THE IMPACT OF EU MEMBERSHIP ON THE FINANCIAL PERFORMANCE OF BUSINESS FIRMS IN CENTRAL AND EASTERN EUROPE

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Abstract

This paper examines how European Union (EU) membership impacts the financial performance of business firms in the emerging economies of Central and Eastern Europe. In 2004, the European Union welcomed ten additional members: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia. This was the largest enlargement in the history of the European Union. This study examines whether business firms from those ten countries improved their financial performance since joining the EU. It intends to empirically demonstrate that the profitability of the business firms increased since the ten countries joined the EU. Quarterly data on assets, short and long term liabilities, and common equity were collected. Data was collected for the period 2001- 2009. Econometric methods were used to determine the efficiency and profitability of these companies. The results of this study indicate that the companies benefited from joining the European Union.

Keywords: Financial Performance, Financial Ratios, Efficiency, Profitability, European Union

1. Introduction

In the fifth and largest European Union enlargement, ten new countries joined the European Union (EU) in 2004. Eight of the ten countries (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia) were former communist Central and East European (CEE) countries, while the other two, Cyprus and Malta, were not. After joining the EU, the firms of these ten countries faced increased competition. There is little research on the impact of EU membership on the financial performance of business firms of these ten countries since joining the EU. This paper examines the financial performance of the some of the firms listed in the stock exchanges of these ten countries to see whether their performances improved after they joined the EU. Using the financial data of these firms, the paper attempts to show if the

firms were able to cope with the stiff competition in the EU single market.

The quarterly data on assets, short and long term liabilities, common equity, and profits of the companies located in those ten countries were collected from the Compustat database for the period of 2001-2009. Compustat is a database compiled by Standard & Poor's which collects data on financial indicators of companies listed in the stock exchange of different nations.

This paper examines whether the operating efficiency of the listed firms from those ten countries improved since they joined the EU in May 2004. The Wilcoxon signed ranked test was utilized to test whether these firms improved their financial performance after they became EU members. Furthermore, a panel data regression model was developed and tested to examine whether the accession to the EU affects the financial performance of business firms (the effect of joining the EU on each of the above ratios). The analysis shows that companies in those ten European countries were improving their financial performance prior to joining the EU. However, some of the improvement in financial performance can be attributed to joining the EU. The paper is divided as follows: The first section provides a review of literature followed by a description of our data and methodology. The results and interpretation section describes the empirical results from the analysis. The final section of the paper offers a summary and conclusions.

2. Review of Literature

In 2004, the European Union welcomed ten new members to the union. However, the process of getting the countries ready to join the EU took a long time. By the year 1989, the EU began to have closer ties with the Central and Eastern European countries. Import quotas were removed to assist these countries in their preparations for admission to the European Union. In 1989, the Poland and Hungary: Assistance for Restructuring their Economies (PHARE) program was instituted to help these countries transition to market economies. It provided economic and technical assistance as well as support for infrastructure investment to recipient countries. Bilateral treaties between Central and Eastern European countries and the EU were formed and as a result, trade between these former communist countries and the EU flourished. Subsequently, in 1993, the European Council decided that these countries could become a part of the EU if they were willing to undertake some reforms. In 2000, the countries of Bulgaria, Latvia, Lithuania, Romania, and Slovakia were also allowed to join the EU if they fulfilled some reforms. In 2004, ten countries became members of the EU (Tomfort, 2006).

Prior to entering, foreign direct investment (FDI) inflows to those ten countries increased by a large extent (Bevan et al, 2001). Therefore, anticipating the change, local firms may have had adjusted their business practices to remain competitive once they join the EU. Therefore, analysis of financial performance pre- and post-EU accession may have some problems if companies keep on improving performance way before joining the EU. Also, as noted by Tomfort (2006), Central and Eastern European countries were able to have a higher level of financial integration than South-Eastern European countries. This can also have an effect on the financial performance of the institutions listed in the stock exchange. However, this paper counterbalances this problem by considering a long period of data starting from 2001, thus, the actual improvements of firms can be examined prior to and post EU accession. Some researchers study the financial performance or operating efficiency of firms after they undergo drastic changes such as privatization. Boubakri and Cosset (1998), D'Souza and

Megginson (1999), and Megginson et al. (1994) study the performance of firms before and after they were privatized to see whether their financial performance has improved. The authors use the Wilcoxon signed-ranked test to measure whether, on average, the financial performance of these firms had improved after they were privatized. In another study, Megginson (2010), reviews research on how privatization programs have altered the size and efficiency of international financial markets in the past three decades.

