SEE JOURNAL

Publisher
School of Economics and Business, University of Sarajevo

The South East European Journal of Economics and Business (SEE Journal) focuses on issues important to various economics and business disciplines, with a special emphasis on South East European and transition countries.

For articles to be considered for the SEE Journal, authors should submit manuscripts electronically, as MS Word attachments, to the Editor, at this e-mail address: seejournal@efsa.unsa.ba. Submissions also should include an indication of the author's background or position. Articles are considered for publication if they have not been published or accepted for publication elsewhere and have not been concurrently submitted elsewhere. For more submission information, see the Guide for Submission of Manuscripts at the end of each issue or on the SEE Journal website.
Other correspondences or inquiries to the editor should be directed to Jasna Lipa, Editorial assistant, e-mail: jasna.lipa@efsa.unsa.ba or prof. dr. Fikret ^auševi}, e-mail: fikret.causevic@efsa.unsa.ba.

The South East European Journal of Economics and Business, ISSN 1840-118X, is published semiannually by the School of Economics and Business, University of Sarajevo, Trg Oslobodjenja - Alija Izetbegovic 1, 71 000 Sarajevo, Bosnia and Herzegovina.

All correspondence should be addressed to The South East European Journal of Economics and Business. School of Economics and Business, Trg Oslobodjenja-Alija Izetbegovic 1, 71 000 Sarajevo, Bosnia and Herzegovina, telephone and fax: 00-387-33-275-922, e-mail: seejournal@efsa.unsa.ba; http://www.efsa.unsa.ba/see.

Abstracting and Indexing: This Journal is regularly indexed and abstracted by databases EconLit and Business Source Complete.
It is available in a PDF format from the website of the School of Economics and Business, Sarajevo http://www.efsa.unsa.ba. SEE Journal articles are also available from Versita http://www.versita.com.

Content

From the Editor

Dear Reader,

It is with great pleasure that I present the second issue of Volume 3 of The South East European Journal of Economics and Business. It contains nine papers by authors from the Czech Republic, the United States, Turkey, Germany, Lithuania, Croatia, Serbia, and Poland.

Daniel Stavárek's paper estimates the exchange market pressure (EMP) in the Czech Republic, Hungary, Poland, and Slovakia (EU4) over the period from 1993 to 2006. According to the model-dependent approach, EMP in the Czech Republic, Hungary, and Slovakia is of similar magnitude. The results obtained suggest that EMP in EU4 decreased over time and was considerably lower and less volatile during periods of floating exchange rates than under fixed exchange rate regimes. The model-independent approach puts greater emphasis on the interest rate differential, which has often been identified as one of the factors of exchange rate determination in EU4. The study does not confirm concerns that an unavoidable shift in the exchange rate regime towards the quasi-fixed ERM II will provoke EMP to grow to excessive levels. What the empirical tests did suggest was that regime change will most likely have only a negligible impact on EMP development.

In his paper, Yu Hsing examines exchange rate behavior for Poland, based on four models. The results of his empirical research show that the Bilson and Frenkel models characterize the behavior of the nominal exchange rate for Poland better than the Dornbusch or Frankel models. The paper has a number of policy implications. The Bank of Poland needs to monitor its money supply. Increased money supply in Poland relative to that in the U.S. would cause the zloty to depreciate. Contrary to what many countries have been practicing, raising the domestic interest rate relative to the U.S. interest rate would not help the domestic currency to appreciate against the U.S. dollar. A higher interest rate hurts consumption and investment spending and would cause the zloty to depreciate, even while stimulating international capital inflows and increasing demand for the zloty. Maintaining price stability and a low inflation rate would help protect the value of the zloty. The positive and significant coefficient of relative tradable to non-tradable prices may indicate that the productivity differential plays an important role in determining the nominal exchange rate.

In their paper, Muhsin Kar, Osman Peker, and Muhittin Kaplan present an empirical investigation of whether trade liberalization and financial liberalization have had any significant impact on economic growth in Turkey, which has, as a developing economy, witnessed an unprecedented staged reform attempt, involving both external and internal liberalization. In Turkey, economic liberalization in terms of both trade and the financial sector was at the heart of the stabilization programme employed in 1980 and has constituted an integral part of economic policy since then. The authors have developed three alternative indexes, by making use of the principal components of analysis, namely trade liberalization, financial development, and economic liberalization proxies. The empirical results obtained by the methods of time series econometrics for the period 1963-2005 show that trade liberalization and financial development made a positive contribution to economic growth. The joint impact of trade liberalization and financial development in terms of economic liberalization on economic growth was also significant during the period analyzed.

Judith Möllers, Jana Fritzsch, and Gertrud Buchenrieder provide an analysis of socio-economic factors and their influence on the farm and non-farm incomes of rural households in Slovenia. Applying canonical correlation analysis, they use a methodological approach that offers a true multivariate procedure for both sides of the equation. The procedure of canonical correlation reveals that only three of the potential determinants influence the composition and level of household income significantly. These are the farm size, the number of household members, and the educational level of the main economically active household member. The authors find that farm size and income from agricultural activities are positively correlated. Their results confirm that rural farm households usually turn towards non-farm employment, if farm incomes are insufficient to support their lifestyles. Another factor pushing households towards non-farm diversification is size of household: larger households have significantly higher non-farm income than smaller ones. An additional finding of this paper is that incomes in the rural non-farm sector clearly depend on education. The higher the educational level, the greater the possibilities in the non-farm sector. Education has no impact on farm incomes, however. All other potential determinants of the farm and non-farm income of rural households in Slovenia turned out to be insignificant, when analyzed simultaneously with the canonical correlation analysis.

Cemal Zehir, Erkut Altindag, and Ayse Gunsel's paper deals with some of the main concepts in business process reengineering, with a view to investigating their association with performance measurement systems. The authors have focused on the effect performance measurement systems have on business performance and various organization characteristics such as empowerment, integration, and long term strategic alignment. The paper reveals that manufacturing firms can also increase organizational performance by employing business process reengineering. While maintaining economies of scale, business reengineering can help

companies develop personalized products and services. Managers should, however, emphasize empowerment to develop employee skills, connect all layers and departments smoothly, and make new reliable strategic plans. Business reengineering provides a way for manufacturers to respond effectively to the challenge of changing environments. The authors conclude that performance measurement systems for business process reengineering practices have become increasingly commonplace and careful empirical analysis is required to improve our understanding of the results of field research.

Ilona Bu~iūnienė and Vida Škudienė investigate the relationship between employee organizational commitment dimensions and leadership styles in Lithuanian manufacturing companies. The results of their study confirm earlier findings on the relationship between leadership style and commitment dimensions (affective, normative, and laissez-faire) and the positive association between commitment and satisfaction with an immediate supervisor. The important finding of this study is that transformational leadership style has a greater influence on affective employee commitment than on normative employee commitment. It is possible that a transformational leadership style has positive associations with employees' commitment in psychological, value, morale, and economic terms. This finding leads the authors to conclude that transformational leadership is a better predictor of employee commitment

Marina Kla~mer ^alopa, Goran Bubaš, and Ksenija Vukovi} present a case analysis of the introduction onto the capital market of Croatia of state-owned shares in the INA oil company and the results of a survey on the perceptions of potential small investors in the company. The conclusion of this research is that the motivation to purchase INA shares was positively and negatively influenced by many variables, whose number prevents detailed elaboration of the findings in this paper. The hypothesis was confirmed that potential small investors' perceptions of various attributes of INA and certain aspects of how INA shares were introduced were related to their motivation for purchasing INA shares when introduced on the capital market. The second hypothesis, that perceptions of attributes of INA and certain aspects of the introduction process can be categorized into basic factors based on the potential small investors' motivation to purchase INA shares, was also confirmed. The authors emphasize, however, that because of the rather small convenience sample in this study, the findings cannot be generalized.

The aim of Biljana Bogi~evi} Miliki}, Nebojša Jani}ijevi}, and Mirjana Petkovi}'s paper is to highlight current human resource management (HRM) practices in Serbia and address possibilities for implementing the North American HRM model in a highly incompatible cultural setting. The research evidence indicate that the formal HRM function in Serbia would be better considered as a personnel department than a HR department, as it is primarily concerned with bureaucratic tracking of HR and maintaining personnel records, instead of being involved in strategy and policy HR decision making. This is consistent with findings in certain other transition economies. In terms of the convergence vs. divergence debate, this research reveals mixed findings. It appears that some HRM practices in Serbia, e.g. the role of trade unions, do converge with the North American HRM model, in spite of the highly incompatible Serbian cultural context. The research evidence also indicated that most HRM practices in Serbia differ considerably from US practice. Contrary to the authors' initial assumptions regarding the credibility of national culture as an explanatory variable in understanding the specific HRM model, the research evidence suggests that it does not in fact appear to be the most important variable underlying differences identified in transition economies.

Grzegorz Michalski discusses the possibility of using portfolio theory in making decisions as to which customers should be given trade credit. The author shows that firms can sell on trade credit terms to some customers who have previously been rejected due to excessive operational risk, with the positive outcome of creating increased firm value. This extension of trade credit is possible only if the firm has purchasers from a number of branches and these branches have different levels of operating risk. The key to success in this regard is portfolio analysis, resulting in a varied portfolio of customers with a spectrum of managed levels of operating risk. The research problem was linked to the operational risk of purchasers interested in receiving trade credit who, as separately considered groups, might be characterized by too high a risk level. In his conclusion, the author states that a portfolio of assets, like the portfolio of accounts receivable, sometimes presents lower risk to acceptable advantages than the groups of purchasers, when considered individually.

Finally, I would like to invite and encourage all the readers of our Journal to submit papers and continue cooperation with us. Our focus will remain research into the businesses and economies of the countries of South East Europe, while maintaining a strong interest in good quality papers dealing with universal problems and theoretical issues of economics and business.

Fikret ^auševi},
School of Economics and Business,
University of Sarajevo.

Exchange Market Pressure in Central European Countries from the Eurozone Membership Perspective*

Daniel Stavarek*

Abstract:

This paper estimates the exchange market pressure (EMP) in four Central European countries (Czech Republic, Hungary, Poland, Slovakia) over the period 1993-2006. Therefore, it is one of very few studies focused on this region and the very first paper applying concurrently model-dependent as well as model-independent approaches to EMP estimation to these countries. The results obtained suggest that the approaches lead to inconsistent findings. They often differ in identification of the principal development trends, as well as the magnitude and direction of the pressure. The paper provides evidence that a shift in the exchange rate regime towards the quasi-fixed ERM II should not stimulate EMP growth. However, it is highly probable that some episodes of the excessive EMP will make the fulfillment of the exchange rate stability criterion more difficult in all of the countries analyzed.

Keywords: Exchange Market Pressure, Model-dependent Approach, Model-independent Approach, European Union, Euro-candidate Countries

JEL: C32, E42, F31, F36

1. Introduction

Ten countries from Central and Eastern Europe joined the European Union (hereafter EU) in the spring of 2004 and in 2007 completed the transformation from centrally planned economies to market economies. Moreover, it is expected that they will also join the Eurozone and implement the Euro as their legal tender. However, membership in the Eurozone is conditioned by fulfillment of the Maastricht criteria. One criterion of which is the national currency's stability in the period preceding entry into the Eurozone.

This criterion is associated with specific exchange rate regime, ERM II, which must be adapted by all countries with regimes whose principles do not correspond with the ERM II's spirit. The group of incompatible regimes includes crawling pegs, free floats or managed floats without a mutually agreed central rate and pegs to anchors other than the Euro. It means that all EU new Member States except for Bulgaria, Estonia and Lithuania had or will have to modify their exchange rate arrangement when joining ERM II. The Czech Republic, Hungary, Poland and Romania currently use flexible exchange rate arrangements. Slovakia and to a lesser extent Slovenia also maintained a flexible regime before entry into the ERM II. Such a change toward a less flexible exchange rate system could increase susceptibility of the countries to currency crises and pressures in foreign exchange markets.

*Stavárek:
Silesian University in Opava, School of Business Administration in Karviná,
Department of Finance
Univerzitní nám. 1934/3,
733 40 Karviná,
Czech Republic
e-mail: stavarek@opf.slu.cz

Acknowledgement
Research behind this paper was supported by the Czech Science Foundation within the project GAČR 402/08/0067 "Financial Integration of the New EU Member States with Eurozone".

Therefore, the aim of this paper is to estimate exchange market pressure (EMP) in the Czech Republic, Hungary, Poland and Slovakia (hereafter EU4) during the period 1993-2006. Since all countries applied both a fixed and flexible exchange rate regime, the time span chosen allows us to compare magnitude of tensions in the foreign exchange market in different exchange rate environments. This kind of analysis has important policy implications as Slovakia has already switched to a less flexible regime and the remaining countries will make this unavoidable step in the near future.

The paper is structured so that Section 2 describes the meaning and theoretical concepts of EMP and provides a review of the relevant literature. In Section 3, the models and data used are cited. Section 4 reports the empirical results and the conclusions are presented in Section 5.

2. Exchange Market Pressure and Literature Review

2.1 Meaning and Concepts of Exchange Market Pressure

The term "exchange market pressure" usually refers to changes in two cardinal variables describing the external sector of any economy: official international reserve holdings and the nominal exchange rate. However, the notion of EMP was defined explicitly for the first time in Girton and Roper (1977). The EMP index in this study is the simple sum of the rate of change in international reserves and the rate of change in the exchange rate. However, since the measure is derived from a highly restrictive monetary model, the formula cannot be applied to other models.

The original concept of EMP has been modified and extended by many researchers. For example, Roper and Turnovsky (1980) and Turnovsky (1985) introduced the idea of using a small open-economy model and extended the original model by substituting the simple monetary approach by an IS-LM framework with perfect mobility of capital. Furthermore, the two EMP components were no longer equally weighted as in the Girton-Roper model.

A notable contribution to the EMP theory was provided by Weymark (1995, 1997a, 1997b, 1998). She revised the models mentioned above and introduced a more general framework in which the models are both special cases of the generalized formula. She introduced and estimated a parameter (conversion factor) standing for the relative weight of exchange rate changes and intervention in the EMP index. Since all previous EMP definitions stemmed from a specific model, Weymark also proposed a model-independent definition of EMP as:

The exchange rate change that would have been required to remove the excess demand for the currency in the absence of exchange market intervention, given the expectations generated by the exchange rate policy actually implemented (Weymark 1995, p.278).

Many researchers have criticized the most undesirable aspect of the EMP measure, dependency on a particular model, and proposed some alternative approaches called model-independent. A simpler and model-independent EMP measure was originally constructed in Eichengreen et al. (1994, 1995). According to this approach, EMP is a linear combination of a relevant interest rate differential, the percentage change in the bilateral exchange rate and the percentage change in foreign exchange reserves. Contrary to Weymark's approach, the weights are to be calculated from sample variances of those three components with no need to estimate any model.

The measure by Sachs et al. (1996) consists of the same elements, but each weight in the EMP index is calculated with respect to standard deviations of all components included instead of using only standard deviation of the respective component.

Kaminsky et al. (1998) and Kaminsky and Reinhart (1999) substituted the interest rate differential by a relevant interest rate in the country analyzed. Furthermore, the weights on the reserves and interest rate terms are the ratio of the standard error of the percentage change of the exchange rate over the standard error of the percentage change of reserves and the interest rate differential, respectively. An approach stemming from Eichengreen et al. (1996) was also followed by Pentecost et al. (2001). However, they determined the weights using principle components analysis.

2.2 Review of Relevant Empirical Literature

Since its introduction, EMP has attracted the attention of many researchers and a great number of theoretical as well as empirical papers have been published. Whereas some empirical papers are focused straight on estimation of EMP in a variety of regions and countries, other studies use the EMP measure as an element of a subsequent analysis examining currency crises, monetary policy, foreign exchange intervention, exchange rate regime and other issues. We only refer to studies analyzing EMP in EU4 in the following literature review.

The first study estimating EMP in, among others, the Czech Republic and Poland, was by Tanner (2002). Using the Girton-Roper model, he examined the relationship between EMP and monetary policy in a vector autoregression system. Regarding the EMP calculated in the Czech Republic and Poland, they were modest in comparison to other countries and very similar to each other. However, EMP in Poland was twelve times higher than in the Czech Republic during the Asian crisis in the second half of the 1990s. Although a positive relationship between EMP and domestic money supply was revealed in both countries, they were not as significant and straight as in other countries.

A more specific application of the Tanner (2002) approach is Bielecki (2005). The paper concentrates only on Poland from 1994-2002. The results indicate that domestic credit reacted in a direction counter to innovations to EMP. Furthermore, Bielecki compared two EMP measures calculated under alternative methodologies (using all foreign reserve changes and pure official foreign exchange intervention data) and came to the conclusion that the appreciation pressure prevailed over the sample period. However, using the pure intervention data in the EMP estimation provided more realistic and robust results.

Van Poeck et al. (2007) used EMP as an indicator of currency crisis and addressed the question whether currency crises in the Euro-candidate countries have been more frequent in fixed, intermediate or flexible exchange rate arrangements. The authors found that EMP was marginally smaller in countries and periods characterized by an intermediate exchange rate regime as compared to those with a floating arrangement. Regarding EU4, the most critical quarters (excessive EMP) occurred in Hungary during the fixed peg regime and in Poland when a crawling peg was being applied.

Very similar conclusions were drawn in Stavárek (2005) where EMP in the Czech Republic, Hungary, Poland and Slovenia in 1993-2004 are estimated. The study applied the EMP measure proposed in Eichengreen et al. (1995) and the results obtained suggest that the Czech Republic and Slovenia went through considerably less volatile development of EMP than Hungary and Poland.

3. Measuring the Exchange Market Pressure: Model and Data

3.1 Model-Dependent Approach

This study originally stems from Weymark (1995) and Spolander (1999) and applies the following formula for EMP calculation:

$$EMP_t = \Delta e_t + \eta(1-\lambda)\Delta r_t \qquad (1)$$

where Δe_t is the percentage change in exchange rate expressed in direct quotation (domestic price for one unit of foreign currency), Δr_t is the change in foreign exchange reserves scaled by the one-period-lagged value of money base and η is the conversion factor which has to be estimated from a structural model of the economy and λ is the proportion of foreign exchange intervention that is sterilized by a change of domestic credit.

The conversion factor represents elasticity that converts observed reserve changes into equivalent exchange rate units. This EMP formula assumes that the central bank's monetary policy is completely independent of demand and supply conditions for the domestic currency in the international foreign exchange market. This means that autonomous money market interventions, i.e. changes in domestic credit not due to sterilization operations, are not assumed to be an instrument of exchange rate policy (Spolander 1999, p. 23).

For practical estimation of EMP the small open economy monetary model summarized in equations (2)-(8) was applied.

$$\Delta m_t^d = \beta_0 + \Delta p_t + \beta_1 \Delta c_t - \beta_2 \Delta i_t \qquad (2)$$

$$\Delta p_t = \alpha_0 + \alpha_1 \Delta p_t^* + \alpha_2 \Delta e_t \qquad (3)$$

$$\Delta i = \Delta i_t^* + E_t(\Delta e_{t+1}) - \Delta e_t \qquad (4)$$

$$\Delta m_t^s = \Delta d_t^a + (1-\lambda)\Delta r_t \qquad (5)$$

$$\Delta r_t = -\overline{p}_t \Delta e_t \qquad (6)$$

$$\Delta d_t^a = \gamma_0 + \Delta y_t^{trend} + (1-\gamma_1)\Delta p_t - \gamma_2 y_t^{gap} \qquad (7)$$

$$\Delta m_t^d = \Delta m_t^s \qquad (8)$$

where p_t is domestic price level, p_t^* is foreign price level, e_t denotes exchange rate (in direct quotation), m_t is nominal money stock (the superscript d represents the demand and s the supply), c_t is real domestic income, i_t is nominal domestic interest rate, i_t^* denotes nominal foreign interest rate, $E_t(\Delta e_{t+1})$ is expected exchange rate change and λ is proportion of sterilized intervention. All variables up to this point are expressed in natural logarithm. Next, d_t^a is autonomous domestic lending by the central bank and r_t is the stock of foreign exchange reserves, both divided by the one period lagged value of the money base. y_t^{trend} is the long-run trend component of real domestic output y_t and y_t^{gap} is the difference between y_t and y_t^{trend}. The sign Δ naturally denotes change in the respective variable.

Equation (2) describes changes in money demand as a positive function of domestic inflation and changes in real domestic income and a negative function of changes in the domestic interest rate. Equation (3) defines the purchasing power parity condition attributing the primary role in domestic inflation determination to exchange rate changes and foreign inflation. Equation (4) describes uncovered interest rate parity. Equation (5) suggests that changes in the money supply are positively influenced by autonomous changes in domestic lending and non-sterilized changes in the stock of foreign reserves. Equation (6) states that changes in foreign exchange reserves are a function of the exchange rate and a time-varying response coefficient. Equation (7) describes the evolution

of the central bank's domestic lending. Whereas domestic inflation and changes in trend real output changes are positive determinants of the domestic lending the gap between real output and its trend has a negative impact on domestic lending activity. Equation (8) defines a money market clearing condition that assumes money demand to be continuously equal to money supply.

By substituting equations (3) and (4) into equation (2) and substituting equation (7) into equation (5) and then using the money market clearing condition in equation (8) to set the resulting two equations equal to one another, it is possible to obtain the following relation:

$$\Delta e_t = \frac{X_t + \beta_2 E(\Delta e_{t+1}) + (1-\lambda)\Delta r_t}{\gamma_1\alpha_2 + \beta_2} \quad (9)$$

where

$$X_t = \gamma_0 - \gamma_1\alpha_0 - \beta_0 + \Delta y_t^{trend} - \gamma_1\alpha_1\Delta p_t^* - \gamma_2 y_t^{gap} - \beta_1\Delta c_t + \beta_2\Delta i_t^* \quad (10)$$

and the elasticity needed to calculate EMP in equation (1) can be found as:

$$\eta = -\frac{\partial\Delta e_t}{\partial\Delta r_t} = -\frac{(1-\lambda)}{\gamma_1\alpha_2 + \beta_2} \quad (11)$$

3.2 Model-Independent Approach

As mentioned above, Eichengreen et al. (1994, 1995) argued that dependency on a particular model was an undesirable feature for the EMP index. As an alternative, they proposed the following measure of a speculative pressure:

$$EMP_t = \frac{\Delta e_t}{e_t} - \frac{1}{\sigma_r}\left(\frac{\Delta m_t}{m_t} - \frac{\Delta m_t^*}{m_t^*}\right) + \frac{1}{\sigma_i}(\Delta(i_t - i_t^*)) \quad (12)$$

where σ_r is the standard deviation of the difference between the relative changes in the ratio of foreign reserves and money (money base) in the analyzed country and the reference country $\left(\frac{\Delta m_t}{m_t} - \frac{\Delta m_t^*}{m_t^*}\right)$ and σ_i is the standard deviation of the nominal interest rate differential $(\Delta(i_t - i_t^*))$. Other variables are as defined in the previous specification.

