technical–scientific creativity by analyzing the companies' performances, in the context of the globalized economy. *Journal of Applied Economic Sciences*, Vol. V, Issue 3(13): 247-257.

[28] Fry, F. 1993. *Entrepreneurship: A Planning Approach.* West Publishing, New York

[29] Gallagher, C., Miller, P. 1991. New Fast Growing Companies Create Job. *Long Range Planning*, Vol. 24, No.1: 96-101.

[30] Gaskill, L.R., Van Auken, H.E., Manning, R.A. 1993. A factor analytic study of the perceived causes of small business failure. *Journal of Small Business Management*, Vol. 31(4): 18-31.

[31] Gatewood, E., Shaver, K., and Gartner, W. 1995. A longitudinal study of cognitive factors influencing start-up behaviours and success at venture creation. *Journal of Business Venturing*, 10: 371-391.

[32] Hall, G., Young, B. 1991. Factors Associated with Insolvency Amongst Small Firms. *International Small Business Journal*, No. 9 (2): 54-63.

[33] Hart, M., McGuinness, S., O'Reilly, M., Gudgin, G. 2000. Public Policy and SME performance: The case of Northern Ireland in the 1990s. *Journal of Small Business and Enterprise Development*, Vol.7, No.1: 27-41.

[34] Hart, M., McGuinness, S. 2000. Exploring Small Firm Growth in the UK Regions 1994-1997", NIERC Working Papers, No.50, Belfast, Republic of Ireland.

[35] Haslam, McKenzie, F., Ryan, M. 2000. Regional Development and Small Business Success in Rural Western Australia, Paper presented at the ICSB World Conference, Brisbane, Australia.

[36] Hausman, J.A. 1978. Specification tests in econometrics. *Econometrica*, Vol. 46, No.6: 1251-1271.

[37] Hillstrom, K., Collier, L. 1998. *Encyclopaedia of Small Business*, Gale Research, Detroit.

[38] Honig, B. 1998. *The human, financial and social capital of Jamaican micro-entrepreneurs*, WP, Tel Aviv International School of Management, Israel.

[39] Hornaday, J., Bunker, C. 1970. The nature of the entrepreneur. *Personnel Psychology*, 23: 47-54

[40] Hornaday, R., Wheatley, W. 1986. Managerial characteristics and the financial performance of small business. *Journal of Small Business Management*, Vol. 24: 267-276.

[41] Kantor, P. 2002. A sectoral approach to the study of gender constraints on economic opportunities in the informal sector in India. *Gender & Society*, 16 (3): 285-302.

[42] Kaplan, S., Norton, D. 1992. The balanced Scorecard-measures that drive performance. *Harvard Business Review*, Vol.78: 71-79.

[43] Karlsson, C. 1993. *Discussion, in: "Small Business Dynamics: International, National and Regional Perspectives*", C. Karlsson, B. Johannison, D.J. Storey (red.) Rutledge, London.

[44] Keats, B.W., Bracker, J.S. 1988. Toward a theory of small firm performance: A conceptual model. *American Journal of Small Business,* 12(4): 41-58.

[45] Kotey, B., Meredith, G. 1997. Relationships among owner/manager personal values, business strategies and enterprise performance. *Journal of Small Business Management,* 35 (2): 37-64.

[46] Kozarzewski, P. 2002. *Psychospoleczny portret przedsiebiorstw* , CASE Warszawa

[47] Loscocco, K., Robinson, J., Hall, R., Allen, J. 1991. Gender and small business success: An inquiry into women's relative disadvantage. *Social Forces,* 70(1): 65-85.

[48] Mas-Colell, M. 1995. *Microeconomic theory*, Oxford University Press.

[49] Mullins, J.W. 1996. Early growth decisions of entrepreneurs: the influence of competency and prior performance under changing market conditions. *Journal of Business Venturing* 11 (2): 89–105.

[50] North, D. *et al*. 1992. A Comparison of surviving and non-surviving small and medium sized manufacturing firms in London during the 1980s, in Caley, K. *et al*. *Small Enterprise Development: Policy and Practice in Action*, Paul Chapman Publishing, London.

[51] North, D., and Smallbone, D. 1993. Employment generation in small business growth in different geographical environments, 16th National Small Firms Policy and Research Conference, Nottingham, United Kingdom.

[52] Perry, M. 1999. *Small Firms and Network Economies*. Rutledge, London.

[53] Perry, C., Meredith, G., Cunnington, H. 1988. Relationship between small business growth and personal characteristics of owner/managers in Australia. *International Small Business Management*, 19: 76-79.

[54] Prihatin Dwi Riyanti, B. 2004. *Factors influencing the success of small-scale entrepreneurs in Indonesia*. In B. N. Setiadi, A. Supratiknya, W. J. Lonner, & Y. H. Poortinga (Eds.). *Ongoing themes in psychology and culture* (Online Ed.). Melbourne, FL: International Association for Cross-Cultural Psychology. Retrieved from http://www.iaccp.org.

[55] Reid, G. 1993. *Small Business Enterprise: An Economic Analysis*, Routledge, London.

[56] Romer, D. 2001. *Advanced Macroeconomics*. Routledge, London.

[57] Sexton, D., Landstrom, H. 2000. *The Blackwell Handbook of Entrepreneurship*. Blackwell, Oxford.

[58] Simonneti, M. *et al*: 2002. *Performance after Mass privatization: a case of Slovenia*, WP 10, University College London.

[59] Smallbone, D. 1995. The Survival, Growth and Support Needs of Manufacturing SMEs in Poland and the Baltic States: Developing a Research Agenda, Materialy konferencyjne, Uniwersytet Lodzki.

[60] Smallbone, D. *et al.* 1992. Managing Change for Growth and Survival: A Study of Mature Manufacturing firms in London in the 1980s, WP No.3, Planning Research Center, Middlesex, U.K

[61] Storey, D.J. 1994. *Understanding the Small Business Sector*. London, Routledge, London.

[62] Varian, H. 1999. *Intermediate Microeconomics*, 4th edition, W.W Norton and Company.

[63] Variyam, J., and Kraybill, D. 1992. Empirical Evidence on Determinants of Firm Growth. *Economic Letters*, Vol. 38: 31-36.

[64] Veerbek, M. 2002. *A guide to modern econometrics*. KU Leuven Academic Press, Lueven.

[65] Wagner, J. 1995. Firm size and job creation in germany. *Small Business Economics*, No. 7 (6): 459-474

[66] Walker, E., Brown, A. 2004. What Success Factors are important for small Business owners? *International Small Business Journal*, Vol. 22, No.6: 577-594

[67] Williamson, O. 1987. *The Economic Institutions of Capitalism*. The Free Press, NY