European Union (EU) membership brings many economic benefits to companies, including economies of scale, larger markets, access to financial institutions within the European Union, and more foreign direct investment (FDI) flows. In the past two decades, in the European Union, privatization programs have made considerable progress. The privatization benefits include an increase in efficiency, productivity, and liquidity in the financial markets. Regarding the effects of privatization on the performance of companies, Djankov and Murrell (2002) conducted an extensive survey on enterprise restructuring in transition. They found that privatization tends to improve firm performance.

Some other researchers such as Vasigh and Haririan (1996) attempted to compare efficiency of privatized and government-owned airports. Their financial data on British and American airports (both publicly and privately-owned) included operating costs, profits, and revenues. They found that privatized airports have higher financial efficiencies (revenue per passenger and revenue per landing) than publicly-owned airports. In another study by Vasigh and Haririan (2003), they investigated the financial and operational efficiency of private versus public airports. They measured airport performance by comparing the efficiency of privatized and government-owned airports through ratio and regression techniques. Vogel, in his 2006 study, focused on the relations between airport privatization and financial performance. He assessed the impact of the degree of privatization on the financial performance of European airports. By comparing privately to publicly owned airports, he found privatized airports were more cost-efficient. In a study by Vasigh and Gorjidooz (2006), productivity was tested in public and private airports using American and British airports. Their concluded that productivity and efficiency of airports depend, among other factors, on the level of competition in the environment that they operate.

3. Data and Methodology

In order to perform our statistical analyses, data on assets, long-term and short-term liabilities, common equity, and profits were collected. The quarterly financial data were retrieved from the Standard and Poor's Compustat Database File for the time period of January 2001–June 2009 (www.compustat.com). There are a total of 5,470 observations between the years (number of firms in each country -- Cyprus: 224, Czech Republic: 200, Estonia: 370, Hungary: 639, Lithuania: 515, Latvia: 497, Malta: 134, Poland: 3047, Slovakia: 80, and Slovenia: 286).

In measuring the financial performance of firms, the following financial ratios were used:

I. Liquidity Ratios

Liquidity ratios provide information on the ability of a firm to meet its short-term financial obligations. Liquidity can be measured by several ratios; we used the Current Liability-to-Asset (CL-to-A) Ratio. This ratio is calculated by dividing total liabilities by total assets. The ratio shows the percentage of a firm's assets that are financed by debt, with the remaining being financed by equity. It represents the firm's borrowing capacity in the capital market.

II. Profitability Ratios

Profitability ratios provide information about the firm's overall efficiency and performance.

These ratios are used to evaluate the ability of a company to manage its expenditures. In our analysis, we used the following ratios: 1) Return on Assets (ROA). The return on assets ratio illustrates the profitability of a firm relative to its total assets (profits made on investment of firm's asset). The ROA ratio is calculated by comparing the firm's net income to its total assets. The higher the ROA ratio, the more efficient is the firm. 2) Return on Equity (ROE). The return on equity (ROE) measures the profit earned for each unit of currency invested in the firm's stock. The ratio is calculated by dividing the firm's net income (after preferred stock dividends but before common stock dividends) by total shareholders' equity (excluding preferred shares). The higher the ROE ratio, the more efficient is the firm. 3) Return on Common Equity (ROCE).

This ratio measures the rate of return earned on the owners' investment, excluding preferred stockholders (net profitability of common stockholders' investment after preferred dividends). The ROCE is calculated by dividing the firm's net income available for distribution to shareholders (net income reduced by preferred dividends) by common equity. A high ROCE can indicate that a larger portion of profits are reinvested back into the company. The higher the ratio, the more efficient the company is in generating profits from its investment.