However, for the practical calculation we took inspiration from Sachs et al. (1996) and made some modifications of the EMP formula. In order to avoid the EMP measure being driven by the most volatile component we changed the weighting scheme. We also abandoned the relation between foreign reserves and money at the home and reference country. Consequently, the EMP formula based on a model-independent approach can be written as follows:

$$EMP_t = \left(\frac{1/\sigma_e}{(1/\sigma_e)+(1/\sigma_m)+(1/\sigma_i)}\right)\frac{\Delta e_t}{e_{t-1}} - \left(\frac{1/\sigma_m}{(1/\sigma_e)+(1/\sigma_m)+(1/\sigma_i)}\right)\frac{\Delta m_t}{m_{t-1}} + \left(\frac{1/\sigma_i}{(1/\sigma_e)+(1/\sigma_m)+(1/\sigma_i)}\right)(\Delta(i_t - i_t^*)) \quad (13)$$

where σ_e is the standard deviation of the rate of change in the exchange rate $\frac{\Delta e_t}{e_{t-1}}$ and other variables are denoted consistently with (12).

The samples of data used in this paper cover the period 1993:1 to 2006:4, yielding 56 quarterly observations for all EU4 countries. The data were predominantly extracted from the IMF's International Financial Statistics and the Eurostat's Economy and Finance database. The missing observations in the time series were replenished from databases accessible on the EU4 central banks' websites. The detailed description of all data series and their sources is presented in Appendix 1.

4. Estimation of Exchange Market Pressure

4.1 Model-Dependent Approach

As is evident from the model presented in Section 3.1, the EMP estimation (1) must be preceded by the calculation of the conversion factor η (11). However, this step is required to obtain values of the sterilization coefficient λ (5), the elasticity of the money base with respect to the domestic price level γ_1 (7), the elasticity of the domestic price level with respect to the exchange rate α_2 (3), and the elasticity of the money demand with respect to the domestic interest rate β_2 (2).

More precisely, the parameter estimates are obtained by estimating the following three equations.

$$\Delta m_t - \Delta p_t = \beta_0 + \beta_1\Delta c_t - \beta_2\Delta i_t + \varepsilon_{1,t} \quad (14)$$

$$\Delta p_t = \alpha_0 + \alpha_1\Delta p_t^* + \alpha_2\Delta e_t + \varepsilon_{2,t} \quad (15)$$

$$\frac{\Delta B_t}{B_{t-1}} - \Delta r_t - \Delta y_t^{trend} - \Delta p_t = \gamma_0 + \lambda\Delta r_t + \gamma_1\Delta p_t + \gamma_2 y_t^{gap} + \varepsilon_{3,t} \quad (16)$$

Equations (14) and (15) are obtained directly from equations (2) and (3). Equation (16) is derived by substitution of (6) into (4) and noting that change in money

supply equals the change in money base $\frac{\Delta B_t}{B_{t-1}}$ assuming the money multiplier to be constant.

One can distinguish two types of variables included in the model: endogenous and exogenous. The endogenous variables are Δm_t , Δp_t , Δe_t , Δi_t , $\frac{\Delta B_t}{B_{t-1}}$ and Δr_t . The exogenous variables are Δc_t , Δp_t^* , Δi_t^* , Δy_t^{trend} and Δy_t^{gap} . Despite the fact that Δe_t does not appear on the left-hand side of any of the equations, it is the endogenous variable because the exchange rate is clearly the variable determined by this model.

The model is estimated using the two-stage least square regression technique (2SLS). The main reason is that the endogenous variables are on both sides of equations (2)-(8). It means that in each equation having endogenous variables on the right-hand side, these variables are likely to correlate with the disturbance term. Thus, using the ordinary least square method would lead to biased estimates.

The 2SLS used requires the incorporation of instruments (variables uncorrelated with the disturbance term) into the estimation. To find appropriate instruments we run the first stage regressions on endogenous variables having all possible instruments as regressors. As possible instruments we set the contemporaneous and one-quarter lagged values of exogenous variables and one-quarter lagged values of all endogenous variables. Finally, the regressors with sufficient statistical significance were selected as instruments.

We applied Augmented Dickey-Fuller tests to examine the stationarity of the time series used. According to the character of each time series we tested the stationarity with a linear trend and/or intercept or none of them. Tests' results allow us to conclude that the first differences of all time series are stationary. Thus, they can be used in estimation of all equations of the model. The percentage change in money base is a naturally flow variable and so already differenced and stationary. Likewise, y_t^{gap} is stationary on level in all countries because of its construction.

The 2SLS estimation results are presented in Appendix 2, individually for each equation. The tables also contain the list of instruments and results of some diagnostic tests. We applied a Jarque-Berra (J-B) indicator to assess normality of the residuals distribution, a Breusch-Godfrey Langrange Multiplier (LM) to test serial correlation and a White test to check heteroscedasticity. All LM tests were run with four lags. The tests indicated evidence of serial correlation in residuals from the equations and the potential heteroscedasticity was also identified in some cases. Therefore, we corrected the standard errors of parameter estimates by the Newey-West procedure. Even more frequently, the residuals seem to be non-normally distributed. Therefore, although the t-statistics can be misleading, this does not reduce the validity of the parameter estimates. Since different equation specifications have different instruments, R^2 for 2SLS can be negative even if a constant is used in the equation.

According to the model specification the parameters β_1 , α_1 , and α_2 should be positive and β_2 , γ_1 , γ_2 , and λ should be negative. Since λ is a fraction, its absolute value should be between zero and one.

The estimations of equation (14) provide mediocre results. The parameters β_2 are correctly signed in all EU4. However, the parameter is not statistically significant in Slovakia. One can see some evidence of non-normal distribution (Czech Republic, Slovakia), serial correlation (Hungary) and heteroscedasticity (Czech Republic, Hungary and Poland).

In the estimations of equation (15) we obtained very good results. The signs of all parameters are consistent with the theoretical assumptions and important α_2 parameters are significantly different from zero in all countries. On the other hand, only error terms in the Polish and Slovak equations seem to pass the standard diagnostic tests completely. Furthermore, one can find a substantially lower elasticity of the domestic price level with respect to the exchange rate (α_2) in Poland and, to a lesser degree, in Slovakia than in other EU4.

The results from the money supply equation (16) are somewhat poorer. This is true because especially the estimation of the Polish equation led to confusing results. The parameter γ_1 has an opposite sign than the theory suggests and the absolute value of the sterilization coefficient λ exceeded the upper margin of the potential interval from zero to one. Moreover, γ_1 in all EU4 except for Hungary are statistically insignificant. Neither the performance of the elasticities of the money base with respect to the domestic output gap (γ_2) are significant (again, Hungary is the exception). According to Spolander (1999, p.72) this problem stems from different specification of the equation and, unfortunately, it is a common drawback of many studies of monetary policy rules and reaction functions.

The parameter estimates of the sterilization coefficients λ in all EU4 except for Hungary do not significantly differ from minus unity, which implies full sterilization. This statement is based on results of the Wald test of the null hypothesis $\lambda = -1$ However, the EU4 central banks have never publicly declared that all foreign exchange intervention has no impact on the money base. Hence, we assume that the parameter estimates of λ indicate less than full sterilization. This assumption is in accordance with the practice of central banks from developed countries, which usually sterilize their intervention partially rather than fully.

Table 1 summarizes estimates of the conversion factors η calculated for all countries using equation (11). Due to non-standard results of the estimation of equation (16) in Poland, the Polish conversion factor differs substantially from other factors in magnitude as well as sign. The extraordinary value of Polish η is subsequently transmitted to EMP, whose extent will not correspond with the EMP scale in other EU4.

Czech Republic	Hungary	Poland	Slovakia
3.227419	**0.963507**	**-6.207188**	**1.167874**

Source: Author's calculations

Table 1: Estimates of conversion factors

The EMP development according to a model-dependent approach is graphically presented for all countries analyzed in Appendix 3. To evaluate EMP correctly it is necessary to remember some elementary facts. First, a negative value of EMP indicates that the currency is under general pressure to appreciate. On the contrary, positive EMP shows that the currency is pressured to depreciate. Second, the value of EMP represents the magnitude of the foreign exchange market disequilibrium, which should be removed by a respective change of the exchange rate.

The figures contain, besides the EMP curve, the lines representing 1.5 multiple of the standard deviation above and below the mean EMP value. A breach of the corridor is considered an excessive EMP, and alerts of a potential crisis. Furthermore, the graphs are divided into several sections, thus allowing one to distinguish between different exchange rate arrangements applied in EU4 during the period examined.

One can find EMP development in EU4 similar in many aspects. The first three years were characterized by many episodes of excessive EMP and its high volatility. The EMP estimates suggest that there was a general pressure on EU4 currencies to depreciate. The principal exception was Poland, whose EMP measurements surpassed 60% on the appreciation side in five quarters during 1993-1995. It is very hard to believe that the magnitude of money market disequilibrium would be so enormous that the Polish zloty (PLN) should have appreciated by 60% in order to remove that disequilibrium, noting the transformation process was still at a beginning stage. Moreover, Van Poeck et al. (2007) and Bielecki (2005) obtained considerably different (and more realistic) estimations of EMP in Poland in that period.

It is worthwhile to remember that all EU4 countries applied some version of fixed exchange rate regime in 1993-1995. Furthermore, the Czech Republic and Slovakia started their existence in January 1993 after the split of the former Czechoslovakia. The related currency separation, launch of new currencies, establishment of new central banks, and formation of new monetary policies had an obvious impact on data used in the estimation and consequently on the EMP figures.

Since 1996, EMP developed more smoothly and free of any abnormal fluctuations. There was only one example of breaching the corridor's margin after 1995. In Hungary, EMP in 2002:1 was -1.96%, suggesting a pressure on the forint (HUF) to appreciate. A high (not excessive) EMP also occurred at the end of 2002. HUF was under speculative attack on the upper edge of the band, which culminated in devaluation of the central parity. In the Czech Republic, the highest EMP was identified in 2002:2 when the pressure reached 12.24%, forcing the koruna (CZK) to depreciate. This reflected the necessity for a correction after the previous long-lasting appreciation and peaking at the historic high. Whereas the depreciation pressure prevailed on HUF and the Slovak koruna (SKK), the proportion of appreciation-pressure and depreciation-pressure quarters was more balanced in the case of CZK in 1996-2006.

4.2 Model-Independent Approach

The EMP values obtained from the model-independent approach are substantially different from those of model-dependent ones (see Appendix 4 for graphical illustration). They differ in magnitude as well as basic development tendencies.

None of the countries analyzed experienced extraordinarily volatile development of EMP in the first three or four years of the period examined. Far from it, the development in the Czech Republic and Poland over that period of time was the most stable ever. Furthermore, one can find many episodes of excessive EMP in all countries during the second half of the period analyzed. Generally, the "crisis quarters" (EMP surpassing upper or lower limit) seem to occur more frequently in the model-independent than model-dependent approach. This should be obvious, as the "no-crisis" band in the model-independent approach is considerably tighter than the model-dependent band in three countries. However, all breaches of the limits had a temporary character. Hence, the foreign exchange market disequilibrium did not last more than one observation (quarter). It is worthwhile to mention a similarity in the very recent EMP development that was shared by three countries (Hungary, Poland and Slovakia). The pressure exceeded or approached the lower limit at the end of 2006 announcing the appreciation pressure on the national currencies.

Whereas the appreciation pressure prevailed over the entire period in the Czech Republic and Poland, the more balanced proportion of positive and negative EMP observations was revealed in Slovakia. By contrast, Hungary had to face predominantly a depreciation pressure on HUF.

The most extreme EMP in the Czech Republic (+13.39%) can be observed in 2004:2. Such a high depreciation pressure was caused by the increase of the Czech interest rate above the Eurozone level and the subsequent change in the interest rate differential (+210%). In Poland, we identified the most extreme EMP in 2005:4 (-20.56%). A separate analysis of the EMP components allows us to determine the principal cause: a substantial change in the reserves-money ratio (+12202.9%) driven by a massive increase in the reserve holdings.

Slovakia is the country with the most escapes from the no-crisis band, mainly on the appreciation side. However, the breaches of the corridor were rather marginal and the most significant one was recorded in 2005:1 (-7.75%) as a consequence of growing international reserves. Slovakia also witnessed a high depreciation pressure (+9.91%) in 1998:4, just after the shift in the exchange rate arrangement towards a managed floating. In Hungary, ignoring the very early period, we can distinguish two cases of the excessive depreciation EMP. The first (+11.19%) occurred in 2003:3 following culmination of the speculative attack on appreciating HUF. In 2005:1, EMP reached an even higher level (+13.78%) foreseeing the coming period of a massive HUF depreciation.

4.3 Comparison of Alternative Approaches

The alternative empirical approaches to the EMP estimation resulted in considerably different findings. This can be documented by descriptive statistics of the EMP time series as well as correlation analysis. The elementary descriptive statistics are presented in Table 2 and correlation coefficients of the EMP measures in Table 3.

The only country with results signaling some degree of consistency is Hungary. The means and medians of both EMP indices have positive signs and the correlation coefficient is the highest among all countries. One can find further uniqueness in the results from Hungary. The development of the model-dependent EMP was significantly less volatile than development of the alternative model-independent EMP. This is evident in all of the following indicators: standard deviation, width of the no-crisis band, and spread between maximum and minimum values.

Totally opposite conclusions can be drawn from the remaining countries. Their most notable common attribute is the higher volatility of the model-dependent EMP. Moreover, they also share a disharmonic development of the EMP measures mirrored in the reversely signed means and medians and low and/or negative correlation coefficients. It should be reminded here that the high standard deviations and wide bands stem from the varying development in the very early stage of the estimation period.

Czech Republic	Hungary	Poland	Slovakia
0.086080	**0.462380**	**-0.292988**	**0.192232**

Source: Author's calculations

Table 3: Correlation coefficients of alternative exchange market pressure measures

The consistency of the two EMP indices can be also assessed by discrepancies in the identification of the crisis quarters. For that purpose, the developments of both EMP measures in each country are put together and presented in Figure 1. Moreover, Table 4 shows how many quarters were identified by the model-independent approach as a crisis occurrence, and how many of these are similarly classified by the model-dependent approach if the model-independent no-crisis band applies. Table 4 also reports the number of EMP crisis observations that obtained the same sign and similar magnitude in both approaches. The results presented confirm the negligible consistency and provide evidence that the empirical tools used tend to interpret EMP development differently.

	Czech Republic		Hungary		Poland		Slovakia	
	m_dep	**m_ind**	**m_dep**	**m_ind**	**m_dep**	**m_ind**	**m_dep**	**m_ind**
mean	0.0361	-0.0015	0.0091	0.0285	-0.1075	-0.0080	0.0352	0.0025
median	0.0036	-0.0011	0.0068	0.0228	-0.0362	0.0009	0.0062	0.0030
max	0.5544	0.1339	0.0578	0.1504	0.2150	0.1110	0.7466	0.0991
min	-0.0577	-0.1003	-0.0199	-0.0531	-0.6992	-0.2056	-0.0891	-0.0786
st. dev.	0.0948	0.0371	0.0165	0.0478	0.2005	0.0554	0.1170	0.0337
upper	0.1783	0.0488	0.0339	0.1002	0.1933	0.0751	0.2107	0.0532
lower	-0.1061	-0.0612	-0.0157	-0.0432	-0.4083	-0.0912	-0.1403	-0.0481

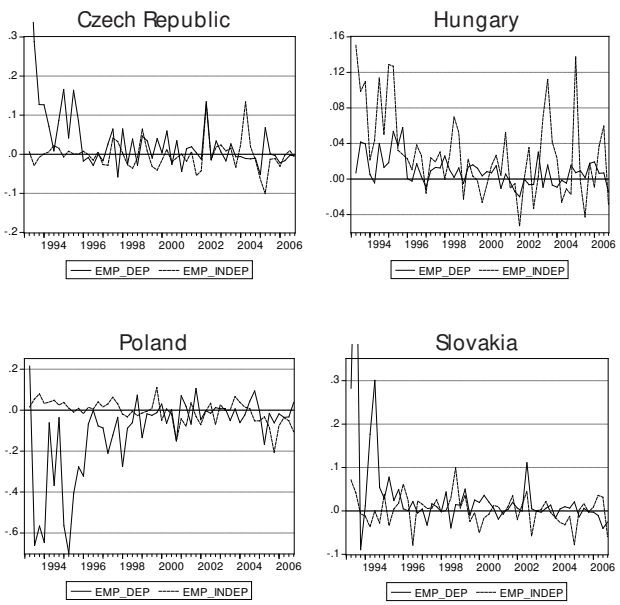
Source: Author's calculations
Notes: m_dep and m_ind denote model-dependent and model-independent approach respectively

Table 2: Descriptive statistics of exchange market pressure

	Czech Republic	Hungary	Poland	Slovakia
m_ind crises	4	6	3	7
m_dep crises	1	0	1	0
same sign	2	6	2	3
similar magnitude	2	0	1	0

Source: Author's calculations
Notes: m_dep and m_ind denote model-dependent and model-independent approach, respectively. Similar magnitude means that the value of the m_dep EMP is within interval 50%-150% of the m_ind EMP value.

Table 4: Consistency of alternative approaches in identification of crises



Source: Author's calculations

Figure 1: Development of exchange market pressure based on model-dependent and model-independent approaches

One of the aims of the paper is to compare EMP in various exchange rate arrangements in EU4. The comparison of the EMP standard deviations calculated over the periods with the particular exchange rate regime along with the numbers of the crisis quarters are provided in Table 5.

The results clearly suggest that any conclusion about the relationship between EMP and exchange rate regime is extremely sensitive to the selection of the EMP estimation method. The model-dependent and model-independent approaches lead to absolutely controversial findings on how EMP develop and fluctuate in the particular exchange rate arrangement. The model-dependent approach provides evidence that EMP was very stable in all EU4 during the floating-regime period and the excessive deviations of EMP occurred sporadically at that time. By contrast, the periods of fixed arrangement witnessed many episodes surpassing the level of 1.5 multiple of the standard deviation as well as substantially more volatile development. The results of the model-independent approach are totally opposite. Generally, any kind of the fixed regime paved the way for lower and less volatile EMP and also fewer crisis periods.

In order to determine whether the differences among EMP values in various exchange rate regimes are statistically significant we carried out a single-factor Analysis of Variance (ANOVA). The EMP observations from all EU4 were gathered in the single dataset and grouped into four categories according to the classification system used in Table 5. The ANOVA test results for both approaches are reported in Table 6.

	Czech Republic		Hungary		Poland		Slovakia	
	m_dep	m_ind	m_dep	m_ind	m_dep	m_ind	m_dep	m_ind
fixed (crawl) peg	0.1448 (0:0)	0.0148 (0:0)	0.0181 (2:0)	0.0458 (3:0)	0.3342 (0:2)	0.0212 (0:0)	0.1767 (2:0)	0.0336 (1:1)
crawling band	---	---	0.0165 (0:0)	0.0317 (0:0)	0.1291 (0:0)	0.0369 (1:0)	---	---
floating	0.0382 (0:0)	0.0438 (3:1)	0.0127 (0:1)	0.0483 (2:1)	0.0613 (0:0)	0.0605 (0:2)	0.0245 (0:0)	0.0339 (1:3)
ERM II	---	---	---	---	---	---	0.0164 (0:0)	0.0380 (0:1)

Source: Author's calculations
Note: The ratio in parentheses is (number of excessive depreciation EMP: number of excessive appreciation EMP)

Table 5: Standard deviations of exchange market pressure and number of crisis quarters

	model-dependent approach			model-independent approach		
	no. obs.	mean	vari-ance	no. obs.	mean	vari-ance
fixed (crawl) peg	56	0.00236	0.06289	56	0.02115	0.00179
crawling band	44	-0.04109	0.01097	44	0.01596	0.00118
floating	115	0.00232	0.00161	115	-0.00610	0.00244
ERM II	5	-0.01622	0.00026	5	0.00292	0.00144
	F-statistics: 1.162374 P-value: 0.325034			F-statistics: 5.646847 P-value: 0.000963		

Source: Author's calculations
Note: Critical value of F-statistics is 2.646402.

Table 6: ANOVA test results

The ANOVA tests show that the exchange rate regime does not influence the average of the model-dependent EMP considerably, as the F-statistic is small and insignificant. On the other hand, the means of the grouped model-independent EMP are significantly different at the 1% level. Thus, one can consider the floating arrangement to be the environment contributing to the volatile development and excessive values of EMP.

The results obtained allow us to derive some policy implications. There is no empirical justification for the a priori concerns that a shift in the exchange rate regime from floating to the quasi-fixed ERM II will stimulate EMP to increase. More likely, the basic characteristics of EMP development will be retained after the change. Hence, supposing that the recent level of EMP volatility and density of the crisis observations revealed by the model-independent approach remain unchanged, it will cast serious doubt on the European Commission's requirement that EU4 must participate in ERM II without substantial tensions on the exchange rates.

The doubt gains importance if the authorized fluctuation margin is likely to be asymmetric with the limits of 15% on the appreciation side and 2.25% on the depreciation side. Although EMP fluctuated predominantly within this narrow band in EU4 in the last four years, the depreciation part of the asymmetric band is very tight and the EMP development should be monitored closely.

Owing to some factors the EMP estimates presented and discussed previously must be viewed with some degree of skepticism. Besides the drawbacks already discussed, the model-dependent EMP in all countries developed almost in parallel with the changes in reserves over the entire period. This implies a frequent application of the central bank official intervention even in the environment of the floating exchange rate regime. However, the reality in many EU4 was different. These limitations should be addressed and eliminated in future research. We recommend use of the pure foreign exchange intervention data as the alternative to the change in reserves. The model can also be extended by the possibility of indirect intervention operating through changes in the domestic lending or interest rate.

5. Conclusion

In this paper, we estimated EMP for the EU4 currencies against the Euro exchange rate over the period from 1993-2006. Fundamental differences in the spirit and construction of the approaches applied are reflected in considerably different results. Thus, the two alternatives are not compatible if the data from EU4 are used.