III. Financial Leverage Ratios (Debt Ratios)

Financial leverage ratios provide information on the ability of a firm to meet its financial obligations (measuring its financial risk). These ratios measure the extent to which a business firm is utilizing its long-term debt. They indicate the long-term solvency or leverage of the company. We used the following two measures of leverage ratios: 1) Debt-to-Asset (D-to-A) Ratio. This ratio is calculated by dividing a firm's total liabilities by total assets. It indicates the percentage of a firm's assets that are financed by debt. The higher this ratio, the greater is the risk associated with the firm's performance. It may also indicate low borrowing ability of the firm. 2) Debt-Equity (D-to-E) Ratio. The debt-to-equity ratio indicates the proportion of debt and equity that the company uses to finance its assets (the proportion of a firm's assets that are financed by debt versus equity). It is calculated by dividing total liabilities of a firm by its stockholders' equity. The ratio can be used to determine the ability of a firm to generate new capital. That is, firms with higher debt-to-equity ratios may find it difficult to raise additional funds in the capital market. 3) Long-term Debt-to-Asset Ratio (Lt-D-to-A). This ratio measures the percentage of the firm's assets that are financed by long-term debt.

A simple scatter-plot provides some idea of the financial performance of firms around the time of EU accession. Figures 1, 2, and 3 show the scatter-plots of the quarterly return on asset, return on common equity, and the return on equity respectively of the firms located in those ten countries for the years 2001 through 2007. Apart from a few outliers (which are excluded to keep the range within normal limits), most of the data points are positive, showing that most of the firms enjoyed profits during this time period. This indicates that firms continued to enjoy profits before and after the actual date of joining the EU.

By utilizing the financial ratios of the business firms in those ten countries, the Wilcoxon signed-rank test will be performed to show whether all these financial ratios have increased in value between different years. Furthermore, a panel data regression model will be tested with these values to determine the effect of joining the EU on each of these ratios.