According to the model-dependent approach, EMP in the Czech Republic, Hungary and Slovakia are of similar magnitude. Whereas a depreciation pressure prevailed on HUF and SKK, no dominance of any direction of the pressure can be found in the case of CZK. The estimates of the Polish EMP are burdened by a substantial statistical insignificance. The results obtained suggest that EMP in EU4 decreased over time and was remarkably lower and less volatile during the periods of floating exchange rates than in the environment of the fixed exchange rate regime. However, there are some concerns about the validity of the parameter estimates and consequently the EMP measures in all EU4.

The model-independent approach puts greater emphasis on the interest rate differential, which has often been identified as one of the factors of the exchange rate determination in EU4. EMP development can be described as homogeneous during the entire period analyzed, with no episode of an abnormal volatility or exceptionally frequent occurrence of excessive EMP. While CZK and PLN were largely under appreciation pressure, HUF was forced to depreciate and no dominance was revealed in Slovakia. However, the model-independent approach identified more crises than the model-dependent approach, including the very recent excessive appreciation pressure on three EU4 national currencies.

The study does not confirm the concerns that the unavoidable shift in the exchange rate regime towards the quasi-fixed ERM II will provoke EMP to grow to excessive levels. Instead, the empirical tests suggest that the regime change will have, with a high probability, a negligible impact on EMP development. Stemming from the estimations obtained, the EU4 central banks will probably be confronted with some occasions of excessive EMP jeopardizing fulfillment of the exchange rate stability criterion.

Appendix 1: Data description

All data are on quarterly basis and cover the period 1993:1 – 2005:4

B_t	EU4 national money base Obtained from IMF's International Financial Statistics (IFS) line 14 (Reserve money) and then logged.
c_t	EU4 Gross national income Derived by adding the net income from abroad to Gross domestic product (IFS line 99B). In national accounts statistics, the total of rents, interest, profits and dividends plus net current transfers is shown as "net income from abroad". It was obtained from IFS by differencing current account balance (IFS line 78ALD) and balance on goods and services (IFS line 78AFD). Logged values.
e_t	Nominal bilateral exchange rate of EU4 currencies vis-à-vis Euro in direct quotation (number of EU4 currency units for one Euro) Obtained from Eurostat's Economy and finance database (EEF) section Exchange rates and Interest rates, line Euro/ECU exchange rates – Quarterly data. Logged values.
i_t^*	Eurozone 3-month money market interest rate Obtained from EEF section Exchange rates and Interest rates, line Money market interest rates – Quarterly data, series MAT_M03
i_t	EU4 national 3-month money market interest rate Obtained from EEF section Exchange rates and Interest rates, line Money market interest rates – Quarterly data, series MAT_M03

m_t	EU4 national M1 monetary aggregate Obtained from IFS line 34..B (Money, Seasonally Adjusted) and then logged.
p_t^*	Eurozone Harmonized indices of consumer prices Obtained from EEF section Prices, line Harmonized indices of consumer prices – Monthly data (index 2005=100). Converted from monthly to quarterly data by averaging the three monthly figures and then logged.
p_t	EU4 national Harmonized indices of consumer prices Obtained from EEF section Prices, line Harmonized indices of consumer prices – Monthly data (index 2005=100). Converted from monthly to quarterly data by averaging the three monthly figures and then logged.

r_t	EU4 national official reserves holdings Obtained from IFS line 1L.D (Total Reserves Minus Gold) converted to national currency using nominal bilateral exchange rate vis-à-vis US dollar (IFS line AE) and then logged.
rm_t	Proportional change in domestic international reserves Obtained by ratio of change in the level of reserves (IFS line 79DAD) and money base of previous period (IFS line 14).
y_t	EU4 national Gross domestic product Obtained from IFS line 99B (Gross Domestic Product) and then logged.
y_t^{trend}	Long-run component of y_t Obtained using the Hodrick-Prescott filter and a smoothing parameter of 1600, as recommended for quarterly data.

Appendix 2: Estimations of equations (14)-(16)

Equation (14)							
Czech Republic				Hungary			
instruments: Δy_{t-1}^{trend} Δr_{t-1} Δi_{t-1} Δy_t^{gap} Δp_{t-1}^*				instruments: Δc_t Δp_t^* Δi_{t-1} Δy_{t-1}^{trend}			
param.	estim.	st.er.	prob.	param.	estim.	st.er.	prob.
β_0	0.0019	0.0030	0.5350	β_0	-0.0047	0.0024	0.0508
β_1	0.0150	0.6767	0.9824	β_1	0.4307	0.2758	0.1246
β_2	-0.0401	0.0163	0.0175	β_2	-0.0490	0.0228	0.0364
R^2=0.0784, SEE=0.0094, DW=1.9026				R^2=0.1204, SEE=0.0102, DW=1.6233			
J-B=35.786 (0.0000), LM=6.1672 (0.1870)				J-B=0.8773 (0.6448), LM=21.709 (0.0002)			
WHITE=24.917 (0.0001)				WHITE=10.894 (0.0278)			
Poland				Slovakia			
instruments: Δy_{t-1}^{trend} Δe_{t-1} Δi_{t-1} Δp_t^* Δc_{t-1}				instruments: Δc_{t-1} Δp_{t-1}^* Δm_t Δp_{t-1} Δi_{t-1}			
param.	estim.	st.er.	prob.	param.	estim.	st.er.	prob.
β_0	0.0014	0.0022	0.5292	β_0	0.0037	0.0038	0.3377
β_1	0.2229	0.1358	0.1068	β_1	-0.6755	0.6150	0.2772
β_2	-0.0891	0.0319	0.0073	β_2	-0.0624	0.0418	0.1417
R^2=-0.2486, SEE=0.0101, DW=2.3297				R^2=-0.7455, SEE=0.0165, DW=1.6467			
J-B=0.5631 (0.7546), LM=8.2077 (0.0842)				J-B=71.840 (0.0000), LM=4.2942 (0.3676)			
WHITE=23.585 (0.0001)				WHITE=1.1746 (0.8823)			
Equation (15)							
Czech Republic				Hungary			
instruments: Δp_t^* Δy_{t-1}^{trend} Δi_{t-1}^* Δe_{t-1}				instruments: Δp_t^* Δy_{t-1}^{trend} Δc_t Δp_{t-1}			
param.	estim.	st.er.	prob.	param.	estim.	st.er.	prob.
α_0	0.0027	0.0014	0.0680	α_0	0.0012	0.0010	0.2593
α_1	0.9251	0.9693	0.3444	α_1	2.1007	0.9945	0.0396
α_2	0.8499	0.3573	0.0211	α_2	0.9970	0.1780	0.0000
R^2=-2.9594, SEE=0.0058, DW=1.7655				R^2=0.1440, SEE=0.0053, DW=1.7237			
J-B=10.022 (0.0066), LM=8.7911 (0.0665)				J-B=0.0137 (0.9931), LM=10.021 (0.0401)			
WHITE=43.986 (0.0000)				WHITE=10.339 (0.0351)			
Poland				Slovakia			
instruments: Δp_t^* Δe_{t-1} Δi_{t-1} Δp_{t-1} Δc_{t-1} Δp_{t-1}^*				instruments: Δi_t^* Δe_{t-1} Δy_t^{gap} Δy_t^{trend} Δp_{t-1}^*			
param.	estim.	st.er.	prob.	param.	estim.	st.er.	prob.
α_0	0.0002	0.0021	0.9153	α_0	0.0035	0.0023	0.1351
α_1	2.8514	1.5569	0.0729	α_1	0.4775	1.8873	0.8013
α_2	0.2191	0.0383	0.0000	α_2	0.4904	0.2243	0.0334
R^2=-0.0007, SEE=0.0070, DW=1.7065				R^2=-0.6853, SEE=0.0048, DW=1.9955			
J-B=0.9986 (0.6070), LM=8.4745 (0.0756)				J-B=3.5220 (0.1719), LM=5.7802 (0.2162)			
WHITE=5.4510 (0.2441)				WHITE=7.3479 (0.1186)			

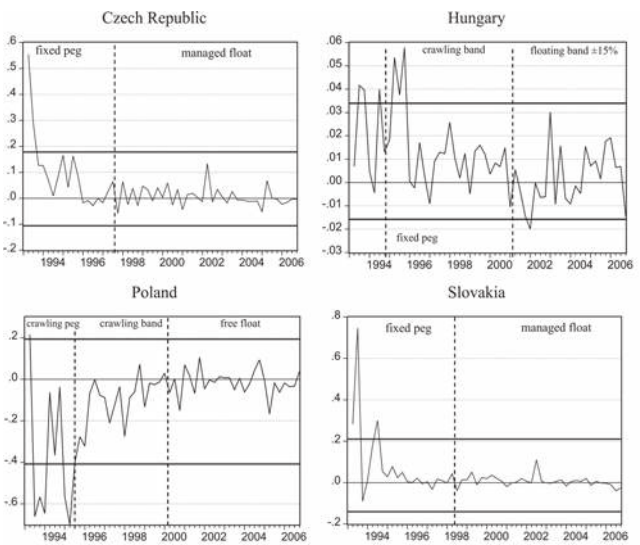
Source: Author's calculations

Appendix 2 (continued): Estimations of equations (14)-(16)

Equation (16)							
Czech Republic				Hungary			
instruments: Δp_t^* Δy_t^{gap} Δr_{t-1} Δi_t^* Δi_{t-1} Δy_{t-1}^{trend}				instruments: Δy_t^{gap} Δi_{t-1}^* Δc_{t-1} Δy_{t-1}^{gap} Δi_{t-1}			
param.	estim.	st.er.	prob.	param.	estim.	st.er.	prob.
γ_0	-0.0035	0.0033	0.2980	γ_0	0.0017	0.0048	0.7150
λ	-0.6998	0.1821	0.0003	λ	-0.6971	0.1128	0.0000
γ_1	-0.5725	0.8973	0.5264	γ_1	-1.7175	0.7430	0.0250
γ_2	0.0003	0.0008	0.7334	γ_2	-0.0001	3.3E-05	0.0033
R^2=0.3475, SEE=0.0208, DW=2.0566				R^2=0.6565, SEE=0.0119, DW=2.5815			
J-B=822.14 (0.0000), LM=0.4953 (0.9739) WHITE=34.505 (0.0000)				J-B=38.062 (0.0000), LM=13.386 (0.0095) WHITE=3.7906 (0.7050)			
Poland				Slovakia			
instruments: Δm_{t-1} Δp_t^* Δy_{t-1}^{trend} Δp_{t-1}^* Δy_t^{gap}				instruments: Δy_{t-1}^{trend} Δc_t Δi_{t-1}^* Δy_{t-1}^{gap} Δi_{t-1}			
param.	estim.	st.er.	prob.	param.	estim.	st.er.	prob.
γ_0	-0.0039	0.0030	0.1916	γ_0	0.0083	0.0074	0.2693
λ	-1.4245	0.3236	0.0001	λ	-0.9005	0.1252	0.0000
γ_1	1.4541	1.1559	0.2143	γ_1	-3.1911	2.3325	0.1779
γ_2	-0.0003	0.0009	0.7247	γ_2	-0.0007	0.0021	0.7312
R^2=0.7436, SEE=0.0221, DW=2.4557				R^2=0.9512, SEE=0.0224, DW=2.4020			
J-B=14.541 (0.0007), LM=8.9796 (0.0616) WHITE=3.9895 (0.6780)				J-B=2.8966 (0.2349), LM=9.2211 (0.0558) WHITE=5.1728 (0.8189)			

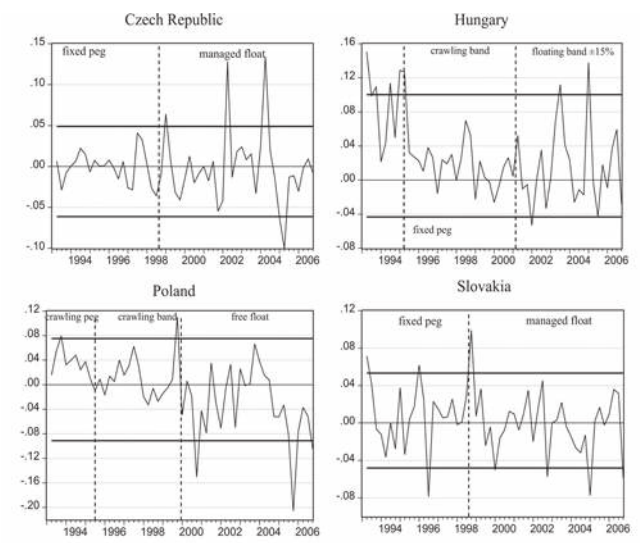
Source: Author's calculations

Appendix 3: Exchange market pressure in EU4 countries (model-dependent approach)



Source: Author's calculations

Appendix 4: Exchange market pressure in EU4 countries (model-independent approach)



Source: Author's calculations

References

Bielecki, S. 2005. Exchange market pressure and domestic credit evidence from Poland. The Poznan University of Economics Review 5 (1): 20-36.

Eichengreen, B., A. K. Rose, C. Wyplosz. 1994. Speculative Attacks on Pegged Exchange Rates: an Empirical Exploration with Special Reference to the European Monetary System. Working Paper No. 4898. National Bureau of Economic Research.

1995. Exchange Market Mayhem: The Antecedents and Aftermath of Speculative Attacks. Economic Policy 10 (21): 249-312.

Girton, L., D. Roper. 1977. A Monetary Model of Exchange Market Pressure Applied to the Postwar Canadian Experience. American Economic Review 67 (4): 537-548.

Kaminski, G., S. Lizondo, C. Reinhart. 1998. Leading indicators of currency crises. IMF Staff Papers 45 (1): 1-48.

Kaminski, G., C. Reinhart. 1999. The twin crises: The causes of banking and balance-of-payments problems. American Economic Review 89 (3): 473-500.

Pentecost, E. J., C. Van Hoydonk, A. Van Poeck. 2001. Measuring and Estimating Exchange Market Pressure in the EU. Journal of International Money and Finance 20 (3): 401-418.

Roper, D., S. J. Turnovsky. 1980. Optimal Exchange Market Intervention in a Simple Stochastic Macro Model. Canadian Journal of Economics 13 (2): 296-309.

Sachs, J. D., A. Tornel, A. Velasco. 1996. Financial crises in emerging markets: The lessons from 1995. Brooking Papers on Economic Activity 1996 (1): 147-215.

Spolander, M. 1999. Measuring Exchange Market Pressure and Central Bank Intervention. Bank of Finland Studies E:17.

Stavárek, D. 2005. Exchange Market Pressure in New EU-member Countries. In Money, Banking and Financial Markets. Proceedings from the International Conference, 244-248. Bratislava: Ekonóm.

Tanner, E. 2002. Exchange Market Pressure, Currency Crises, and Monetary Policy: Additional Evidence from Emerging Markets. Working Paper WP/02/14. International Monetary Fund.

Turnovsky, S. J. 1985. Optimal Exchange Market Intervention: Two Alternative Classes of Rules. In J. S. Bhandari (ed) Exchange Rate Management Under Uncertainty. Cambridge: MIT Press.

Van Poeck, A., J. Vanneste, M. Veiner. 2007. Exchange Rate Regimes and Exchange Market Pressure in the New EU Member States. Journal of Common Market Studies 45 (2): 459-485.

Weymark, D. N. 1995. Estimating Exchange Market Pressure and the Degree of Exchange Market Intervention for Canada. Journal of International Economics 39 (3-4): 273-295.

1997a. Measuring the Degree of Exchange Market Intervention in a Small Open Economy. Journal of International Money and Finance 16 (1): 55-79.

1997b. Measuring Exchange Market Pressure and Intervention in Interdependent Economy: A Two-Country Model. Review of International Economics 5 (1): 72-82.

1998. A General Approach to Measuring Exchange Market Pressure. Oxford Economic Papers 50 (1): 106-121.

Application of Monetary Models of Exchange Rate Determination for Poland

Yu Hsing*

Abstract:

The zloty/USD exchange rate is examined based on the Dornbusch model, the Bilson model, the Frenkel model, and the Frankel model. Empirical results show that the coefficient of the relative money supply is positive and significant, that the coefficient of the relative output is negative and significant, and that the Bilson model or the Frenkel model applies to Poland. Hence, the nominal exchange rate is positively affected by the relative interest rate and the relative expected inflation rate. The Balassa-Samuelson effect is confirmed in both models. The Bilson model has a smaller root mean squared error or mean absolute percent error than the Frenkel model.

Keywords: Dornbusch model, Bilson model, Frenkel model, Frankel model, Balassa-Samuelson effect

JEL: F31

1. Introduction

Since April 2000, Poland has pursued a floating exchange rate regime without setting any restrictions against other foreign currencies. However, the National Bank of Poland, which is the central bank of Poland, reserves the right to take necessary measures to intervene in the foreign exchange market in order to achieve the stated inflation target of 2.5% decided by the Monetary Policy Council, with an allowed deviation of 1 percentage point from either side and to meet the criterion of exchange rate stability in order to join the Eurozone.

According to International Financial Statistics, the zloty/USD exchange rate fluctuated in the short run and exhibited trends in the long run, rising from 1.12 in 1992.M1 to a high of 4.64 in 2000.M10, and then declining to 3.09 in 2006.M10. These statistics suggest that the zloty has become stronger against the U.S. dollar in recent years. The study of the behavior of the zloty/USD exchange rate is significant for several reasons. Exchange rate stability is essential to the growth of international trade. Rapid appreciation of the zloty is expected to hurt exports and help imports, whereas rapid depreciation would help exports and hurt imports. Although depreciation would help exports, depreciation is expected to cause import prices and domestic inflation rates to rise. Currency depreciation may lead to a decrease in real wealth or assets, capital outflows, less foreign investments, potential problems of repayment of foreign debt, etc. Hence, the study of the behavior of the nominal exchange rate is significant.

Several recent articles studied the exchange rates for Poland and other countries in the region. Dibooglu and Kutan (2001) revealed that real exchange rate fluctuations in Poland and Hungary can be significantly explained by nominal shocks and that real shocks exerted more effect on the exchange rates in Hungary than in Poland. Smidkova, Barrell and Holland (2003) found evidence of overvaluation for Poland and the other three pre-accession countries in 2001 and that economic fundamentals may not necessarily lead to the stability of the real exchange rate. Karfakis and Moschos (2004) showed that macroeconomic fundamentals largely contributed to currency crises in Poland and the Czech Republic. Creel and Levasseur (2004) indicated that that government actions and measures were more credible in Poland than the other two countries

*Hsing:
Southeastern Louisiana University
Hammond, LA 70402,USA
e-mail: yhsing@selu.edu

under study. Barlow (2004) found that the purchasing power parity hypothesis was rejected in Poland, the Czech Republic, and other selected developed countries. Crespo-Cuaresma, Fidrmuc, and MacDonald (2005) found that the monetary model combined with the Balassa-Samuelson effect worked well in explaining exchange rate behaviors for six CEECs. Stavarek (2005) reported that stock prices Granger-caused the exchange rates in Poland, the Czech Republic, Hungary, and Slovakia.

This paper attempts to examine the nominal exchange rate for Poland based on several well-known monetary models (Frenkel and Koske, 2004) including the Dornbusch model (1976), the Bilson model (1978), the Frenkel model (1976), and the Frankel model (1979). Monetary models of exchange rate determination are based on purchasing power parity, interest parity, and the money demand function. The purchasing power parity hypothesis assumes that the nominal exchange rate is a function of the relative price in the two countries under study. The interest parity concept postulates that the nominal exchange rate is determined by the interest rate differential between the two countries. Stable money demand functions for the two countries are expected in deriving a stable exchange rate equation. There are several versions of monetary models of exchange rate determination, partly depending upon whether a sticky price (Dornbusch, 1976; Frankel, 1979) or a flexible price (Frenkel, 1976; Bislon, 1978) is assumed.

Monetary models of the exchange rate have been studied extensively. MacDonald and Taylor (1991, 1993, 1994a, 1994b), Kouretas (1997), Diamandis, Georgoutos and Kouretas (1998), Makrydakis (1998), Husted and MacDonald (1998), Reinton and Ongena (1999), Chinn (1999, 2000), Miyakoshi (2000), Hwang (2001), Tawadros (2001), Civcir (2003), Sarno, Valente, and Wohar (2004), Lee, Azali and Matthews (2007), Bitzenis and Marangos (2007), and others have found evidence in support of the monetary models for some currencies. To measure the potential impact of the productivity differential in the tradable and non-tradable sectors on the nominal exchange rate, the Balassa-Samuelson effect (Balassa, 1964; Samuelson, 1964; Chinn, 1999, 2000; Drine and Rault, 2005; Crespo-Cuaresma, Fidrmuc, and MacDonald, 2005; Lothian and Taylor, 2006) will be tested.

2. The Model

Supposing that the purchasing power parity hypothesis holds, that is, that money demand functions are stable for both countries, and/or that the uncovered interest parity condition is valid, the four different monetary models of the nominal exchange rate can be described by the following equation with different assumptions on the parameters:

$$\varepsilon = \alpha_0 + \alpha_1(M - M^*) - \alpha_2(Y - Y^*) + \alpha_3(R - R^*) + \alpha_4(\pi^e - \pi^{e*}) + \upsilon \quad (1)$$

where

ε = the nominal exchange rate in terms of the zloty per U.S. dollar,
M = the money supply for Poland,
Y = real output for Poland
R = the short-term nominal interest rate for Poland
π^e = the expected inflation rate for Poland
M^* = the money supply for the U.S.
Y^* = real output for the U.S.
R^* = the short-term nominal interest rate for the U.S.
π^{e*} = the expected inflation rate for the U.S.
υ = error terms.

The coefficient of the relative money supply is expected to be positive and equal to one, and the coefficient of the relative output is expected to be negative. Different assumptions of these four models are as follows:

The Dornbusch model:

$$\alpha_3 < 0, \alpha_4 = 0$$

The Bilson model:

$$\alpha_3 > 0, \alpha_4 = 0$$

The Frenkel model:

$$\alpha_3 = 0, \alpha_4 > 0$$

The Frankel model:

$$\alpha_3 < 0, \alpha_4 > 0$$

Therefore, the Dornbusch model assumes that an increase in the relative interest rate would cause the zloty to appreciate because a higher domestic interest rate relative to the foreign interest rate would lead to capital inflows and higher demand for the zloty. The Bilson model postulates that an increase in the relative interest rate would cause the zloty to depreciate because the demand for domestic currency would decline in response to a higher domestic interest rate relative to the foreign interest rate. The Frenkel model maintains that an increase in the relative expected inflation rate would lead to the depreciation of the zloty. The Frankel model combines the assumptions of the Dornbusch model and the Frenkel model.

Note that the Dornbusch and Frankel models assume that uncovered interest parity holds and that purchasing power parity holds in the long run. The expected exchange rate change is a function of the interest rate differential or is the deviation of the spot rate from its long-term rate plus the deviation of the actual inflation rate from the expected inflation rate. In other words, the long-term exchange

rate is equal to the short-term exchange rate plus the real interest rate differential.

The Balassa-Samuelson effect can be tested by adding another variable to the first equation:

$$\varepsilon = \beta_0 + \beta_1(M - M^*) - \beta_2(Y - Y^*) + \beta_3(R - R^*) + \beta_4(\pi^e - \pi^{e*}) + \beta_5(P^{N} - P^{N*}) + \mu \quad \textbf{(2)}$$

where P^{TN} is the log difference between the tradable sector price and non-tradable sector price in Poland and P^{TN*} is the log difference between the tradable sector price and non-tradable sector price in the U.S.

3. Empirical Results

Monthly data were collected from International Financial Statistics, which is published by the International Monetary Fund. The sample ranges from 1992.M1 to 2005.M12 for the Dornbusch or Bilson model and from 1992.M6 to 2005. M12 for the Frenkel or Frankel model to account for lags in constructing the expected inflation rate. The data for the money supply beyond 2005.M12 had not been published at the time of writing. The exchange rate is expressed as zlotys per U.S. dollar.[1] M2 money is used for the money supply and is expressed in millions for Poland and billions for the U.S. Industrial production is selected to represent output as data for real GDP are not available on a monthly basis.[2] The money market rate in Poland and the federal funds rate in the U.S. are chosen to represent the interest rates. The average inflation rate of the past four months is used to represent the expected inflation rate.[3] The tradable sector price is represented by the producer price index, and the non-tradable sector price is represented by the consumer price index.[4] Except for the interest rates and expected inflation rates, all other variables are measured in the logarithmic scale.

In the unit root test, the critical values are -3.468, -2.878, and -2.576 at the 1%, 5%, and 10% levels. All the variables have unit roots in levels and are stationary in first difference at the 5% level. According to the Johansen test, in equation (1), because the value of the trace statistic is estimated to be 125.563 compared with the critical value of 69.819, the null hypothesis that the exchange rate and other variables in equation (1) are not cointegrated cannot be rejected at the 5% level. In a similar manner, in equation (2), because the trace statistic of 159.091 is greater than the critical value of 95.754, the null hypothesis of no cointegration cannot be rejected at the 5% level.

According to the Granger causality test, ε and $Y - Y^*$ Granger cause each other, and $P^{TN} - P^{TN*}$ and $Y - Y^*$ Granger cause each other. ε Granger causes $\pi^e - \pi^{e*}$ or $P^{TN} - P^{TN*}$ but not vice versa. $M - M^*$ Granger causes $Y - Y^*$, $\pi^e - \pi^{e*}$, or $P^{TN} - P^{TN*}$ but not vice versa. $R - R^*$ Granger causes $Y - Y^*$ but not vice versa. $\pi^e - \pi^{e*}$ Granger causes $Y - Y^*$ but not vice versa. $R - R^*$ Granger causes $\pi^e - \pi^{e*}$ but not vice versa. $\pi^e - \pi^{e*}$ Granger causes $P^{TN} - P^{TN*}$ but not vice versa.

	Test of the Dornbusch and Bilson Models:	
(A)	$\varepsilon = -1.457 + 0.690(M - M^*) - 0.384(Y - Y^*) + 0.006(R - R^*)$ (-0.693) (20.779) (-3.344) (+2.384)	$R^2 = 0.956$
	Test of the Frenkel Model:	
(B)	$\varepsilon = -1.399 + 0.688(M - M^*) - 0.470(Y - Y^*) + 0.028(\pi^e - \pi^{e*})$ (-9.419)(18.692) (-3.309) (1.825)	$R^2 = 0.945$
	Test of the Frankel Model:	
(C)	$\varepsilon = -1.502 + 0.699(M - M^*) - 0.344(Y - Y^*) + 0.006(R - R^*) + 0.016(\pi^e - \pi^{e*})$ (-8.834) (18.237) (-3.023) (2.417) (0.999)	$R^2 = 0.949$
	Test of the Balassa-Samuelson Effect:	
(D)	$\varepsilon = -1.878 + 0.794(M - M^*) - 0.243(Y - Y^*) + 0.004(R - R^*) + 1.481(P^{TN} - P^{TN*})$ (-10.352) (18.341) (-2.482) (1.869) (3.842)	$R^2 = 0.966$
(E)	$\varepsilon = -1.954 + 0.820(M - M^*) - 0.265(Y - Y^*) + 0.038(\pi^e - \pi^{e*}) + 1.593(P^{TN} - P^{TN*})$ (-11.385)(19.390) (-2.399) (2.734) (4.183)	$R^2 = 0.959$

Notes:
Figures in the parenthesis are t-ratios.
The critical values at the 1%, 2.5%, 5%, and 10% significance levels are 2.364, 1.984, 1.660, and 1.290, respectively.

P^{TN} is the log difference between the tradable sector price and non-tradable sector price in Poland.

P^{TN*} is the log difference between the tradable sector price and non-tradable sector price in the U.S.

Table 1. Estimated Regressions of the Nominal Exchange Rate for Poland

Table 1 presents estimated regressions for different models and related statistics. The level form is employed in empirical work because the use of first-difference may obscure the outcome (Greene, 2003). The Newey-West (1987) method is applied to yield consistent estimates for the standard error and covariance when the forms of autocorrelation and heteroskedasticity are uncertain. In version (A), the positive coefficient of the relative money supply and the negative coefficient of the relative output are as expected and are significant at the 1% level. The positive and significant coefficient of the relative interest rate suggests that the behavior of the exchange rate in Poland can be characterized by the Bilson model better

1. The EUR/PLN exchange rate may be considered due to its increasing significance after joining the EU. However, the earliest data for the EUR/PLN exchange rate begin in 1999. The sample size may not be large enough to test monetary models.

2. Ideally, real GDP instead of industrial production should be used in empirical work. However, real GDP is reported on a quarterly basis, whereas industrial production is reported on a monthly basis. If real GDP is used in empirical work, the sample size will reduce by 75%, making the test of hypotheses more unreliable.

3. Consumer inflation expectations published by the NBP may be employed. However, numerical values were not readily available. Furthermore, the series ended in 2002.M12, which would reduce 36 observations in the sample.

4. The selection of the PPI and CPI to represent the price levels for the tradable and non-tradable goods may not reflect the changing composition of the service sector.

than the Dornbusch model. It implies that an increase in the relative interest rate is expected to cause the zloty to depreciate.

In version (B), the Frenkel model is tested. The coefficients of the relative money supply and the relative output have the expected signs and are significant. The positive and significant coefficient of the relative expected inflation rate indicates that an increase in the relative expected inflation rate would cause the zloty to depreciate.

In version (C), the Frankel model is tested. The coefficients of the relative money supply and the relative output have the expected signs and are significant. The positive and significant coefficient of the relative interest rate is opposite to the assumption of the Frankel model. The coefficient of the relative expected inflation rate is positive but insignificant.

In every version the null hypothesis that $\alpha_1 = 1$ can be rejected at the 5% level. The root mean squared error is used to determine which model would perform better in forecasting. The root mean squared error is 0.229 in the Bilson model and 0.241 in the Frenkel model. The mean absolute percent error is 5.673% in the Bilson model and 5.760% in the Frenkel model. Hence, the Bilson model has smaller forecast errors than the Frenkel model.

To measure the effect of the productivity differential in the tradable and non-tradable sectors on the exchange rate, the Balassa-Samuelson (1964) effect is tested. The coefficient of the relative price of the tradable to non-tradable goods is positive and significant at the 1% level in the Bilson model in version (D) and in the Frenkel model in version (E) in Table 1. The Balassa-Samuelson effect is not tested in the Frankel model because of an incorrect sign for the coefficient of the relative interest rate.

The error correction model with a lag length of two is considered. In versions (B), (C), and (E), the coefficient of the error correction term is insignificant at the 10% level. In version (A), the coefficient of the error correction term is negative and significant, $\Delta(\varepsilon_{t-1})$ has a significant coefficient with a positive value, and all other coefficients are insignificant. In version (D), $\Delta(\varepsilon_{t-1})$ and $\Delta(\varepsilon_{t-2})$ have significant coefficients, and all other coefficients are insignificant. To save space, details of the results are not printed here and will be available upon request.

To account for a possible impact of the adoption of a floating exchange rate policy since April 2000, a dummy variable with a value of zero before April 2000 and one since April 2000 has been considered. The coefficient of the dummy variable is positive but insignificant at the 10% level in the Dornbusch model, the Bilson model, the Frenkel model, and the Frankel models, and it is positive and significant at the 2.5% level in the regressions with the Balassa-Samuelson effect. These results suggest that the pursuit of a floating exchange rate may lead to a depreciation of the zloty, holding other factors constant.

Several different measurements or versions are considered. Treasury bill rates in Poland and the U.S. may be considered to represent the relative interest rate. However, the data of the Treasury bill rate in Poland are not complete. Real GDP may substitute industrial production in empirical work. However, the sample size based on quarterly data will decrease 75%, causing hypothesis tests to become less reliable. Attempts were made to include the relative stock price in the models without success due to the lack of complete data for the stock price in Poland during the sample period. To save space, these results are not presented and will be available upon request.

4. Summary and Conclusions

This paper has examined the exchange rate behavior for Poland based on four well-known models. Empirical results show that the Bilson model and the Frenkel model characterize the behavior of the nominal exchange rate for Poland better than the Dornbusch model and the Frankel model. The positive and significant coefficient of the relative interest rate in the Bilson model indicates that raising the domestic interest rate relative to the foreign interest rate would cause the zloty/USD exchange rate to rise or the zloty to depreciate. The positive and significant coefficient of the relative expected inflation rate in the Frenkel model suggests that a higher expected domestic inflation rate relative to the expected foreign inflation rate would cause the zloty to depreciate or the zloty/USD exchange rate to rise. The monetary models can explain the behavior of the zloty/USD exchange rate reasonably well in view of a relatively high value of R^2 and a relatively small value of the root mean squared error or the mean absolute percent error.

There are several policy implications. The Bank of Poland needs to monitor its money supply. Increased money supply in Poland relative to the money supply in the U.S. would cause the zloty to depreciate. Contrary to what many countries have been practicing, raising the domestic interest rate relative to the U.S. interest rate would not help to appreciate the zloty against the U.S. dollar. A higher interest rate hurts consumption and investment spending and would cause the zloty to depreciate even though it would cause international capital inflows and increase the demand for the zloty. Maintaining price stability and a low inflation rate would help protect the value of the zloty. The positive and significant coefficient of the relative tradable to non-tradable prices may suggest that productivity differential is important in the determination of the nominal exchange rate.

There may be potential areas for future research. The monetary models are based on the assumptions of a stable money demand function and the validity of purchasing power parity and uncovered interest parity. It may be interesting to study whether the money demand functions

for Poland and the U.S. would be stable. The monetary models may be compared with other exchange rate models such as the one based on an open economy IS, the monetary policy function, and an augmented Phillips curve (Romer, 2006). In this exchange rate model, the central bank determines the short-term interest rate based on the inflation rate gap, the output gap, and other related variables such as the exchange rate and the world interest rate. If currency depreciation leads to a higher inflation rate, the central bank would raise the interest rate, which, in turn, is expected to reduce aggregate spending and output.

References

Barlow, D. 2004. Purchasing power parity in three transition economies, Economics of Planning, 36, 201-21.

Bilson, J. F. O. 1978. Rational expectations and the exchange rate, in: J. Frenkel and H. Johnson, eds., The Economics of Exchange Rates, Addison-Wesley Press, Reading.

Bitzenis, A. and Marangos, J. 2007. The monetary model of exchange rate determination: the case of Greece (1974-1994), International Journal of Monetary Economics and Finance, 1, 57-88.

Cheung, Y.-W., Chinn, M. D. and Pascual, A. G. 2005. Empirical exchange rate models of the nineties: are any fit to survive? Journal of International Money and Finance, 24, 1150-75.

Chinn, M. D. 1999. On the won and other East Asian currencies, International Journal of Finance and Economics, 4, 113-27.

Chinn, M. D. 2000. Before the fall: were East Asian currencies overvalued? Emerging Markets Review, 1, 101-26.

Civcir, I. 2003. The monetary models of the Turkish Lira/dollar exchange rate: long-run relationships, short-run dynamics and forecasting, Eastern European Economics, 41, 43–69.

Crespo-Cuaresma, J., Fidrmuc, J., and MacDonald, R. 2005. The monetary approach to exchange rates in the CEECs, Economics of Transition, 13, 395-416.

Diamandis, P. F., Georgoutos, D. A. and Kouretas, G. P. 1998. The monetary approach to the exchange rate: long-run relationships, identification and temporal stability, Journal of Macroeconomics, 20, 441–66.

Dibooglu, S., and Kutan, A. M. 2001. Sources of real exchange rate fluctuations in transition economies: the case of Poland and Hungary, Journal of Comparative Economics, 29, 257-75.

Dornbusch, R. 1976. Expectations and exchange rate dynamics, Journal of. Political Economy, 84, 1161-76.

Drine, I. and Rault, C. 2005. Can the Balassa-Samuelson theory explain long-run real exchange rate movements in OECD countries? Applied Financial Economics, 15, 519-30.

Frankel, J. A. 1979. On the mark: a theory of floating exchange rates based on real interest differentials, American Economic Review, 69, 610-22.

Frenkel, M. and Koske, I. 2004. How well can monetary factors explain the exchange rate of the euro?, Atlantic Economic Journal, 32, 232–43.

Frenkel, J. A. 1976. A monetary approach to the exchange rate: doctrinal aspects and empirical evidence, Scandinavian Journal of Economics, 78, 200-24.

Fuhrer, J. C. and Weiller, K. J. 1991. Multivariate posterior odds approach to assessing competing exchange rate models, Review of Economics & Statistics, 73, 113-24.

Greene, 2003. Econometric Analysis, 5th edition, Upper Saddle River, New Jersey.

Hooper, P. and Morton, J. E. 1982. Fluctuations in the dollar: a model of nominal and real exchange rate determination, Journal of International Money and Finance, 1, 39-56.

Husted, S. and MacDonald, R. 1998. Monetary-based models of the exchange rate: a panel perspective, Journal of International Financial Markets, Institutions and Money, 8, 1-19.

Hwang, J. K. 2001. Dynamic forecasting of monetary exchange rate models: evidence from cointegration, International Advances in Economic Research, 7, 51–64.

Karfakis, C., and D. Moschos 2004. Predicting currency crises: evidence from two transition Economies, Emerging Markets Finance and Trade, 40, 95-103.

Kouretas, G. P. 1997. Identifying linear restrictions on the monetary exchange rate model and the uncovered interest parity: cointegration evidence from the Canadian US dollar, Canadian Journal of Economics, 30, 875–90.

Lobo, B. J. 2002. Large changes in major exchange rates: a chronicle of the 1990s, Applied Financial Economics, 12, 805-11.

Lothian, J. R. and Taylor, M. P. 2006. Real exchange rates over the past two centuries: how important is the Harrod-Balassa-Samuelson effect? University of Warwick, Department of Economics, Warwick Economics Research Paper Series (TWERPS).

MacDonald, R. and Taylor, M. P. 1991. The monetary approach to the exchange rate: long-run relationships and coefficient restrictions, Economics Letters, 37, 179–85.

MacDonald, R. and Taylor, M. P. 1992. Exchange rate economics, IMF Staff Paper, 39, 437–89.

MacDonald, R. and Taylor, M. P. 1993. The monetary approach to the exchange rate: rational expectations, long-run equilibrium, and forecasting, IMF Staff Papers, 40, 89–107.

MacDonald, R. and Taylor, M. P. 1994a. The monetary model of the exchange rate: long-run relationships, short-run dynamics and how to beat a random walk, Journal of International Money and Finance, 13, 276–90.

MacDonald, R. and Taylor, M. P. 1994b. Re-examing the monetary approach to the exchange rate: the dollar–franc, 1976–90, Applied Financial Economics, 4, 423–9.

Meese, R. A. and Rogoff, K. 1983. Empirical exchange rate models of the seventies: do they fit out of sample? Journal of International Economics, 14, 3-24.

Makrydakis, S. 1998. Testing the long-run validity of the monetary approach to the exchange rate: the won-US dollar case, Applied Economics Letters, 5, 507-11.

Miyagawa, T., Toya, H., and Makino, T. 2004. Equilibrium exchange rates in Asian currencies, Seoul Journal of Economics, 17, 483-509.

Miyakoshi, T. 2000. The Monetary Approach to the Exchange Rate: Empirical Observations from Korea, Applied Economics Letters, 7, 791-94.

Newey, W. K. and West, K. D. 1987. A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix, Econometrica, 55, 703-8.

Reinton, H. and Ongena, S. 1999. Out-of-sample forecasting performance of single equation monetary exchange rate models in Norwegian currency markets, Applied Financial Economics, 9, 545-50.

Romer, D. 2006. Advanced Macroeconomics, 3rd edition. Boston: McGraw-Hill/Irwin.

Sarno, L., Valente, G., and Wohar, M. E. 2004. Monetary fundamentals and exchange rate dynamics under different nominal regimes, Economic Inquiry, 42, 179-93.

Schroder, M. and Dornau, R. 2002. Do forecasters use monetary models? an empirical analysis of exchange rate expectations, Applied Financial Economics, 12, 535-43.

Smidkova, K., R. Barrell, and D. Holland 2003. Estimates of fundamental real exchange rates for the five EU pre-accession countries, Prague Economic Papers, 12, 291-16.

Tawadros, G. B. 2001. The predictive power of the monetary model of exchange rate determination, Applied Financial Economics, 11, 279–86.

Taylor, M. P. 1995. The economics of exchange rates, Journal of Economic Literature, 33, 13–47.

Taylor, A. M. and Taylor, M. P. 2004. The purchasing power parity debate, Journal of Economic Perspectives, 18, 135-58.

Trade Liberalization, Financial Development and Economic Growth in The Long Term: The Case of Turkey

Muhsin Kar, Osman Peker, Muhittin Kaplan*

Abstract:

The determinants of economic growth have been a much debated theoretical issue in the literature, especially after the endogenous growth theory of the late 1980s. This new theory highlights the importance of economic policies that lead to an increasing rate of return. In particular, it is argued that human capital, trade liberalization and financial development may play very important roles in the determination of economic growth. This paper tries to empirically estimate the joint impacts of trade liberalization and financial development on economic growth for the period 1960-2004. Instead of using common proxies for the issue, principal components analysis is employed to develop better measures (indexes) for trade liberalization, financial development and the joint effects of both. The empirical results obtained from the Johansen co-integration procedure show that trade liberalization, financial development and the joint impacts of both positively contributed to economic growth in Turkey for the period 1963-2005.

Keywords: Trade liberalization, Financial development, Economic growth, Co-integration, Endogenous growth theory, Turkey.

JEL: C32, E44, F13, O11, O16.

1. Introduction

The impact of financial and trade regimes on economic growth have been a hotly debated theoretical issue, particularly after the emergence of the endogenous (new) growth theory during the last two decades. Contrary to the neo-classical growth theory, the new growth theory implies that the economic policies followed in a country may have a significant impact on the long-term rate of economic growth. To this end, most developing countries that formerly followed restrictive economic policies have started liberalizing their trade and financial sectors in order to increase economic growth in the 1980s. The main argument for this policy change was that both trade and financial liberalization policies reduce inefficiency in the production process and positively influence economic growth.

Following this line of reasoning, Turkey, as a developing economy, has witnessed an unprecedented and staged reform attempt involving external (trade) and internal (financial) liberalization, especially after the 24 January Decisions following the economic crisis in 1980. In Turkey, economic liberalization in terms of trade and financial sector was at the heart of the stabilization programme

*Kar
Faculty of Economics and Administrative Sciences,
Kahramanmaraş Sütçü İmam University,
Kahramanmaraş/TURKEY
e-mail: mkar@ksu.edu.tr

*Peker
Faculty of Nazilli Economics and Administrative Sciences
Adnan Menderes University,
Aydın/TURKEY
e-mail: ottopeker@yahoo.com

*Kaplan
Faculty of Economics and Administrative Sciences,
Niğde University,
Niğde/TURKEY
e-mail: mkaplan@nigde.edu.tr

employed in 1980 and constituted an integral part of the economic policies since then. The theoretical core of the economic reform programme is to provide efficiency in the allocation of scarce resources.

In the empirical literature, the impact of trade liberalization[1] and financial development[2] on economic growth has been separately examined for Turkey. However, there has been theoretical literature that highlights the joint impact of these issues on economic growth. The joint impact of both variables is initially highlighted in the Roubini and Sala-i Martin (1991) model, which has extended the Barro (1991) growth model by incorporating both factors. The inclusion of both trade and financial variables in the Barro (1991) model showed that financial and trade variables may play a very important role in economic growth. Recently, Blackburn and Hung (1998) have presented a theoretical analysis of the joint impact of both financial development and trade liberalisation on economic growth. Using endogenous growth theory, their model predicts that economic growth rates in the presence of financial intermediation tend to be higher than those under direct lending and borrowing. The model also predicts that both financial development and trade liberalization jointly facilitate the rate of economic growth by decreasing redundant research efforts and increasing markets for new products.

Therefore, this paper empirically examines the impacts of trade liberalization and financial liberalization and/or development on economic growth in Turkey by using a simple endogenous growth framework and by making use of new developments in time series techniques for the period 1963-2005. This paper is distinguished from the earlier existing literature in two aspects. First of all, this paper tries to assess the joint impact of trade liberalization and financial development on economic growth.

Second, there are different measures for trade liberalization and financial development in the literature and the existing studies employ only one of these proxies in their analysis. However, the trade and financial liberalization affect economic growth through different channels and each proxy captures a single aspect of the issue. In order to overcome this problem, three composite indexes, for trade liberalization, for financial development and for a narrow sense economic liberalization, are constructed by applying principal components analysis.

The structure of this paper is as follows: the next section presents the theoretical linkages among trade liberalization, financial development and economic, growth and introduces the aggregate production function to be estimated. Section three gives brief information about the Turkish economy, particularly highlighting the developments in trade and financial sector. In section four, the measures for trade liberalization and financial development are reviewed and three indexes are constructed by employing principal components analysis. In section five, the empirical results are presented using econometric techniques and the outcome of the long-term production function is interpreted in detail. The paper finishes with a conclusion.