Figure 1 - Return on Assets

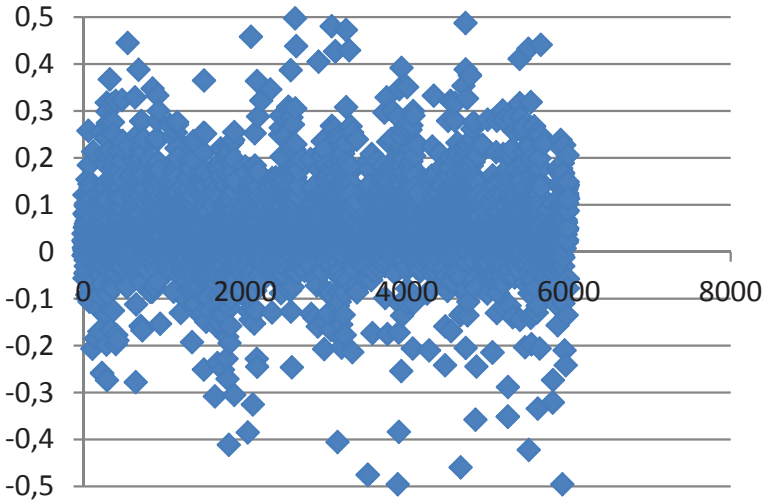


Figure 2 - Return on Common Equity

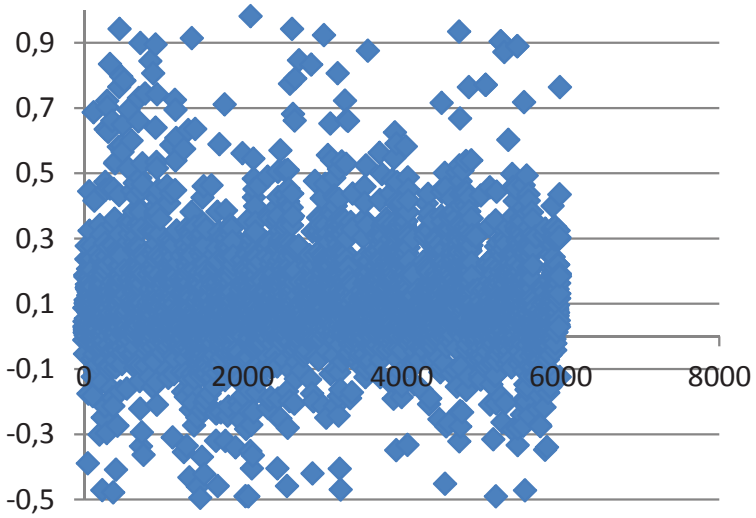
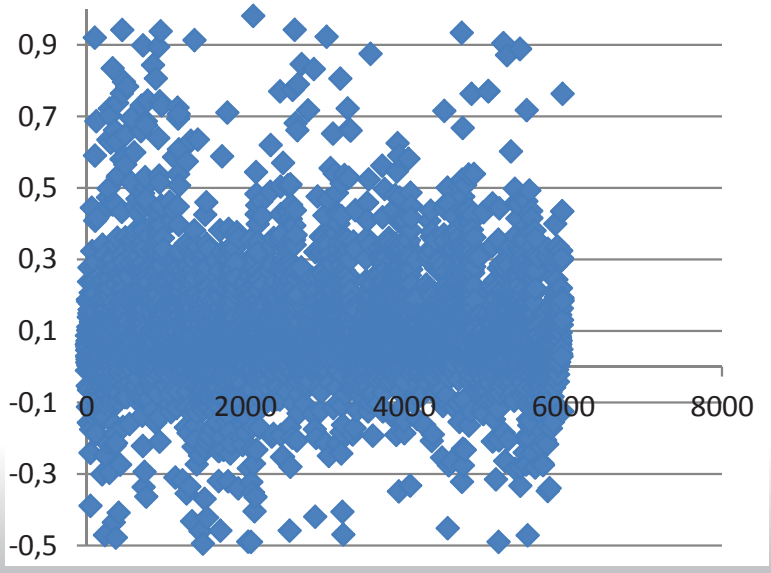


Figure 3 - Return on Equity



4. Empirical Results

The Wilcoxon signed-rank test was performed to show whether the financial ratios, return on assets (ROA), return on equity (ROE), and return on common equity (ROCE), increased in value between the two time periods used in this study. Furthermore, a panel data regression model was developed and tested to examine whether the accession to the EU affected the financial performance of business firms (the effect of joining the EU on each of the financial ratios). The results of the Wilcoxon signed-rank test show that these companies were able to improve their financial performance after they joined the EU. We used two ways to conduct the signed ranked test. First we hold the initial date constant, and then compared the financial performance of firms since they joined the EU with that initial date. Then, we altered the initial date to compare the performance of firms in different time periods. The results are presented in tables 1, 2 and 3. The test examines the two samples of data at different time periods to determine whether the data were significantly different from one another. The tables list the t-values of the analysis. All statistical analyses in this paper were performed using the Stata: Data Analysis and Statistical Software package (www.stata.com).

Table 1 – Wilcoxon Signed-Rank Test Results Comparing the Financial Ratios at Different Dates

	3/31/2004-9/30/2004	9/30/2003-3/31/2005	3/31/2003-9/30/2005	12/31/2002-12/31/2005	9/30/2001-3/31/2006
ROA	**5.897***	**3.337***	**3.471***	**3.07***	**2.883***
ROCE	**4.951***	**2.984***	**3.25***	**2.574***	**2.034***
ROE	**5.762***	**2.747***	**3.941***	**3.016***	**3.025***
CL-to-A	-0.906	**-2.218***	-1.053	-0.567	-0.081
Lt-D-to-A	0.514	-0.405	-1.061	-0.4	**-2.414***
D-to-E	0.334	-0.189	-1.413	-0.957	0.393
D-to-A	0.349	-0.094	-0.9	-0.471	0.692

Dates are in MM/DD/YYYY format. Asterisks indicate significance at the 5% level.