2. Theoretical Framework: Trade Liberalization, Financial Development and Economic Growth

With the emergence of the endogenous growth theories in 1980s, the relationship between economic policy and growth became a highly debated issue. In the theoretical literature, discussions are focused on different channels through which economic policy affects economic growth. In this section, different models of growth will be discussed to provide a framework of thought that helps to understand the impacts of each link between policy and growth. In other words, each channel through which economic policy affects growth has different implications for growth in different models. There are two competing theoretical frameworks in the growth literature, namely neo-classical and endogenous growth theories. The main differences between them are whether the policy change has a long-term effect on the growth rate. On the one hand, the neo-classical theory argues that a policy change has no effect on long-term economic growth and, on the other hand, that endogenous growth theory shows a policy change in economy does matter.

The endogenous growth theory is a reaction to the traditional Neo-Classical growth models[3] , represented by, among others, Solow (1956). This new approach to growth theory has sought to supply the missing explanation of long-term growth. In essence, this approach provides a theory of technical progress, one of the central missing elements of the neo-classical model. In other words, endogenous growth theories seek to discover what lies behind the exogenous rate of technical progress and hence a country's growth rate. Endogenous growth theory recognizes that technological change occurs as a result of the efforts of profit-maximizing firms to invent new blueprints, and that technological progress is an endogenous outcome of economic activity.

1 The relationship between growth and trade liberalization is usually examined in the empirical literature in two different lines for Turkey: The first line of the existing empirical research tries to assess the impact of openness on economic growth (Conway, 1987; Greenaway and Sapsford, 1994, 1995; Ghatak, Milner and Utkulu, 1995; Subasat, 2002; Utkulu and Ozdemir, 2005, Hilmi and Safa, 2007). The second line of the empirical works examines the relationship between trade liberalization and the total factor productivity (Krueger and Tuncer, 1980, 1982; Nishimizu and Robinson, 1986; Foroutan, 1991; Ozmucur and Karatas, 1994; Filiztekin 2000).

2 With the emergence of financial liberalization hypothesis, the empirical studies tried to assess the impact of financial liberalization on economic growth by simple regressing growth rate on the real interest rate (Fry, 1978, 1979, 1980). Furthermore, the relationship between financial development and economic growth is analyzed in terms of causality issue in a bivariate model (Kar and Pentecost, 2000; Unalmis, 2002; Ozatay and Sak, 2002). In addition, Yeldan (1997), Lewis (1992) and Karabulut and Demiroz (2002) examined the impact of financial liberalization/development on economic growth in the framework of the CGE models. Finally, Guncavdi and Kucukciftci (2005) investigate the role of financial reforms on economic growth with a methodology based on the Leontief's input-output model and conclude that the production sector of the economy has increasingly become independent from the use of financial services produced by the banking system in the post-reform period.

3 For a recent empirical and theoretical review of the literature on growth, see Renelt (1991), Hermes (1994), Levine (1997, 2001), Thirlwall (2000), Favara (2003), Auerbach and Siddiki (2004), Subasat (2002), Winters (2004).

The crucial distinction between 'old' and 'new' growth theories is that the former utilizes the assumption that returns to the capital stock is diminishing, while the latter argues that returns to capital itself or, in a wider sense, to the stock of physical and human capital formation is constant or increasing (Sala-i Martin, 1990a). This then implies that those variables that lead to non-decreasing returns drive the growth rate. Numerous candidates have been recommended as the source of non-decreasing returns: particularly, the stock of human capital Lucas (1988); accumulated capital, Rebelo (1991); research and development, Romer (1986, 1990); or public infrastructure investment (Barro, 1991). Thus, endogenous growth models highlight sectors of the economy that influence the growth path of an economy. This can be simply shown in a Robelo-type production function, known as the AK model. Most of the endogenous growth models can be viewed as extensions or micro-foundations of the AK model (Sala-i-Martin, 1990b).

Rebelo (1991) formulated the simple form of the endogenous growth model, which has since been widely used in empirical analysis. The AK model takes its name from its production function. In its original form, the model setting involves dynamic maximization. In this section, we will make the further assumption of a constant savings rate. This assumption, however, does not change the main conclusions and intuitions of the model. In the AK model, the production function takes the following form:

$$Y_t = A K_t \quad \textbf{(1)}$$

where Y_t represents output, K_t is capital stock at time t and A is some positive constant. This formulation of the production function means that there are constant returns to capital accumulation. It is also important to note that A is equal to the return to investment in this model. As will be explained in the next section, trade policy primarily affects the rate of return of capital and hence growth. Therefore, A can be written as a function of trade policy (τ) as,

$$A = \theta_0 - \theta_1 \tau \quad \textbf{(2)}$$

Equation (2) indicates that the rate of return of capital is a negative function of trade policy.

The accumulation of capital is formulated as:

$$K_t = I_{t-1} + (1-\delta) K_{t-1} \text{ and } I_t = sY_t \quad \textbf{(3)}$$

where s is the investment rate and δ is the depreciation rate. Both are assumed constants, and investment at time t (I_t) is equal to the savings in the economy. The special formulation of the production function in the AK model (equation 1) implies that the marginal product of each unit of capital is always equal to A. It does not decline as the capital accumulates. This can be shown easily: after substituting the value of investment into equation (3) and then dividing both sides by K_{t-1} and taking the logarithm of both sides, the resulting equation will be:

$$\log\left(\frac{K_t}{K_{t-1}}\right) = \log[sA + (1-\delta)] \quad \textbf{(4)}$$

For small values of s, A and δ and $sA > \delta$, equation (4) can written as:

$$\Delta \log K_t = sA - \delta \quad \textbf{(5)}$$

This equation says that the rate of growth of capital stock is constant if tariff rates are constant. After taking the logarithm and derivative of the production function and substituting the value of the equation of motion of the capital from equation (5) and the value of return to capital from the equation (2), the long-term rate of growth of output can be written as follows:

$$\Delta \log Y_t = \Delta \log K_t = s\theta_0 - s\theta_1 \tau - \delta \quad \textbf{(6)}$$

From equation (6), it is obvious that the rate of growth of the economy is decreasing with tariff rates and increasing with saving rates. Hence, any economic policy that increases the return to investment will permanently increase the rate of growth of the economy. Almost all-endogenous growth literature has concentrated on the determinants of the return to investment, A, and how policy change affects it (Sala-i-Martin, 1990a).

Equation (6) has two main implications in terms of economic policy change. Economic policies in the trade and financial sectors will have a long-term effect on economic growth. While trade policy affects the economic growth through the change on tariff rates, the saving rates are influenced by a well-functioning financial system.

The theoretical linkages among trade liberalization and financial liberalization and economic growth can be explained as follows. Trade policy in terms of tariff reduction or elimination of restrictions on trade might have impacts on the growth through several channels. If openness is to affect economic performance, it must have an intermediate effect on one or all of the following: (i) allocation of factors of production across sectors - the allocation effect (Young, 1991; Redding, 1997; Grossman and Helpman, 1992); (ii) openness will increase competition in the domestic economy and hence productivity - the import discipline hypothesis (Greenaway and Milner, 1993; Aghion, Dewatripont and Rey, 1997; Aghion, Harris and Vickers, 1997; Aghion and Howitt, 1996); (iii) openness enlarges the market for domestic producers, which they can take advantage of - the scale economies (Taylor, 1994; Grossman and Helpman, 1991); (iv) openness increases the number of inputs that have no domestic substitutes

and thus leads to a higher capacity for utilization and productivity - the availability of inputs (Nishimizu and Robinson, 1986; Quah and Rauch, 1990; Rivera-Batiz, and Romer, 1991; Grossman and Helpman, 1992); and, finally, (v) the flow of knowledge across sectors and countries - the spillover effect (Feder, 1982; Grossman and Helpman, 1992).

On the other hand, the role of financial sector in economic development has long been one of the hotly debated issues among economists (Schumpeter, 1911; Goldsmith, 1969; Patrick, 1966; McKinnon, 1973; Shaw, 1973). With the emergence of the endogenous growth theory, several studies have attempted to show how the operation and policies of the financial sector may affect the rate of economic growth (Greenwood and Jovanovic, 1990; Bencivenga and Smith, 1991; King and Levine, 1993a, 1993b; Roubini and Sala-i Martin, 1992; Pagano, 1993; Leigh, 1996; Demetriades and Hussein, 1996; Arestis, 2005; Siddiki, 2002; Auerbach and Siddiki, 2004; Arestis, 2005; Liang and Teng, 2006). Finance can influence growth in an endogenous growth model through increasing the savings rate (Bencivenga and Smith, 1991), by increasing the returns on investment (Greenwood and Jovanovic, 1990), and by increasing human capital accumulation. From a macroeconomic or aggregate production function point of view, all this means that economies that are developed more financially will be able to transform a given amount of inputs, K, into larger amount of output, Y. This is why the production function is an increasing function of the financial development of the economy (Roubini and Sala-I Martin, 1992).

3. A Brief Review of Turkish Economy

3.1. Macroeconomic Developments

It is very common to examine macroeconomic development in the Turkish economy under three sub-periods, 1923-1960, 1960-1980, 1980 and after, distinguished not only by different structural conditions, but also by the government's response to those conditions. There was heavy state intervention formulated as "etatism" before 1960 (Okyar, 1965). Etatism, an economic policy excessively controlled by the State, became unpopular and heavily criticized among Turkish academics and businessmen. With the changes in the political structure in terms of the multi-party system, there was a policy change towards liberalization in the period 1950-53. However, with the deterioration of macroeconomic structure, the etatist economic policies were re-initiated after attempts at policy change.

After the 1960 military coup, Turkey entered into a period of development plans. In September 1960, the State Planning Organisation (SPO) was established to study the Turkish economy and to propose and enforce a long-term economic development plan. This proposal was for three five-year-plans, the first of which began in 1963. The economic development plans were aimed at producing a well-balanced economy with progress in agriculture and industry, thereby making the most of the available resources in the Turkish economy. The main features of this period are that the economic policies carried out within the development plans were characterized as interventionist and protectionist. Accordingly, policies were mainly designed to protect domestic industry from foreign competition and to increase the government control over the allocation of resources and production of goods. These economic policies implemented in the early 1960s were pursued for about twenty years, until 1980, when the Turkish economy found itself in a major crisis.

In 1980, a new stabilization policy was accepted and the etatism and import substitution policies were switched to an export-oriented industrialization policy based on a market mechanism. The policy package put into effect in 1980 and reinforced in the following years was more than just a stabilization and adjustment package; it also marked a shift in development strategy from inward orientation to outward orientation (Yildizoglu and Margulies, 1988; Senses, 1984; Onis, 1986; Dervis and Petri, 1987). Trade and financial liberalization were the main policy tools in this stabilization programme.

3.2. Trade Liberalization in Turkey

After pursuing the "import substituting industrialisation strategy (ISI)" as a dominant industrialization strategy in the 1950s, 1960s, and 1970s, Turkey switched to an outward-oriented industrialization strategy with the IMF-supported stabilization programme that was introduced to resume growth following the economic crisis in 1980. Rapid export growth was one of the main objectives of the 1980 stabilization programme to improve the huge trade deficit, restore international creditworthiness and establish the credibility of liberalization reforms at home. A variety of incentives were introduced to promote manufactured exports. These incentives included tax rebates, credit subsidies, and foreign exchange allocated for the import of intermediate products.

The success of the liberalization process in the 1980s prompted the government to pursue further liberalization in the 1990s. Therefore, Turkey liberalized her import regime by abolishing the deposit requirement for imports and the import licensing system in the early 1990s. Accompanying agreements with the World Trade Organisation (WTO) in 1994 have significantly contributed to the liberalization of the import regime. As a member of the WTO, Turkey has adopted the rules and procedures governing the multilateral trading system and entered into negotiations with several Eastern and Central European, Mediterranean and Baltic countries to conclude free trade agreements.

In 1996, Turkey entered into a new era by signing a Customs Union Agreement with the European Union (EU). After the liberalization programme in 1980, this was the second most important development affecting the Turkish economy as a whole. Except for sensitive products, mainly motor vehicles, footwear, and furniture, Turkey lifted all tariff and non-tariff barriers for manufacturing products originating from the EU. Turkey also adopted the EU's Common External Tariff for goods imported into Turkey from third countries. This required a further liberalization of her tariff regime, since Turkish protection rates were higher overall than the Common External Tariff (Harrison et al., 1996; Togan, 1997). Moreover, Turkey had to reduce her tariffs to countries that signed a Preferential Trade Agreement (PTA) with the EU.

3.3. Financial Liberalization in Turkey

Prior to 1980, Turkey was a typical example of highly restricted and segmented financial markets (Akyuz, 1990). Interest rates were determined institutionally and kept at artificially low levels. By the end of the 1970s, real interest rates became highly negative due to the acceleration of inflation (Fry, 1979). The state owned banks were dominant institutions in the Turkish financial system (Fry, 1979). Entry into the banking sector (domestic and foreign) was restricted.

Since then, Turkey has been experiencing a liberal approach to its financial markets as a key component of the newly adopted growth-oriented structural adjustment program since 1980 (Aricanli and Rodrik, 1990). When the authorities lifted the ceilings on personal time deposit rates and lending rates were abolished[4]. At the time it was considered a "major step in deregulation of interest rates which breaks a practice that has been in force some 50 years" (Wolff, 1987:104). This policy change was not very smooth and the reluctant behaviour of the financial institutions required the authorities to intervene into the sector two years after the implementation of financial liberalization and to determine interest rate for a period.[5] Another development, in the first half of the 1980s, was that residents (and non-residents) were allowed to open foreign exchange deposits in commercial banks (Rittenberg, 1988).

The essential regulation was finally initiated in 1985, when the new Banking Law was enacted. The law introduced new regulations in terms of provision for a minimum capital and a capital adequacy ratio. The ownership structure of banks was also regulated. Furthermore, a Bank Supervision unit at the Central Bank became operational in 1986. Thus, five years after the initial liberalization of domestic interest rates, an adequate regulatory and institutional framework was defined and became operational.

After the liberalization of the capital account in 1989 and establishment of the supervisory and regulatory unit at the Central Bank, it was believed that an adequate regulatory and institutional framework was finally defined and became functional. However, the crises of November 2000 and February 2001 have shown that these developments were not sufficient to have stable, efficient and well-established financial markets in Turkey. These crises led not only to the establishment of a new institution, namely the Supervisory and Regulatory Board of Banking, which aimed at restructuring the financial system in 2000, but also to the development of new policies that proposed an efficient and effective financial market. It can be argued that the Turkish financial system finally had an independent supervisory and regulatory body, 20 years after beginning to implement liberalization policies in the financial sector.

4. Measurement of Trade Liberalization and Financial Development

4.1. Measurement of Trade Liberalization

Researchers in the recent empirical literature concentrate on finding reliable proxies of trade liberalization. However, the share of export as a percentage of income, the share of the import as a percentage of income, the share of export plus imports (trade volume) as a percentage of the income and tariffs constitute very common proxies for trade liberalization in the empirical literature. In this article, the following proxies of trade liberalization are employed in the empirical analysis.

Export to GDP ratio (X/GDP): The first theoretical channel that links openness to economic performance goes through the allocation of resources. According to this argument, opening up to international trade brings about reallocation of resources according to comparative advantages (Grossman and Helpman, 1992, Young, 1991). Since the direct effect of the allocation of resources is observed on the level of exports, the share of exports in total production can be used to represent this dimension of openness. In addition, the share of exports in production can be used as a proxy of openness to capture the dimension of openness related to scale economies and the availability of inputs.

Import to GDP ratio (M/GDP): The import share in total production can be used as an openness proxy characterizing the dimension of openness related to increased international competition. It also represents the allocation effect of openness since the imports of those sectors that have comparative disadvantages will increase following trade liberalization.

Foreign trade to GDP ratio (X+M/GDP): The share of the total of exports and imports in total production provide the

4 The developments in financial sector since 1980 are explained in more detail Akyuz (1990), Cosan and Ersel (1986), Inselbag and Gultekin (1988), Cizre-Sakallioglu and Yeldan (2000), Ozatay and Sak (2002) and Rittenberg (1988).

5 Atiyas (1990) explains in detail of the response of private sector to financial liberalisation.

proxy that represents the technology spillover dimension of openness. Openness to trade facilitates access to the technological information in the world (Grossman and Helpman, 1992, Chp-9), which creates technological spillover through imports as well as exports.

4.2. Measurement of Financial Development

One of the most difficult aspects of empirically investigating the relationship between financial development and economic growth is the measurement of "financial development". However, the practitioners are forced to form a well-defined set of measures of financial development by the availability of data at hand. The proxies proposed for measuring the level of financial development are basically chosen from the monetary and credit aggregates in an economy. The rationale for the inclusion of a wide range of proxies is to maximize the information on financial development. In other words, diverse aggregates should be able to catch different functions of the financial markets. In this article, the following proxies[6] for financial development are employed in the empirical analysis.

Narrow Money Ratio (M1/Y): In the absence of the financial sector economic agents have to hold their financial assets at hand. This means that the funds for investment will be kept out of the financial sector in the economy. With financial development, the ratio of narrow money to income will decrease.

Narrow Money Broad Money Ratio (M1/M2): In a fragmented financial sector, economic units may prefer to hold their funds out of the financial sector to remain liquid. However, developments in the financial system in terms of not only organizations such as banks but also instruments in this sector may lead people to put their money in the banking sector, through which investment can be carried out. In short, with financial development, deposits in the banking sector may be increased and as a result the M1/M2 ratio will decrease.

Broad Money Ratio (M2/Y): Monetary aggregates also provide an alternative set of variables to measure the extent of financial development (De Gregorio and Guidotti, 1995; Galetovic, 1996; Lynch, 1996). In the literature, the commonly used measure of financial development is a ratio of some broad measure of the money stock, usually M2, to the level of nominal income (Gelb, 1989; King and Levine, 1993a, 1993b; Murinde and Eng, 1994a, and 1994; Lyons and Murinde, 1994; Demetriades and Hussein, 1996; Arestis and Demetriades, 1997; Kwan et. al., 1998). This simple indicator measures the degree of monetization in the economy. The monetization variable is designed to show the real size of the financial sector of a growing economy. Money provides valuable payment and saving services. The 'narrow money' stock best reflects the former and 'broad money' the latter. Narrow money balances should rise in line with economic transactions, but broad money should rise at a faster pace, if financial deepening is occurring (Lynch, 1996).

It is argued that the use of monetary aggregates as a proxy for the degree of financial development might also presents problems (De Gregorio and Guidotti, 1995; King and Levine, 1993a). King and Levine (1993a) note that different definitions of monetary aggregates may act as proxies for different roles of financial intermediation. In some cases monetary aggregates may be very poor indicators of the extent of financial development. For example, De Gregorio and Guidotti (1995) criticize the use of narrow money to income ratio as a proxy for financial development. They argue that a high level of monetization (M1/GDP) is the result of financial underdevelopment, while a low level of monetization is the result of a high degree of sophistication of financial markets, which allow individuals to economize on their money holdings. De Gregorio and Gudotti (1995) suggest to use a less liquid monetary aggregate (M3 or M2/GDP) as a proxy for financial development. It is expected that the broad money ratio is positively related to growth.

M2Y Ratio (M2Y/Y): M2Y definition of the money includes the deposits in the foreign currency in the national banking system. After financial liberalization, in a broader sense, capital account liberalization in 1989, foreign savers may utilize the real return in the countries where the real rate of interest is high. In addition, in an unstable economy, the domestic economic unit may prefer to hold their assets as foreign currency in the banking system in order to minimize the impact of economic shock coming from the exchange rate risk. It is therefore important to consider this ratio as a proxy for financial development in countries where there is capital account liberalization, which is the case in Turkey partially after 1980 and in full after 1989.

4.3. Construction of Trade Liberalization and Financial Development Indexes

As discussed in the previous section, each measure (proxy) for trade liberalization or financial development captures a different aspect of the issue and therefore, it is better to develop a tool to overcome these problems. In other words, the characterization of the relationship among alternative proxies gains importance. In considering all these facts, the task is to find out a latent variable that combines different dimensions of trade liberalization or financial development together and provides a single measure of trade liberalization or financial development. Principle component analysis can be used to combine this information in trade liberalization and financial development proxies.

The main idea of principle component analysis is to reduce the dimensions of a data set that consists of a

6 For a more comprehensive set of measures of financial development, see Lynch (1996).

number of interrelated variables, making use of the covariance between them, while retaining as much as possible of the variation present in the data set (Jolliffe, 1986). This is achieved by the linear transformation of data that are orthogonal to each other. The method of principle component analysis can be applied by using the original values of the data or their deviations from their means or standardized variables. Since the method is sensitive to the unit of measurement of the data, it is better to use standardized variables when the variables are measured in different units.

Furthermore, considering the fact that the proxies are non-stationary, principle components were estimated on the data matrix of the difference of the logs of the standardized variables for the period concerned. The variances of the principle components are the eigenvalues (λ_{ij}) of the variance-covariance matrix (Σ) of the data. The elements of the corresponding eigenvector of the first principle component are the coefficients that will be used for the linear combination of the proxies. Therefore, the one-dimensional measure of trade liberalization (or financial development) can be found as follows:

$$op_t = \sum_{i=1}^{5} \lambda_i z_{it} \qquad \textbf{(8)}$$

where op_t represents the one dimensional measure of trade liberalization (or financial development) at time t, z_{it} is the standardized i[th] trade liberalization (or financial development) proxy at time t, and λ_i is the eigenvector component that corresponds to a complementary measure of i[th] proxy.

For trade liberalization, three proxies, namely ratio of export to income (X/Y), ratio of import to income (M/Y) and ratio of export plus imports to income (OPEN) are used to obtain a trade liberalization index (TL):[7]

$$TL = 0{,}9852\,\mathrm{L}(M/Y) + 0{,}9991\,\mathrm{L}(\mathrm{OPEN}) + 0{,}98\,\mathrm{L}(X/Y) \qquad \textbf{(9)}$$

where L denotes the logarithm of the following variables. As can be seen from the coefficients of the trade liberalization proxies, they have positive impacts on the trade liberalization index.

The index for financial development (FD) includes the monetary aggregates, namely M1/Y, M1/M2, M2/Y and M2Y/Y. The FD index as follows:

$$FD = -0{,}905\,L(M1/Y) + 0{,}23\,L(M2/Y) + 0{,}941\,L(M2Y/Y) - 0{,}989\,L(M1/M2) \qquad \textbf{(10)}$$

where the all the letters are defined as above. The coefficient for financial development index indicates that M1/Y and M1/M2 are negatively related to the index and the others vice versa.

7 The results of the construction of the indexes are available upon request.

In order to test the joint impact of trade liberalization and financial development on economic growth as discussed theoretically by Blackburn and Hung (1998), we initially intended to do as Siddiki (2002), who includes two variables for both trade liberalization and financial development in the same regression. Due to the existing high correlation (r = 0,98) among trade liberalization and financial development indexes, it may not be appropriate to include both at the same time in a regression. Therefore, we have decided to construct another index that includes both proxies for trade liberalization and financial development, namely X/Y, M/Y, OPEN/Y, M1/Y, M1/M2, M2/Y and M2Y/Y. This new index (EL), therefore, involves proxies for both external liberalization and financial development. In a narrow sense, this index (EL) can be considered as an economic liberalization index, which carries instruments from both aspects of the issue concerned here. The EL index is as follows:

$$EL = -0{,}979\,L(M1/M2) - 0{,}904\,L(M1/Y) + 0{,}203\,L(M2/Y) + 0{,}903\,L(M2Y/Y) + 0{,}962\,L(M/Y) + 0{,}97\,L(X/Y) + 0{,}98\,L(OPEN) \qquad \textbf{(11)}$$

The coefficients of the EL index are consistent with the above findings.

5. Empirical Results

5.1. Data set and Time Series Properties of the Variables

The research period is determined by the data availability. The annual data is employed for the Turkish economy for the period 1963-2005. The gross national product (GNP) at 1987 constant prices is available from the web site of the State Planning Organization. Narrow money (M1) and broad money (M2) are taken from the web site of the International Financial Statistics (IFS). M2Y is collected from the electronic data dissemination system in the Central Bank in Turkey. Trade variables (M and X) are also taken from the IFS and converted into national currency by using the exchange rate available in the IFS.

Recent developments in econometrics requires that before undertaking an empirical analysis, time series properties of the data in terms of unit root should be investigated because regression analysis carried out with non-stationary variables may invalidate many of the assumptions of regression analysis. If a time series has a unit root, a widespread and convenient way to remove non-stationarity is by taking first differences of the relevant variable. A non-stationary series, which by differencing d times transfers to a stationary one, is called an integrated of order d and denoted as I(d) (Charemza and Deadman, 1997). In fact, when a series is integrated of order one it means that it is not itself stationary, but that its first differences are stationary. The definition of the variables is presented in Table 1.

Name of the variable	Definition
LPRY	Log of per capita reel income
LK	Log of gross fixed capital formation as a proxy for capital stock
LSEC	Log of secondary school enrolment rate
TL	Trade liberalization index
FD	Financial development index
EL	Economic liberalization index

Table 1. Definition of the Variables

The results of the Dickey-Fuller (DF) and Augmented Dickey – Fuller (ADF) unit root tests for the variables are presented in Table 2. The critical values are produced by the Eviews 5.0 econometrics program, which is based on the response surfaces in MacKinnon (1991). L and D respectively denote the logarithm and difference of the variable in concern.

Vari-ables	Intercept without trend	5 % Critical Value	Intercept with trend	5% Critical Value	Results
LPRY	-0.750 (0)	-2.93	-2.812 (0)	-3.52	Not I(0)
LK	-1.090 (0)	-2.93	-2.313 (0)	-3.52	Not I(0)
LSEC	-1.971 (4)	-2.94	-2.123 (0)	-3.52	Not I(0)
FD	-0.452 (0)	-2.93	-3.451 (4)	-3.53	Not I(0)
TL	-0.293 (0)	-2.93	-3.026 (0)	-3.52	Not I(0)
EL	-0.110 (0)	-2.93	-3.494 (4)	-3.53	Not I(0)
DLPRY	-7.035 (0)	-2.93	-6.953 (0)	-3.52	I(0)
DLK	-5.60 (0)	-2.93	-5.590 (0)	-3.52	I(0)
DLSEC	-3.07 (3)	-2.94	-3.120 (3)	-3.53	I(0)
DFD	-6.230 (0)	-2.93	-4.557 (7)	-3.54	I(0)
DTL	-5.152 (0)	-2.93	-5.097 (0)	-3.52	I(0)
DEL	-5.22 (0)	-2.93	-5.185 (0)	-3.52	I(0)
Not: The order of augmentation in the Dickey-Fuller regressions is chosen using the Akaike Information Criterion and the numbers given in the brackets in columns two and three represent the order of augmentation.					

Table 2. DF and ADF Tests for Unit Root

The results of DF and ADF unit root tests show that the levels of the variables are not stationary, but that their first differences are stationary, with or without the inclusion of a deterministic trend.

5.2. Estimation of the Long-term Production Function

The next step, in the light of 'new' growth theory, is to examine the multivariate cointegration issue among the variables considered. Accordingly, a measure of physical capital (i.e. gross domestic capital formation), a measure of human capital (i.e. the secondary school enrolment rate defined as the number of the students in the secondary school divided by total population) and one of the indexes, namely TL, FD and EL, constructed above will be included in the empirical analysis.

Following Roubini and Sala-i Martin (1992), Coe and Moghadam (1993), Piazola (1995), Leigh (1996), Odedokun (1996, 1999), Ghatak, Milner and Utkulu (1995, 1997), Siddiki (2002) and Liand and Teng (2006), the augmented production function with trade liberalization and financial development can be written as follows:

$$Y = f(K, H, X_i) \qquad f_1, f_2, f_3 > 0 \qquad (7)$$

Where Y is output, K is physical capital, H is human capital, $X_i \quad (i = 1,2,3)$ denotes the trade liberalization, financial development and the joint impact of these two components of economic liberalization. The coefficients for these three variables are the concerns of this paper and it is expected that they have positive impacts on economic growth.

The rationality of the variables in the production function needs some detail. Those variables explained in the previous section will be referred to in order to avoid repeating them. Since it is highly unrealistic to assume that financial development is the sole or even the main driving force behind the growth process, the potential effects of more conventional factors should be isolated by including some variables. Renelt (1991) argues that it is possible to find a significant relationship between growth and many of the other variables in the empirical literature, particularly in cross-country studies. Following Renelt (1991), the production function includes supply side variables, namely physical capital, labour, human capital, trade liberalization and financial development. In order to understand the true interactions, potential policy variables are explicitly modelled.

According to Scott (1992), physical capital seems to be a much more important determinant of economic growth than neo-classical growth theory suggests. An increase in investment not only raises the rate of economic growth, but also creates large positive external effects (learning effects). Physical capital is approximated by the gross

fixed capital formation in the empirical studies (Fosu, 1990; Ghatak, Milner and Utkulu, 1995; Piazolo, 1995; Most and van den Berg, 1996; Alexander, 1997; Ghura, 1997). The main reason why capital formation is not employed is that there are no annual depreciation rates at hand. It is expected that the physical capital should have a positive effect on economic growth.

A substantial body of recent economic theory has emphasized human capital as a determinant of economic growth. Not only does the new growth theory stress the importance of human capital (Romer, 1986; Lucas, 1988; Barro, 1991 and 1998; Piazolo, 1995; Glomm and Ravikumar, 1997; Hwang, 1998), but human capital augmented neo-classical models as well (Mankiw et. al., 1992; Grammy and Assane, 1996) . The educational level of a society serves as a proxy for the development of human capital. Education increases the quality of the labour force, and therefore, the long-term production possibility curve shifts outward. An increase in the educational level has a positive effect on economic growth. In other words, a better educated labour force will be more productive on the job by requiring less supervision and possessing greater initiative in handling job-related problems.

The production function is estimated using the Johansen cointegration procedure. In particular, economic theory often suggests that the path of certain pairs of variables should not diverge, at least in the long term, though they may diverge in the short term due to seasonal factors. If the variables continue to diverge, market forces or other instruments commence to cause them to converge again. In this vein, cointegration means that one or more linear combinations of these variables are stationary even though individually they are not. If these variables are cointegrated, they cannot move "too far" away from each other. In other words, if there is a long-term relationship between two or more non-stationary variables, the idea is that deviations from this long term path are stationary (Charemza and Deadman, 1997). In contrast, a lack of cointegration suggests that such variables have no link; they can wander arbitrarily far away from each other.

The application of the Johansen cointegration procedure (Johansen, 1988; Johansen and Juselius, 1992) in the empirical literature is very common. This methodology emphasizes the identification of long-term relationships, and hence is particularly appropriate for studying the determinants of potential output. These new developments in time series econometrics have been recently exploited in the growth literature (Serletis, 1994; Jones, 1995; Piazolo, 1995; Leigh, 1996; Arestis and Demetriades, 1997; Cellini, 1997; Hansson and Jonung, 1997; Lau and Sin, 1997; Batina, 1998; Hwang, 1998; Rousseau and Wachtel, 1998; Siddiki, 2002; Liang and Teng, 2006). Studies mentioned above utilizing the time series properties and cointegration analysis have attempted to establish a long term relationship between the level of the set of the variables in their empirical analysis.

The Johansen cointegration procedure involves estimating a Vector Autoregressive Model (VAR) such as (Holden and Thompson, 1992; Charemza and Deadman, 1997):

$$Z_t = A_1 Z_{t-1} + ... + A_k Z_{t-k} + \varphi D_t + u_t \qquad (13)$$

where Z_t is a (n x 1) vector that contains current and lagged values of n variables which are each assumed to be I(1), each A_i is an (n x n) matrix of parameters, D_t is a vector of I(0) variables[8] and is the vector of random errors. Here, the formulation of the VAR model is of major importance because the results of the cointegration test can be very sensitive to that formulation. There are two main interrelated issues that particularly should be taken into consideration. The first one is to include an appropriate lag length to ensure that the residuals are white noise. The second is that using too many lags reduces the power of the statistics. Therefore, the choice of the appropriate lag-length is important. There are several criteria to determine the appropriate lag-length in the empirical literature, namely the Akaike Information Criteria, the Schwarz and Hannan-Quinn criteria.

Following the economic discussions in the previous section, the variables are classified under three groups. The first one assesses the impacts of trade liberalization on the production. The second one concerns the relationship between the financial development and income. Finally, the last asserts the joint effect of trade liberalization and financial development (economic liberalization) on economic growth. The correlation coefficient between trade liberalization and financial development indexes are quite high (r = 0,98), and therefore two variables are not included in the same regression. Formally, the three groups of the variables are named as models and formed as in Table 3:

Model I	LPRY, LK, LSEC, TL
Model II	LPRY, LK, LSEC, FD
Model III	LPRY, LK, LSEC, EL

Table 3. Definition of the Variables and the Systems

Empirical investigation (carried out E-views econometric software programme) starts from an augmented VAR with four lags on all variables. The Schwarz and Hannan-Quin criteria showed that, in all models, appropriate lag length is equal to one (available upon request). After the establishment and estimation of the VAR, the cointegration statistics, namely maximum eigenvalue and trace statistics,

8 D_t actually represents a vector of any variables that are included in the system to ensure that errors ut are white noise; thus it may contain dummy variables as well.

developed by Johansen are applied to test whether there is a the long-term relationship among the variables. The results are presented in Table 4.

Ho: rank=r	Max Eigen.	5%	Trace	5%
Model I				
r= =0	35,629*	28,588	68,529*	54,079
r< =1	19,213	22,299	32,899	35,192
r< =2	9,242	15,892	13,686	20,261
r< =3	4,444	9,164	4,444	9,164
Model II				
r= =0	38,260*	28,588	74,425*	54,079
r< =1	20,457	22,299	36,164*	35,192
r< =2	12,456	15,892	15,707	20,261
r< =3	3,250	9,164	3,250	9,164
Model III				
r= =0	37,205*	28,588	69,534*	54,079
r< =1	19,615	22,299	32,328	35,192
r< =2	8,628	15,892	12,712	20,261
r< =3	4,084	9,164	4,084	9,164

Table 4. Johansen Cointegration Test Results

Both trace and maximum eigenvalue statistics showed that there is at least one cointegrating vector for each model. Trace statistics indicated that there are two cointegrating vectors in Model II. For the same model, the maximum eigenvalue statistic resulted in one cointegrating vector. Therefore, one cointegrating vector for the Model II is assumed in the further analysis.

The corresponding cointegrating vectors for each model respectively presented as follows (standard errors are given in the parenthesis):

$$CI1 = LPRY - \underset{(0,058)}{0,1206}\,LK - \underset{(0,101)}{0,311}\,LSEC - \underset{(0,002)}{0,019}\,TL - \underset{(0,185)}{2,454} \quad \textbf{(14)}$$

$$CI2 = LPRY - \underset{(0,04)}{0,008}\,LK - \underset{(0,07)}{0,46}\,LSEC - \underset{(0,001)}{0,015}\,FD - \underset{(0,16)}{2,80} \quad \textbf{(15)}$$

$$CI3 = LPRY - \underset{(0,05)}{0,046}\,LK - \underset{(0,08)}{0,42}\,LSEC - \underset{(0,001)}{0,009}\,EL - \underset{(0,16)}{2,67} \quad \textbf{(16)}$$

As far as the empirical results are concerned, secondary school enrolment rate, financial development and trade liberalization are statistically significant. The sign of the variables concerned (TL, FD and EL) is as argued in the theoretical discussion above. Particularly, human capital accumulation (LSEC) in three models (Equation 14, 15, 16) is significant and influences economic growth positively. The impact of trade liberalization (TL) on per capita income is positive (Equation 14). In addition, financial development has positively contributed to economic growth (equation 15). Finally, although the magnitude of its coefficient is very small, the variable for economic liberalization (EL), which captures the aspects of both trade liberalization and financial development, also has a positive effect on the growth rate. However, physical capital in Models II and III (LK in Equation 15 and 16) seems to be insignificant.

The empirical analysis shows that financial development (FD) and trade liberalization (TL) separately have positive contributions to economic growth in Turkey. In addition, the joint impact of trade liberalization and financial development in terms of economic liberalization (EL) also positively influence economic growth. As argued by the endogenous growth literature, human capital also positively affects income.

6. Conclusion

With the emergence of the new growth theories, the impact of economic policy on economic growth has been a hotly debated issue. In other words, whether economic polices in a country influence the economic growth is an empirical issue. This paper empirically investigated whether trade liberalization and financial liberalization have had any significant impact on economic growth in Turkey which, as a developing economy, has witnessed an unprecedented staged reform attempt involving external (trade) and internal (financial) liberalization, especially after the 24 January Decisions following the economic crisis in 1980. In Turkey, economic liberalization in terms of trade and the financial sector was at the heart of the stabilization programme employed in 1980 and has constituted an integral part of the economic policies since then. The theoretical core of the economic reform programme is to provide efficiency in the allocation of scarce resources and to mobilize unproductive resources into investment and hence promote economic growth.

To test the impact of trade liberalization and financial development on Turkish economic growth, three alternative measures (indexes) were developed by making use of the principal components analysis, namely trade liberalization, financial development and, in a sense, economic liberalization proxies. The empirical results, obtained by employing the methods of the time series econometrics for the period 1963-2005, showed that trade liberalization and financial development positively contributes to economic growth. Furthermore, the joint impact of trade liberalization and financial development in terms of economic liberalization on economic growth is also significant in Turkey.

References

Aghion, P. and Howitt, P., (1996), "Research and Development in the Growth Process", Journal of Economic Growth, 1, 49-73.
Aghion, P., Harris, C. and Vickers, J., (1997), "Competition and Growth With Step By-Step Innovation: An Example", European Economic Review, 41, 771-82.

Aghion, P., M. Dewatripont and Rey, P., (1997), "Corporate Governance, Competition Policy and Industrial Policy", European Economic Review, 41, 797-805.

Akyuz, Y., (1990), "Financial System and Policies in Turkey in 1980s", in T. Aricanli and D. Rodrik (Eds), The Political Economy Of Turkey: Debt, Adjustment And Sustainability, London: Macmillan.

Alexander, W. R. J., (1997), "Inflation and Economic Growth: Evidence from a Growth Equation", Applied Economics, 29, 233-238.

Arestis, P. and Demetriades, P., (1997), "Financial Development and Economic Growth: Assessing the Evidence", Economic Journal, 107(442), 783-799.

Arestis, P., (2005), Financial Liberalisation and the Relationship Between Finance and Growth, CEPP Working Paper No. 05/05, University of Cambridge, UK.

Aricanli, T. and Rodrik, D., (1990), The Political Economy of Turkey: Debt, Adjustment and Sustainability, London: Macmillan Press.

Atiyas, I., (1990), "The private sector's response to financial liberalisation in Turkey: 1980-1982", in T. Aricanli and D. Rodrik (Ed), The Political Economy of Turkey: Debt, Adjustment and Sustainability, 1990, London: Macmillan.

Auerbach, P. and J. U. Siddiki (2004), "Financial Liberalisation and Economic Development: An Assessment", Journal of Economic Surveys, 18(3), 231-265.

Barro, R. J., (1991), "Economic Growth in a Cross Section Countries", Quarterly Journal of Economics, May, 407-444.

Barro, R.J., (1998), Human Capital and Growth in Cross-Country Regressions, Harvard University, Manuscript, Oct.1998.

Batina, R.G., (1998), "On the Long Run Effects of Public Capital and Disaggregated Public Capital on Aggregate Output", International Tax and Public Finance, 5,

Bencivenga, V.R. and Smith, B.D., (1991), "Financial Intermediation and Endogenous Growth", Review Of Economic Studies, 58, 195-209.

Blackburn, K. and Hung, V.T.Y., (1998), "A Theory of Growth, Financial Development and Trade", Economica, 65, 107-124.

Cellini, R., (1997), "Implications of Solow's Growth Model In The Presence Of A Stochastic Steady State", Journal Of Macroeconomics, 19(1), 135-153.

Charemza, W.W. and Deadman, D.F., (1997), New Directions in Econometric Practice, Edward Elgar, Cheltenham.

Cizre-Sakallioglu, U. and Yeldan, E., (2000), "Politics, Society and Financial Liberalization: Turkey in the 1990s", Development and Change, 31, 481-508.

Coe, D.T and Moghadam, R,. (1993), "Capital and Trade as an Engine of Growth in France", IMF Staff Papers, 40, 542-566.

Conway, P. J., (1987), "Economic Shocks and Structural Adjustments: Turkey after 1973", in Contributions to Economic Analysis, D.W. Jorgenson and J. Waelbroeck (eds. of series), No.166, Amsterdam: North-Holland.

Cosan, F.M. and Ersel, H., (1986), "Turkish financial system: its evolution and performance, 1980-86", in Inflation and Capital Markets, Proceedings of the OECD-CMB Conference, 1986, August

De Gregorio, J. and Guidotti, P.E., (1995), "Financial Development And Economic Growth", World Development, 23(3), 433-448.

Demetriades, P. O. and Hussein, K. A., (1996). "Does Financial Development Cause Economic Growth? Time-series Evidence from 16 Countries", Journal of Development Economics, 51, 387– 411.

Dervis, K. and Petri, P.A., (1987), "The Macroeconomics of Successful Development: What are the Lessons?", Presented for the NBER conference on macroeconomics, 1987, March 13-14, Mass: Cambridge.

Edwards, S., (1988), "Financial Deregulation and Segmented Capital Markets: The Case of Korea", World Development, 16 (1), 185-194.

Favara, G., (2003), An Empirical Reassessment of the Relationship Between Finance and Growth, IMF Working Paper, WP/03/123, Washington D.C.: IMF.

Feder, G., (1982), "On Export and Economic Growth", Journal Of Development Economics, 12, 59-73.

Filiztekin, A., (2000), "Openness and Productivity Growth in Turkish Manufacturing" mimeo.

Foroutan, F. (1991), Foreign Trade and Its Relation to Competition and Productivity in Turkish Industry, PRE Working Paper Series, No. 604, World Bank, Washington, D.C.

Fosu, A.K., 1990, "Export Composition And The Impact Of Exports On Growth Of Developing Economies", Economics Letters, 34, 67-71.

Fry, M.J., 1978. "Money and Capital or Financial Deepening in Economic Development?", Journal of Money, Credit and Banking, 10 (4), 464-475.

Fry, M.J., 1979. "The Cost of Financial Repression in Turkey", Saving and Development, 3 (2), ss.127-135.

Fry, M.J., 1980. "Money, Interest, Inflation and Growth in Turkey", Journal of Monetary Economics, 6, 535-545.

Galetovic, A., (1996), "Finance And Growth: A Synthesis and Interpretation of The Evidence", BNL Quarterly Review, 49(196), 59-82.

Gelb, A.H., (1989), Financial Policies, Growth and Efficiency, Working Papers WPS 202, Washington, D.C: The World Bank

Ghatak, S., Milner, C. and Utkulu, U., (1995), "Trade Liberalization and Endogenous Growth: Some Evidence for Turkey", Economics of Planning, 28(2-3), 147-167.

Ghatak, S., Milner, C. and Utkulu, U., (1997), "Export, Export Composition and Growth: Cointegration and Causality Evidence for Malaysia", Applied Economics, 29, 213-223

Ghura, D., (1997), Private Investment and Endogenous Growth: Evidence From Cameroon, Working Paper, WP/97/165, Washington, D.C.:IMF.

Glomm, G. and Ravikumar, B., (1997), "Productive Government Expenditure and Long Run Growth", Journal of Economic Dynamics And Control, 21, 183-204.

Goldsmith, R.W., (1969), Financial Structure and Development, New Haven and London: Yale University Press.

Grammy, A. P. and Assane, D., (1996), "New Evidence on the Effect of Human Capital on Economic Growth", Applied Economic Letters, 4, 121-124.

Greenaway, D. and Milner, C., (1993), Trade and Industrial Policy in Developing Countries: A Manual of Policy Analysis, London: Macmillan.

Greenaway, D. and Sapsford, D.R., (1994), "What Does Liberalisation Do For Exports and Growth?", Weltwirtschaftliches archive, 130 (1), 152-174.

Greenaway, D. and Sapsford, D.R., (1995), "Liberalisation and the Terms of Trade in Turkey: A Causal Analysis", Applied Economics, 27 (10), 953-959.

Greenwood, J. and Jovanovic, B., (1990), "Financial Development, Growth, and the Distribution of Income", Journal of Political Economy, 98(5), 1076-1107

Grossman, G. M. and E. Helpman (1991), "Quality ladders in the theory of growth", Review of Economic Studies, 58, 43-61.

Grossman, G. M. and Helpman, E., (1992), Innovation and Growth in the Global Economy, Cambridge MA: MIT Press.

Guncavdi, O. and Kucukciftci, S., (2005), "Financial Reforms and the Decomposition of Economic Growth: An Investigation of the Changing Role of the Financial Sector in Turkey", Review of Middle East Economics and Finance, 3(1), 63-86.

Hansson, P. And L. Jonung, (1997), Finance And Growth: The Case Of Sweden 1834-1991, Stockholm School Of Economics, Working Paper Series In Economics And Finance, No.176.