Table 1 compares the results of different Wilcoxon-signed rank tests. For example, the second column shows the t-values computed using the financial ratios between the dates 3/31/2004 and 9/30/2004. Therefore, the second column measures the financial performance of firms about 3 months before and after joining the EU, the third column measures the performance about 6 months before and after joining the EU, and so on. Based on this test, it seems that performance of ROA, ROCE and ROE improved significantly or stayed the same (the t-values not being significant) for all time periods. Current liabilities to asset and long-term debt to asset ratios either stayed statistically the same or decreased. Debt-to-equity and debt-to-asset ratios did not change significantly. From this analysis, it seems that companies improved their profitability after the countries joined the EU. Firms did not increase their leverage, or in some cases, actually reduced their leverage. This shows that, on average, the companies performed well after they joined the EU. These countries were able to earn higher profits per unit currency of asset and equity right after joining the EU.

The Wilcoxon signed-rank test was performed by keeping the date prior to joining the EU

fixed and comparing the financial ratios of that date with the dates after joining the EU. Table 2 shows the results for which the initial date was fixed at March 31, 2004:

Table 2 – Wilcoxon Signed-Rank Test Results Comparing the Financial ratios with the Initial Date Fixed at March 31, 2004

	3/31/2004-3/31/2005	3/31/2004-3/31/2006	3/31/2004-3/31/2007	3/31/2004-3/31/2008	3/31/2004-3/31/2009
ROA	-0.945	-0.351	0.237	-1.192	**-5.294***
ROCE	-1.335	-0.895	-0.495	-1.937	**-5.437***
ROE	-1.416	-1.115	-0.815	-2.45	**-6.156***
CL-to-A	-1.05	-1.548	-1.183	-1.463	-1.63
Lt-D-to-A	0.255	0.067	-0.276	-0.298	0.361
D-to-E	-0.004	-0.51	-0.035	0.251	0.484
D-to-A	0.342	-0.022	0.289	0.491	0.929

Dates are in MM/DD/YYYY format. Asterisks indicate significance at the 5% level.

Table 2 reveals that most of the results of the rank test are not significant except for the ROA, ROE, and ROCE between the dates March 31, 2004 and March 31, 2009. The fall in profits in this case can be attributed to the recession that a number of countries had experienced in 2009 due to the global economic slowdown. Therefore, it can be attributed from this table that companies were improving their efficiency before they had actually joined the EU. Thus, the financial ratios just before joining the EU are not significantly different from those ratios following the accession. To test whether firms really improved their performance, the above test was repeated except that the initial date was fixed at June 30, 2001. The results are shown in Table 3.

Table 3 – Wilcoxon Signed-Rank Test Results Comparing the Financial Ratios with the Initial Date Fixed at June 30, 2001

	6/30/2001-6/30/2005	6/30/2001-6/30/2006	6/30/2001-6/30/2007	6/30/2001-6/30/2008	6/30/2001-3/31/2009
ROA	**2.404***	**2.512***	**2.883***	1.457	**-3.985***
ROCE	1.827	1.756	**2.034***	0.605	**-4.56***
ROE	**2.722***	**2.588***	**3.025***	1.531	**-4.088***
CL-to-A	0.065	-0.305	-0.081	-0.416	-0.5
Lt-D-to-A	**-1.964***	-1.756	**-2.414***	-1.429	-1.398
D-to-E	0.173	0.03	0.393	0.675	0.889
D-to-A	0.721	0.527	0.692	0.933	1.174

Dates are in MM/DD/YYYY format. Asterisks indicate significance at the 5% level.

The results in Table 3 show that ROA, ROCE and ROE increased in value significantly until 2008. In 2009, the values decreased due to the effect of a global economic slowdown.

Long- term-debt-to asset ratio decreased or stayed statistically the same and the rest of the values are not significantly different. This table also reveals that when comparing the financial ratios of 2001 with those after joining the EU, companies generally did much better. Firms had started improving their performance after 2001 and continued to do so until 2008.

The next question is whether this improvement in financial performance was due to joining the EU or to sustained economic growth and other business-friendly factors that these countries experienced during the study period. An auto-regression model was developed and tested to evaluate whether the accession to the EU really affected the financial performance of these firms.

The following model is used to examine the financial performance of the business firms:

$$\mathbf{X_t = \beta_0 + \beta_1 X_{t-1} + \beta_2 X_{t-2} + B_3 D}$$

where X_t is any of the variables ROA, ROCE, ROE, CL-to-A, Lt-D-to-A, D-to-E and D-to-A respectively at time period *t*. β_i are the coefficients, where *i={0,1,2,3}* and *D* is the dummy variable which is 1 to indicate the time period after joining the EU and 0 otherwise.

The above equation can be estimated to measure the effect of past performance of financial ratios on present performance, and whether joining the EU, as represented by the dummy, had any effect on those financial ratios. A panel data regression was then performed to estimate the effects of each of the independent variables on the dependent variable and the empirical results are shown in Table 4.

Table 4 – Regression Results. Auto-Regression of Different Financial Ratios

	ROA	ROCE	ROE	CL-to-A	Lt-D-to-A	D-to-E	D-to-A
Constant	**0.007*** **(0.0044)**	0.1290 (0.0915)	0.0597 (0.0788)	**0.1595*** **0.0107**	**0.0366*** **(0.0084)**	0.9080 (0.6577)	**0.0858*** **(0.0132)**
Lagged one Period	**1.0375*** **(0.0354)**	0.0002 (0.0097)	-0.0036 (0.0099)	**0.4026*** **(0.0301)**	**0.6709*** **(0.0416)**	0.052 (0.143)	**0.6799*** **(0.0315)**
Lagged two Periods	**-0.3180*** **(0.0466)**	**0.0610*** **(0.0099)**	**0.0599*** **(0.0102)**	**0.1678*** **(0.0305)**	0.0648 (0.0402)	**-0.259 *** **(0.073)**	**0.1442*** **(0.031)**
EU Dummy	**0.0158*** **(0.0049)**	0.0321 (0.0975)	0.1141 (0.0854)	**-0.032*** **(0.0073)**	-0.0036 (0.0073)	0.1234 (0.6704)	-0.0145 (0.0078)

Standard errors of the regression coefficients are in parentheses directly below the associated coefficients. Asterisks indicate significance at the 5% level.

The above regression results show that the EU dummy is significant in two of the cases. This shows that joining the EU helped to increase the return on assets and decrease current liabilities to asset ratios. After joining the EU, firms became more competitive and reduced current liabilities relative to their assets. In the case of ROCE, ROE and D-to-E, the coefficient on EU dummy is positive but not significant, while it is negative and not significant in the case of Lt-D-to-A and D-to-A. In most cases, past performance of the companies did affect their

future performance. However, in some cases such as the two year lagged value of return on assets ratio has a negative effect on present ROA ratio and the two year lagged debt-to-equity ratio has a negative effect on present D-to-E ratio. Generally, most of the past values of financial ratios affected their corresponding future values.

5. Conclusions

This paper examines whether the performance of business firms improved after the ten Central and Eastern European countries joined the EU in May 2004. Quarterly data on assets, long-term and short-term liabilities, common equity, and profits were collected and analyzed. The Wilcoxon signed-rank test was utilized to show whether these financial ratios increased in value between the two time periods used in this study. Furthermore, a panel data regression model was developed and tested to examine whether the accession to the EU affected the financial performance of business firms (the effect of joining the EU on each of the financial ratios). The Wilcoxon signed-rank test reveals that companies were able to improve their return on assets (ROA), return on equity (ROE), and return on common equity (ROCE) after the countries joined the EU. In a cross-country analysis, a panel regression model was developed and estimated. The results of the auto-regression model reveal that the EU dummy variable had a significant effect in increasing the value of ROA ratios, as well as reducing the value of current liability to asset (CL-to-A) ratios. Furthermore, this study suggests that companies were anticipating increased competition and access to larger markets before joining the EU and had acted accordingly. Thus, the comparison of ratios (after the countries joined the EU) with that of June 30, 2001 were significant, but the comparison with those of March 31, 2004 were not. From 2001 to 2004, the companies were preparing to join the EU. Once they joined the EU, the profitability of the firms increased. Therefore, the companies of these countries benefited from joining the economic union.

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