Harrison, G.W., T.F. Rutherford, and Tarr, D.G., 1996, Economic Implications for Turkey of a Customs Union with the European Union, Policy Research Working Paper, No. 1599, World Bank.

Hermes, N., (1994), "Financial Development and Economic Growth: A Survey of the Literature", International Journal of Development Banking, 12(1), 3-22.

Hilmi, N. and Safa, A., (2007), "The Impact of Trade Liberalization on Growth: The Case of Turkey", MEEA Annual Meeting, January 5-7, Chicago, IL.

Holden, K. and Thompson, J., (1992), "Co-integration: An Introductory Survey", British Review of Economic Issues, 14(33), 1-55.

Hwang, I., (1998), "Long Run Determinants Of Korean Economic Growth: Empirical Evidence From Manufacturing", Applied Economics, 30, 391-405.

Inselbag, I and N.B. Gultekin, 1988, Financial markets in Turkey, in T.F. Nas and M. Odekon (Ed), Liberalisation and The Turkish Economy, 1988, New York: Greenwood Press.

Johansen, S., (1988), "Statistical Analysis of Cointegration Vectors", Journal of Ecoomic Dynamics and Control, 12, 231-254.

Johansen, S., and Juselius, K., (1992), "Testing Structural Hypothesis in a Multivariate Cointegration Analysis of the PPP and UIP for UK", Journal of Econometrics, 53, 211–244.

Jolliffe, I. T. (1986), Principle Component Analysis, Springer-Verlag, New York.

Jones, C.I., (1995), "Time Series Tests of Endogenous Growth Models", Quarterly Journal Of Economics, 110, 495-525.

Kar, M. and Pentecost, E., 2000, The Direction of Causality Between Financial Development and Economic Growth in Turkey: Further Evidence, Economic Research Paper, Department of Economics, Loughborough University, No. 00/27. Loughborough.

Karabulut, G. and Demiröz, M., (2002), "Financial Intermediation and Economic Growth: A CGE Model for Turkey", VI. International Economics Conference, 11-14 September, Economic Research Center, Middle East Technical University, Ankara, Turkey.

King, R.G. And Levine, R., (1993a), "Finance And Growth: Schumpeter Might Be Right?", Quarterly Journal of Economics, 108(3), 717-737.

King, R.G. And Levine, R., (1993b), "Finance, Entrepreneurship, and Growth: Theory And Evidence", Journal of Monetary Economics, 32(3), 513-542.

Krueger, A. O. and Tuncer, B., (1980), Estimating Total Factor Productivity Growth in a Developing Economy, World Bank Staff Paper, No. 422, Washington.

Krueger, A.O. and B. Tuncer (1982), "Growth of factor productivity in Turkish Manufacturing Industries", Journal of Development Economics, 11, 307-325.

Kwan, A.C.C. et al, (1998), "An Exogeneity Analysis of Financial Deepening and Economic Growth: Evidence from Hong Kong, South Korea and Taiwan", Journal Of International Trade And Economic Development, 7(3), 339-354.

Lau, S.P. And Sin, C., (1997), "Public Infrastructure and Economic Growth: Time Series Properties and Evidence", Economic Record, 73(221), 125-135.

Leigh, L., (1996), Financial Development and Economic Growth: An Econometric Analysis For Singapore, Working Papers, WP/96/15, Washington, D.C.: IMF.

Levine, R. and Renelt, D., (1992), "A Sensitivity Analysis of Cross-country Growth Regressions", American Economic Review, 82, 942-963.

Levine, R., (1997), "Financial Development and Economic Growth: Views and Agenda, Journal of Economic Literature, 55, June, 668-726.

Levine, R., (2001)., "International Financial Liberalization and Economic Growth", Review of International Economics, 9(4), 688-702.

Lewis, J.D., (1992), Financial repression and liberalisation in a general equilibrium model with financial markets, Journal of Policy Modeling, Vol. 14, No. 2, pp. 135-166.

Liang, Q. and Teng, J., 2006, "Financial development and economic growth: Evidence from China", China Economic Review, 17, 395–411.

Lucas, R.E., (1988), "On the Mechanics of Economic Development", Journal of Monetary Economics, Vol.22, pp.3-42.

Lynch, D., (1996), "Measuring Financial Sector Development: A Study Of Selected Asia-Pacific Countries", Developing Economies, 34(1), 3-33.

Lyons, S.E. and Murinde, V., (1994), "Cointegration and Granger-Causality Testing of Hypotheses on Supply-Leading and Demand-Following Finance", Economic Notes, 23(2), 308-316.

MacKinnon, J.G. (1991), "Critical Values for Cointegration Tests", in R.F. Engle and C.W.J. Granger (eds), Long-run Economic Relationships, Oxford: Oxford University Press.

Mankiw, N.G., D. Romer and Weil, D.N., (1992), "A Contribution to the Empirics of Economic Growth", Quarterly Journal Of Economics, May.

Mckinnon, R. I. (1973), Money and Capital in Economic Development, Brookings Institution, Washington.

Most, S.J. and Van Den Berg, H., (1996), "Growth in Africa: Does the Source of Investment Financing Matter?", Applied Economics, 28(11), 1427-1433.

Murinde, V. and Eng, F.S.H., (1994a), "Financial Restructuring And Economic Growth In Singapore", Savings And Development, 18(2), 225-246.

Murinde, V. and Eng, F.S.H., (1994b), "Financial Development And Economic Growth In Singapore: Demand-Following or Supply-Leading?", Applied Financial Economics, 4(6), 391-404.

Nishimizu, M. and Robinson, A., (1986), 'Productivity Growth in Manufacturing in Industrialisation and Growth: A Comparative Study', in H. Chenery, S. Robinson and M. Syrquin (eds.), Industrialisation and Growth, Oxford:Oxford University Press for World Bank.

Odedokun, M.O. (1996), "Alternative Econometric Approaches of Analyzing the Role of Financial Sector in Economic Growth: Time Series Evidence from LDCs", Journal of Development Economics, 50, 119–146.

Odedokun, M.O., (1999), "How the Size of the Monetary Sector Affects Economic Growth: Econometric Evidence from Industrial and Developing Countries", Journal of Policy Modeling 21(2), 213–241.

Okyar, O., (1965), "The Concept of Etatism", Economic Journal, March, 75(297), 98-111.

Onis, Z., 1986, "Stabilisation and Growth in a Semi-industrial Economy: An Evaluation of the Recent Turkish Experiment, 1977-84", METU Studies in Development, Vol. 13, No. 1/2, pp. 7-28.

Ozatay, F. and Sak, G., 2002. "Financial Liberalization in Turkey", Emerging Markets Finance and Trade, 38 (5), September-October, pp.6-22.

Ozmucur, S. and C. Karatas (1994) "The public enterprise sector in Turkey: Performance and Productivity growth, 1973-1988", in Recent Industrialisation Experience of Turkey in a Global Context, F. Senses (ed.), Greenwood Press.

Pagano, M., (1993), "Financial Markets and Growth, An Overview", European economic Review, Vol.37, pp.613-622.

Patrick, H.T., (1966). "Financial Development and Economic Growth in Undeveloped Countries", Economic Development and Cultural Change, 14, 174– 189.

Piazola, M., (1995), "Determinants of South Korean Economic Growth, 1955-1990", International Economic Journal, 9(4), 109-133.

Quah, D. and Rauch, J.E., (1990), Openness and the Rate of Economic Growth, Working Paper, University of California.

Rivera-Batiz, L. A. and Romer, P.M., (1991), "Economic integration and endogenous growth", Quarterly Journal of Economics, 106, 531-556.

Rebelo, S., (1991), "Long Run Policy Analysis and Long-Run Growth", Journal of Political Economy, 99(3), 500-521.

Redding, S., (1997), Dynamic Comparative Advantage and the Welfare Effects of Trade, Nuffield College Economics Discussion Paper, no. 140.

Renelt, D., (1991), Economic Growth: A Review Of The Theoretical And Empirical Literature, Working Papers WPS 678, Washington, D.C.: World Bank.

Rittenberg, L., 1988, Financial liberalisation and savings in Turkey, in T.F. Nas and M. Odekon (Ed), Liberalisation and the Turkish Economy, 1988, New York: Greenwood Press.

Romer, P. M. (1986), "Increasing Returns and Long-run Growth", Journal of Political Economy, 94, 1002-1037.

Romer, P.M. (1990), "Endogenous Technological Change", Journal of Political Economy, 98, S71-S102.

Roubini, N. and Sala-i Martin, X., (1991), Financial Development, Trade Regimes and Economic Growth, NBER Working Paper no: 3876 October

Roubini, N. and Sala-i-Martin, X. (1992) "Financial Repression and Economic Growth", Journal of Development Economics, 39, 5–30.

Rousseau, P.L. and P. Wachtel, (1998), "Financial Intermediation and Economic Performance: Historical Evidence from Five Industrialized Countries", Journal of Money, Credit and Banking, 30(4), 657-678.

Sala-i Martin, X., (1990a), Lecture Notes On Economic Growth (I): Introduction To The Literature And Neocassical Models, NBER Working Paper, No.3563.

Sala-i Martin, X., (1990b), Lecture Notes On Economic Growth (II): Five Prototype Models Of Endogenous Growth, NBER Working Paper, No.3564.

Schumpeter, J. A,. (1911), The Theory of Economic Development, Cambridge, MA:Harvard Univ. Press.

Scott, M. F. G., (1992), "Policy Implications of 'A New View on Economic Growth'", Economic Journal, May, 6222-632.

Senses, F., (1984), "An Assessment of Turkey's Liberalisation Attempts Since 1980 Against the Background of Her Stabilisation Program", METU Studies in Development, 10(3), 271-321.

Serletis, A., 1994, "Testing The Long-Run Implications Of The Neoaclassical Growth Model For Canada", Journal Of Macroeconomics, 16(2), 329-346.

Shaw, E. S., (1973), Financial Deepening in Economic Development, New York: Oxford Univ. Press.

Siddiki, J.U., (2002), "Trade and Financial Liberalisation and Endogenous Growth in Bangladesh", International Economic Journal, 16 (3), 23-37

Solow, R. M., (1956), "A Contribution to the Theory of Economic Growth", Quarterly Journal of Economics, 70(1), 65-94.

Subasat, T., 2002, "Does Export Promotion Increase Economic Growth? Some Cross-Section Evidence", Development Policy Review, 20(3), 333-349.

Taylor, M.S., (1994), "Once-off and Continuing Gains From Trade", Review of Economic Studies, 61, 589-601.

Taylor, M. S., (1999), 'Trade and trade policy in endogenous growth models', in J. Piggott and A. Woodland (eds.), International Trade Policy and Pacific Rim, Macmillan Press.

Thirlwall, A.P., (2000), "Trade Agreements, Trade Liberalization and Economic Growth: A Selective Survey", African Development Review, 12(2).

Togan, S., (1997). "Opening up the Turkish Economy in the Context of the Customs Union with EU", Journal of Economic Integration, 12(2), 157-179.

Unalmış, D., (2002), The Causality Between Financial Development and Economic Growth: The Case of Turkey, The Central Bank of The Republic of Turkey Research Department Paper, No:3, June. pp. 1-11. http://www.tcmb.gov.tr/research/work/wp6.pdf, 07.07.2003.

Utkulu, U. and Özdemir, D., (2005), "Does Trade Liberalisation Cause a Long Run Economic Growth in Turkey", Economic of Planning, 37 (3-4), September.

Winters, L.A., (2004), "Trade Liberalisation And Economic Performance: An Overview", The Economic Journal, 114, February, F4-F21.

Wolff, P. (1987), Stabilisation Policy and Structural Adjustment in Turkey, 1980-1985, Berlin: German Development Institute.

Yeldan, E., (1997), "Financial Liberalization and Fiscal Repression in Turkey: Policy Analysis in a CGE Model with Financial Markets", Journal of Policy Modelling, 19(1), 79-117.

Yildizoglu, E. and Margulies, R., (1988), "Austery Packages and Beyond: Turkey since 1980", Capital and Class, 36, 141-162.

Young, A., (1991), "Learning by Doing and the Dynamic Effects of International Trade", Quarterly Journal of Economics, 106, 369-406.

Farm and Non-farm Incomes of Rural Households in Slovenia Canonical Correlation Analysis

Judith Möllers, Jana Fritzsch, Gertrud Buchenrieder*

Abstract:

This paper provides an analysis of socio-economic characteristics and their influence on farm and non-farm incomes of rural households in Slovenia. With the canonical correlation analysis we use a methodological approach that offers a true multivariate procedure for both sides of the equation. It thus goes beyond a simple pair-wise correlation analysis and also beyond multiple correlation analysis. This rather rarely used statistical method offers interesting insights into many fields of analytical applications. Our results confirm that rural households usually turn towards non-farm employment if distress-push factors prevail. Besides insufficient farm incomes, large household sizes push households into non-farm diversification. Employment opportunities in the non-farm sector- regardless of whether triggered by distress in the household or demand in the non-farm sector- depend strongly on education.

Keywords: Canonical Correlation Analysis, Slovenia, Rural Non-farm Sector, Diversification

JEL: D10, J20, R20

1. Introduction

In rural areas of transition economies only the lucky ones can rely on agricultural incomes alone. Small-scale farming systems and unfavourable economic conditions lead to a need to take up additional non-farm employment to sustain the households' livelihoods. The transition process came along with a dramatic decrease in production and high unemployment rates. While a few stood to benefit from these economic changes, particularly in rural areas, many face unemployment, loss of life-time savings and consequently have to now endure poverty. Thus, the start of non-farm employment often is the result of 'distress-push' dynamics, itself often related to downward pressures on incomes from farming (Benjamin and Kimhi 2006).

The share of non-farm incomes in the income portfolio of rural households is known to be substantial, but is usually neither quantitatively investigated nor recorded in statistics of most of Central and Eastern European countries (CEEC). Greif (1997) estimates the contribution of non-farm incomes in CEEC as between 15 and 60% of all incomes. According to national statistics in Slovenia, almost one quarter of the workforce of Slovenian family farms is employed off-farm and as many as 72% refer to their farm work as an additional or casual activity (SORS 2000). In Slovenia around 10% are employed in agriculture, but the share of gross domestic product (GDP) is lower, at around 3%. Yet almost 90% of the area is rural according to the OECD-definition, and almost 60% of Slovenia's population lives in these areas (Juvančič and Erjavec 2001). On average, family farms in Slovenia

*Möllers:
Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO), Theodor-Lieser-str.2, 06120 Halle (Saale), Germany
e-mail: moellers@iamo.de

*Fritzch
Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO), Theodor-Lieser-str.2, 06120 Halle (Saale), Germany

* Buchenrieder
Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO), Theodor-Lieser-str.2, 06120 Halle (Saale), Germany

are of less than six hectares, with more than half of this area being grassland.

The continued high involvement of the rural population in agriculture, the structural imbalances caused by the transition process and significant regional disparities have increased interest from both policy makers and researchers in the rural non-farm economy. Knowledge of the driving forces of income diversification and factors influencing the access to farm and non-farm incomes is thus essential to better exploit its potential to overcome structural problems and to alleviate poverty and income disparity.

This paper provides an analysis of socio-economic characteristics and their influence on farm and non-farm incomes of rural households in two research regions in rural Slovenia. We analyse income portfolios and investigate how farm and non-farm incomes depend on household characteristics. With canonical correlation analysis we use a methodological approach that offers a true multivariate approach for both sides of the equation. It allows for the identification of significant relationships between two sets of variables and goes beyond a simple pair-wise correlation analysis, where the relationship between two variables is tested, and also beyond multiple correlation analysis, where the relation between one variable and a set of variables is analysed.

In Section 2 the analytical tool known as canonical correlation analysis is introduced. Section 3 presents results based on the empirical database from Slovenia. First, farm and income structures are briefly discussed and the variable sets for the correlation analyses are introduced. Following this is a presentation of the results of a standard and a canonical correlation analysis. The paper concludes in Section 4, also pointing out policy recommendations and remarks on the methodological approach.

2 Methodology

Canonical correlation analysis is used to reveal expected multivariate relations between variables that cannot be captured by the more commonly used methods of pair-wise correlation or multiple approaches such as logistic regression. We apply this method to test our main hypothesis, namely that the composition and level of rural households' income is to a large extent determined by their specific socio-economic characteristics (Figure 1). There may also be a reverse impact of households' income on their characteristics (dashed arrow in Figure 1), which will not be discussed here.

2.1 Database and Research Area

The empirical data against which we will test our hypothesis comes from a survey that was conducted in 2001 covering 120 rural Slovenian households[1] . Within the stratified sample, the households were selected

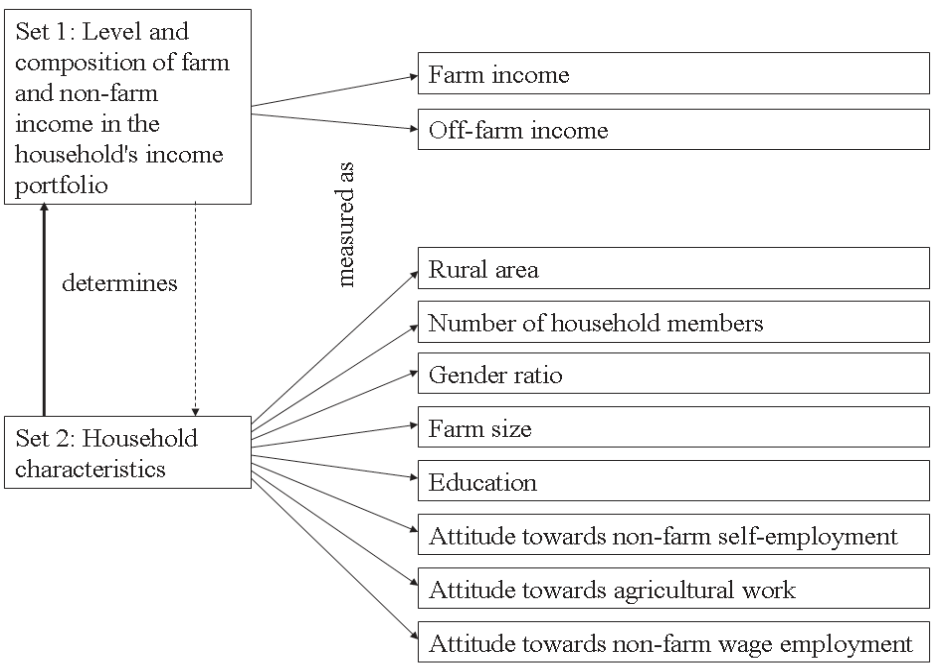


Figure 1: Canonical correlation model to be tested in the analysis
Source : Own figure

1 We gratefully acknowledge the support of the European Commission for the funding of the Phare ACE project No. P98-1090-R.

according to their location and their income structure. Pomurska was selected as a typical rural region in Slovenia. Gorenjska represents a more peri-urban environment. Furthermore, the households are located in agriculturally more or less-favoured areas and four household types can be distinguished. These are (1) full-time farm households, (2) part-time farm households with at least one non-farm self-employment activity, (3) part-time farm households with at least one non-farm wage employment, and (4) households that have abandoned their farming activities. Within these groups the households were randomly selected.

Gorenjska lies in the north-west of Slovenia and is well connected to the capital Ljubljana. It is characterised by industrial production including steel, textiles and shoes. The unemployment rate is relatively low; at the time of the survey it was around 11% and below the national average. Pomurska, in the very north-east of the country, is little-industrialised. The non-farm labour market is based on the textile and food industries, but the textile industry suffered particularly from the transitional breakdown. The unemployment rate was almost 20% compared to about 14% in Slovenia[2], and the number of people working on family farms in this region is, at 8.5%, clearly above average (2.9%) (SORS 2002; Erjavec et al. 2002a)

2.2 Canonical Correlation as Analytical Tool

As the procedure of the canonical correlation analysis is rather unknown and not often used in agricultural economics, we first briefly discuss this statistical method here. Hotelling (1935) was the first to describe the mathematics of canonical correlation. Good introductions into this procedure give Marinell (1990), Thompson (1984), Hair et al. (1998), and Stevens (2002). The main objective of the canonical correlation procedure is to identify significant relationships between two sets of variables. Each of these sets consists of at least two variables. This not only goes beyond a simple pair-wise correlation analysis where the relationship between two variables is tested, but also beyond multiple correlation analysis where the relation between one variable and a set of variables is analysed. Canonical correlation analysis provides a true multivariate approach for both sides of the equation. Its main advantages are thus that (1) a large amount of information on correlations that is otherwise only available pair-wise can be treated simultaneously and (2) the interpretation refers to only two sets of variables and is thus more condensed and intuitive.

For a canonical correlation analysis, the original set of t variables is divided into two sets, one with p and the other with q variables (t=p+q). The canonical correlation analysis looks for a linear combination (Equation 1 and 2) of the variables in each set so that the Pearson correlation between these linear combinations (canonical correlation Rc_m) is maximized. In Equation 1 and 2, a_i (i=1 … p) and b_j (j=1 … q) stand for the coefficients in the linear combinations, and y_i and x_j represent the original variables.

Equation for set 1:

$$u_m = \sum_{i=1}^{p} a_i * y_i \qquad (1)$$

Equation for set 2:

$$v_m = \sum_{j=1}^{q} b_j * x_j \qquad (2)$$

The values of the linear combinations replace the original values in the calculation. A maximum of k pairs of linear combinations can be calculated with k=min(p,q). Each pair of u_m und v_m (m=1 … k) is called the m^{th} canonical function; the linear combinations u_m and v_m themselves are the m^{th} canonical variates.

The interpretation of the results is done in four steps. First, the significance level of the canonical correlation coefficients (Rc_m) is evaluated. As test statistic - Wilk's lambda - with a significance level of 0.05 is used. However, not only the significance level but also the magnitude of the canonical correlation coefficient should be considered in the context of the sample size. This is done in the second step of interpretation. Hair et al. (1998) recommend an absolute value of 0.5 as the lowest limit for an important correlation for a sample size of 120. Third, the canonical loadings are interpreted. Canonical loadings show the correlation between the original variable and its canonical variates. For canonical loadings the same limits are applied as for canonical correlations (0.5 for N=120). Finally, the redundancy of the whole canonical analysis is assessed by the redundancy index because, as Stewart and Love (1968: 160) point out, it "is important to note that a relatively strong canonical correlation may be obtained between two linear functions, even though these functions may not extract significant portions of variance from their respective batteries." They define the redundancy index as:

Set 1:

$$RIv = \sum_{m=1}^{k} {Rc_m}^2 * Vv_m \qquad (3)$$

2 The unemployment rates refer to the total number of unemployed persons, both registered and those who consider themselves unemployed.

Set 2:

$$RIu = \sum_{m=1}^{k} Rc_m^2 * Vu_m \quad (4)$$

Whereby RIu and RIv represent the redundancy index for set 1 and set 2. Rc_m^2 is the squared m^{th} canonical correlation. Vu_m and Vv_m relate to the proportion of the variance of set 1 or set 2 extracted by its canonical variate u_m or v_m.

The redundancy index measures the proportion of variance of set 1 predictable from set 2 (RIu) and vice versa (RIv). In most cases, only RIu is considered, since set 1 is defined as the set of dependent variables and researchers are more interested in the variance extracted from this set. There are no limits for an acceptable redundancy index; all results should, however, be assessed in the theoretical context of the research work and the empirical reality of the data set (Hair et al. 1998: 452).

To test the hypothesis, two sets of variables are defined. In our analysis the first shows the composition and level of farm and non-farm income in the households' income portfolios and the second describes household characteristics that are potentially influential with regard to these incomes. Set 1 comprises a variable representing income from agricultural activities, estimated on the basis of revenues and cost (see Erjavec et al. 2002), and non-farm income consisting of income from self-employment and waged employment. The income variables are measured in USdollar purchasing power parities (US$ PPP). Set 2 includes eight variables that are defined as follows: (1) Dummy for location (0=household is located in the peri-urban region of Gorenjska, 1=household is located in the rural region of Pomurska), (2) number of all household members, (3) gender ratio (ratio of women between 16 and 64 years to all household members in the same age group), (4) farm size in hectares, (5) educational level of the main economic active person (MEA) ranging on a nine-point scale from 0=cannot read or write to 8=PhD studies[3] and (6) to (8) MEA's attitudes towards non-farm self-employment, agricultural activity and non-farm wage employment measured on a four-point rating scale (-1: negative attitude, 0: indifferent, 1: positive with slight reservation, 2: very positive attitude).

The data evaluation starts with descriptive statistics. In a second step, correlation coefficients (Pearson's correlation coefficient) for each pair of variables are calculated and tested for significance. Finally, canonical correlation analysis as a multivariate approach is adopted to test for significant relations between the composition of farm and non-farm income in the household's income portfolio (set 1) and the above described household characteristics (set 2). All calculations were done with the SPSS software package.

3 Nevertheless, the highest identified educational degree was a Bachelor.

3 Empirical Results

3.1 Descriptive Statistics

Household characteristics are assumed to directly impact income strategies. Therefore a short overview of the variable sets used and some additional information on incomes, farm sizes, education, attitudes and perceived access restrictions to labour markets will be provided. Table 1 shows descriptive statistics for all variables in the analysis.

The average yearly per-capita income in the Slovenian sample was found to be 3,900 € (or 6,500 US$ PPP), which is about 60% less compared to the national average (EBRD 2002). This significant difference can be explained, on the one hand, by the generally higher poverty risk in rural areas and, on the other hand, by the inclusion of Pomurska, the poorest region in the country in the sample. Non-farm incomes play an important role for rural households in Slovenia. On average they contribute over 40% to the total income portfolio; Figure 2 depicts regional income portfolios as found in the empirical data set. The most important branches of the rural non-farm sector are trade and rural tourism followed by metallurgy, the food industry and tailoring.

Farms are, compared to the national average, well endowed with land; the farm size is on average 13 ha. The share of farming income is around 30%, with the remainder made up of pensions, social payments, interest payments, etc. Interestingly, farm incomes are more important for the better-off income groups, pointing at predominantly distress-push motivations for those who take up non-farm employment. The access to better-paid non-farm occupations is closely related to education level. Bojnec et al. (2003), for example, show that those who are able to avail themselves of the rural non-farm labour market are characterised by a higher education. The observed re-allocation of labour back into the agricultural sector, however, is, related to high unemployment in the rural non-farm economy and also to old age. The agricultural sector in Slovenia thus acts as a buffer (Bojnec et al. 2003). In general, the educational level in rural Slovenia is relatively high. More than 60% of the sample households have at least one household member who graduated from a secondary school; 30% of all active household members have gone through a professional education.

Employment decisions are furthermore influenced by personal attitudes and by perceived constraints, for example, with regard to the access to the local labour market. The data reveals that the Slovenian rural population is very much inclined to non-farm employment, particularly to wage employment. Seventy-six percent of all respondents have a very positive attitude towards non-farm employment. At the same

time, Slovenians appreciate farming and the rural lifestyle. Less than 8% of the respondents gave negative ratings, but the analysis of the age groups shows that particularly the young generation in the age group from 16 to 25 has fewer positive attitudes towards agriculture. The most important constraints as perceived by the households, hindering them from taking up non-farm employment, are – besides a lack of time and labour capacity – lacking equity capital, difficulty in obtaining credits, unfavourable policies and administrative barriers as well as lacking infrastructural and market connections. The Kolmogorov-Smirnov test for normal distribution shows that, except for the number of household members, all other variables are not normally distributed (Table 1).

	Min.	Max.	Median	Test statistic [1]	Sig. [2]
Set 1					
Farm income (US$ PPP)	-13,174	69,900	3,859	2.10	0.000
Non-farm income (US$ PPP)	0	49,773	9,865	1.48	0.026
Set 2					
Rural area (1=rural, 0=else)	0	1	0.5	3.73	0.000
Number of household members	1	9	5	1.24	0.091
Farm size (total ha)	0.0	67.0	9.1	1.92	0.001
Household gender ratio	0.0	1.0	0.5	2.58	0.000
Education (nine-point scale) [3]	1	6	3	2.38	0.000
Attitude towards... (four-point scale) [4];					
Non-farm self-employment	-1	2	1	3.48	0.000
Agricultural activities	-1	2	1	3.48	0.000
Non-farm wage employment	-1	2	1	5.15	0.000

Source: Own calculations with data from EC Phare ACE project No. P98-1090-R.

Note: [1] Kolmogorov-Smirnov *Z*

[2] A significance level smaller than $p<0.05$ indicates that the data are not normal distributed.

1 US$ PPP = 133.8 Slovenian Tolar in 2001 (World Bank 2003).

30 households display negative farm incomes that are compensated through non-farm incomes or unearned incomes, e.g. old-age pensions.

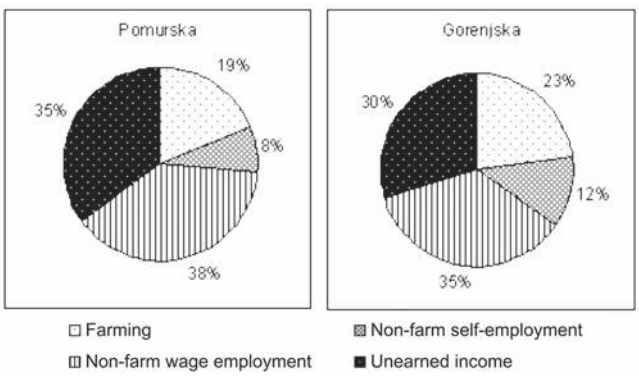
Set 1: Depicts the average farm and non-farm income in 2001.

Set 2: Depicts selected household characteristics with a potential influence on the income variable set; the first and the last two categories of the education variable are empty, which means no MEA has the respective educational level.

[3] 0=no studies and cannot read or write, 1=no studies but can read or write, 2=elementary school, 3=vocational school, 4=secondary school, gymnasium, 5=college, 6=graduate studies (university B.Sc.), 7=M. Sc. studies (university), 8=Ph.D. studies (university). The categories 0, 7, and 8 were not mentioned from the respondents.

[4] -1 = negative attitude; 0=indifferent attitude, 1=positive attitude, 2=very warm feeling about the respective activity.

Table 1: Overview statistics for the Slovenian rural households, 2001



Source: Data from EC Phare ACE project No. P98-1090-R.

Note: The averages are calculated on the basis of income portfolios of individual households.
Unearned incomes = pensions, social security payments, child benefits, etc.

Figure 2 Regional income portfolios

3.2 Correlation Analysis

The correlations between all pairs of variables were calculated using Pearson's correlation coefficient and tested for significance at the 0.05 level. This analysis provides a priori information about relations between the composition and level of household's income on the one side and household characteristics on the other side for the canonical correlation analysis that will be employed in Section 3.3. In Table 2, all correlation coefficients are depicted and significant ones are marked with asterisks. All variables show at least one significant correlation with another variable. As all variables appear to yield some information, we will include all in the canonical correlation analysis. Seventeen of the 45 pair-wise correlations are significant. However, the absolute values of the coefficients

indicate that no strong relations exist. We will discuss the significant relations from the pair-wise correlations in the following section in more detail.

Correlations within Set 1

Farm income is negatively correlated with non-farm income. This indicates that people who earn a satisfying level of income from farming participate less in non-farm work. People who have smaller farms tend to embark more upon non-farm work.

Correlations within Set 2

The correlation between the rural area variable and the number of household members is negative. This indicates that households in the rural area of Pomurska have fewer members than those in the peri-urban area of Gorenjska. The Mann-Whitney test confirms that this correlation is significant (Mann-Whitney U=1421.0, significance level=0.044). The rural location of the household and the educational level of the MEA are negatively correlated. Although Slovenia is a relatively small country with good access to urban centres, the educational situation is better in Gorenjska, which is less remote and well connected to urban centres.

The number of household members is positively correlated with the gender ratio, the farm size and the MEA's attitude towards non-farm self-employment. Larger farms can provide an adequate livelihood for more family members. Smaller farms often can, if at all, sustain only the farm owner and the core family. More positive attitudes towards non-farm self-employment in larger households may be caused by the fact that self-employment is seen as an additional income source that fits in well with farm activities. Particularly in larger households it provides an opportunity to productively employ additional family members in the workforce. Moreover, the need for supporting more household members could also result in the decision to diversify income by self-employed activities. Farm size is positively correlated with the MEA's attitude towards agricultural activities. This demonstrates that owners of larger farms, who often obtain most of their incomes from farming, identify themselves with their profession more than small-scale farmers.

An interesting correlation arises between education and attitudes towards agricultural work. The negative correlation coefficient indicates that better educated people consider farm work less desirable. At the same time, the correlation between the MEA's attitudes towards non-farm wage employment and his educational level is positive. Investments in higher education frequently render non-farm waged employment more attractive.

Correlations between variables of set 1 and set 2

As expected, farm size is positively correlated to farm income. Moreover, higher farm income positively interacts with the attitude towards farming. This indicates that people who earn sufficient agricultural income enjoy their farm occupation more than others. Non-farm income is positively correlated with the number of household members, education and attitudes towards non-farm waged employment. Larger households tend to diversify more into non-farm activities. On the one hand, they are obliged to do so because they must support more persons. On the other hand, they possess the manpower to embark upon additional activities. Access to non-farm work, particularly better-paid jobs, depends strongly on education.

On average, the biggest share of income comes from non-farm work in the sample (Figure 2). A positive correlation of the educational level exists with non-farm income but not with farm-income. Higher education may give access to better-paid and more attractive jobs. A positive attitude towards non-farm waged employment goes along with significantly higher non-farm income, whereas the attitude towards non-farm self-employment shows no significant influence. Qualitative results show that the rural population in Slovenia is particularly fond of wage employment as it is less risky and comes along with social security schemes (Möllers 2006). Accordingly, the majority of non-farm income comes from waged employment (63% of all households have such an income). Only 23% of the households are engaged in non-farm self-employed activities. Non-farm income is negatively correlated with the rural area dummy, farm size and attitudes towards agricultural work. The opportunities for non-farm income, especially from waged employment, are better in the peri-urban Gorenjska region.

Farm size and attitudes towards farm activities are negatively correlated to non-farm incomes. In households with higher non-farm incomes, the attitudes towards agricultural work are less positive. On the one hand, if agricultural work does not provide for a certain living standard, the attitudes towards farming could turn negative. On the other hand, when a household has to choose whether to concentrate on farming or to start non-farm employment, the decision for non-farm work is pushed forward by less positive attitudes towards farm activities.

In summary, the results of the pair-wise correlation analysis show that non-farm income is influenced by more variables than farm income. For the level of farm income, the farm size and attitudes towards farming activities are important, whereas non-farm activities are prompted by a large number of household characteristics. All correlations could be interpreted reasonably but, as mentioned above, it is difficult to come up with a clear picture of relations from pair-wise correlations. Therefore, a canonical correlation is calculated in the next step.

	Farm income	Non-farm income	Rural area	Number of household members	Gender ratio	Farm size	Education	Attitudes towards non-farm self-employment	Attitudes towards farm activities	Attitudes towards non-farm wage employment
Set 1										
Farm income	1.00									
Non-farm income	-0.33*	1.00								
Set 2										
Rural area	0.07	-0.22*	1.00							
Number of household members	0.15	0.23*	-0.21*	1.00						
Gender ratio	0.01	-0.13	0.02	0.25*	1.00					
Farm size	0.69*	-0.27*	0.12	0.23*	-0.04	1.00				
Education	-0.02	0.37*	-0.09*	0.04	0.00	0.02	1.00			
Attitude towards non-farm self-employment	0.12	0.14	-0.15	0.20*	-0.07	0.08	0.06	1.00		
Attitude towards farm activities	0.22*	-0.22*	0.17	-0.00	-0.07	0.26*	-0.26*	0.12	1.00	
Attitude towards non-farm wage-employment	-0.14	0.18*	-0.10	0.11	0.00	-0.08	0.28*	0.04	0.00	1.00

Source: Own calculations with data from EC Phare ACE project No. P98-1090-R.
Note: * significant on the 0.05-level

Table 2: Pearson's product-moment-correlation coefficient for all variables in the analysis

3.3 Canonical Correlation Analysis

The results presented above show multiple relations between all variables. Therefore, there is no simple answer to the question of which household characteristics determine the level and composition of farm and non-farm income in the household's income portfolio. By using the statistical procedure of canonical correlation analysis we look at all correlations simultaneously and thus identify important household characteristics.

Set 1 involves two variables; hence two canonical correlation coefficients are calculated. Table 3 lists the canonical correlation coefficients and the canonical loadings. Both canonical correlations are highly significant and larger than 0.5. Thus, they are important and further interpretation is useful.

	1st canonical function	2nd canonical function
Set 1		
Farm income	-0.97	-0.24
Non-farm income	0.54	-0.84
Set 2		
Rural area	-0.20	0.40
Number of household members	-0.09	-0.63
Farm size	-0.96	-0.21
Gender ratio	-0.06	0.27
Education	0.12	-0.59
Attitude towards non-farm self-employment	-0.09	-0.42
Attitude towards agricultural activity	-0.35	0.20
Attitude towards non-farm wage-employment	0.22	-0.17
Canonical correlation	0.71	0.52

Source: Own calculations with data from EC Phare ACE project No. P98-1090-R.
Note: Bold figures indicate important canonical loadings. A loading is considered important when it reaches at least a value of 0.5 (Hair et al. 1998).

Table 3: Canonical loadings

Looking at the canonical loadings for set 1, it becomes obvious that the first canonical variate mostly represents farm income, whereas the second represents non-farm income. Non-farm income is also correlated with the first canonical variate. Higher non-farm incomes result in or are caused by lower farm incomes. In other words, the two income components substitute for each other.

The first canonical variate for set 2 is determined by farm size only. The negative signs indicate that larger farms provide higher farm incomes. Accordingly, households with less agricultural land are more eager to enter into non-farm activities and have higher absolute non-farm incomes. The second canonical variate for set 2 has high loadings for the number of household members and the educational level. Non-farm income rises with the number of people living in the household and with the educational level of the MEA.

As explained in Section 2, not only the canonical correlation coefficient and the loadings should be considered but also the redundancy index. The redundancy indices are 0.410 for set 1 and 0.115 for set 2, respectively (Table 4).

	1st canonical function	2nd canonical function
Set 1		
Farm income	**-0.97**	-0.24
Non-farm income	**0.54**	**-0.84**
Set 2		
Rural area	-0.20	0.40
Number of household members	-0.09	**-0.63**
Farm size	**-0.96**	-0.21
Gender ratio	-0.06	0.27
Education	0.12	**-0.59**
Attitude towards non-farm self-employment	-0.09	-0.42
Attitude towards agricultural activity	-0.35	0.20
Attitude towards non-farm wage-employment	0.22	-0.17
Canonical correlation	**0.71**	**0.52**

Source: Own calculations with data from EC Phare ACE project No. P98-1090-R.

Table 4: Redundancy indices

Set 1 was defined as the set of dependent variables that are explained by the variables of set 2 as independent variables, therefore only RIu is important for interpretation. 41% of variance in set 1 is explained by all canonical variates of set 2. This leaves nearly 60% unexplained. However, in the context of the hypothesis and a wide variability in the original data, this result is satisfactory.

The network of multiple relations could be described by two canonical functions. In comparison to the correlation analysis, the canonical correlation analysis provides a much clearer and comprehensive picture of relationships. It results in three main findings:

1. Only three of the included household characteristics influence the composition and level of household's income, i.e. farm size, number of household members and the educational level of the MEA.

2. Two more variables, (1) the region and (2) attitudes towards self-employment show loadings near the lower limit of 0.5 and thus could have an impact. However, due to the small sample size, the variables were not further interpreted.

3. The gender ratio and attitudes towards agricultural and non-farm waged employment do not influence the composition and level of household's income significantly.

4. Conclusions

Not surprisingly, household characteristics influence the composition and level of household income significantly. While the commonly used pair-wise correlation analysis gives some insights into possibly important dependent variables and their relationship, it fails to provide a clear picture of important determinants. The procedure of canonical correlation, however, reveals that out of the potential determinants only three influence the composition and level of household's income significantly. These are the farm size, the number of household members and the educational level of the main economic active household member.

We find that farm size and income from agricultural activities are positively correlated. Farm incomes are almost solely influenced by the size of the farm. Otherwise, non-farm incomes are negatively influenced by the farm size and thus larger farms have a lower probability that household members engage in the non-farm sector. The two components of household income are related, i.e. higher non-farm incomes result in or are caused by lower farm incomes. In other words, the two income components substitute for each other.

Our results confirm that rural farm households usually turn towards non-farm employment if farm incomes are not sufficient to support their livelihoods. Another factor that pushes households into non-farm diversification is the size of the household: larger households have significantly higher non-farm income than smaller ones. However, we also find that the incomes that can be gained in the rural non-farm sector clearly depend on education. Higher educational levels open possibilities in the non-farm sector, whereas it does not show any impact on farm incomes. All other potential determinants of farm and non-farm income of rural households in Slovenia turned out to be insignificant when analysed simultaneously with the canonical correlation analysis.

From this we can deduct a couple of recommendations for policy makers: In countries with predominantly small-scale farms, rural development measures should address two different target groups. First, farms with a potential to develop into viable and competitive sizes should be in the focus of agricultural policies. It is important to provide incentives that facilitate factor market mobility and particularly allow these farms to grow; i.e. land transfers (sale or rental) from those farm families who leave the sector should be facilitated and promoted. Second, rural development policies that foster the local non-farm economy are needed. Often the uptake of non-farm jobs is mainly restricted by underdeveloped local job markets as well as a lack of appropriate general and professional education. Therefore it is necessary to provide incentives for business start-ups and to increase the attractiveness of a region for establishing industries. A further focus should be put on improving the employability of the labour force. In order to increase employment of those with a low level of education, or of those with knowledge and skills that are not in demand in the labour market, it is necessary to emphasise active forms of assistance, i.e. training and education in accordance with changing labour market needs.

The methodological approach of using the canonical correlation sheds light on complex relationships between potential determinants of rural income levels and income composition that are otherwise difficult to disentangle. Being a true multivariate approach for both sides of the equation, it has clear advantages compared to the more commonly used pair-wise correlations or multiple regressions.

References

Benjamin, C. and A. Kimhi 2006. Farm work, off-farm work and hired farm labour: estimating a discrete-choice model of French farm couple's labour decisions. European Review of Agricultural Economics 33 (2): 149-171

Bojnec, S., L. Dries and J. F. Swinnen 2003. Human Capital and Labour Flows out of the Agricultural Sector: Evidence from Slovenia. Proceedings of the 25th International Conference of Agricultural Economists (IAAE), 16-22 August 2003, Durban.

EBRD 2002. Transition Report Update. European Bank for Reconstruction and Development, London: EBRD.

Erjavec, E., L. Juvančič, O. Oblak, M. Kožar, B. Moljk, P. Kolarek and S. Kavčič 2002. Economic Diversification and Labour Adjustment in the Rural Households in Slovenia. Working Paper EC Phare Ace Research Project P98-1090-R.

Greif, F. 1997. Off-farm income sources and uses in transition economies. Federal Institute of Agricultural Economics, Vienna und FAO/REU, Rome.

Hair, J. F., W.C. Black, B.J. Babin, R.E. Anderson and R.L. Tatham 1998. Multivariate Data Analysis, 5th edition, Prentice Hall International, Upper Saddle River, New Jersey.

Hotelling, H. (1935). The Most Predictable Criterion. Journal of Educational Psychology. Vol. 26: 139-142.

Juvančič, L. and E. Erjavec 2001. Rural development in Slovenia – A brief outline. Working Paper EC Phare Ace Research Project P98-1090-R.

Marinell, G. (1990). Multivariate Verfahren, 3rd edition. Oldenburg Publisher, Munich.

Möllers, J. 2006. Außerlandwirtschaftliche Diversifikation imTransformationsprozess.Diversifikationsentscheidungen und -strategien ländlicher Haushalte in Slowenien und Mazedonien. Studies on the Agricultural and Food Sector in Central and Eastern Europe, Vol. 35, Halle (Saale).

Stevens, J. P. 2002. Applied Multivariate Statistics for the Social Science. 4th edition, Lawrence Erlbaum Associates, Mahwah, New Jersey.

Stewart, D. and W. Love 1968. A General Canonical Correlation Index. Psychological Bulletin. Vol. 70, 160-163.

SORS 2000. Agricultural Census 2000. Statistical Office of the Republic of Slovenia Ljubljana: SORS.

SORS 2002. Statistical Yearbook of the Republic of Slovenia 2002. Statistical Office of the Republic of Slovenia, Ljubljana: SORS.

Thompson, B. 1984. Canonical Correlation Analysis, Sage University Paper series on Qualitative Applications in the Social Sciences No. 47, Sage Publications, London.

World Bank 2003. World Development Indicators. Washington, D.C.: The World Bank.

The Role of the Performance Measurement Systems on Business Process Reengineering: An Empirical Study of Turkish Small and Medium Scaled Manufacturing Firms

Cemal Zehir, Erkut Altindag, Ayse Gunsel*

Abstract:

Today, companies have begun to adopt more flexible structures to adapt to the rapidly changing environment. From the beginning of the 1990's, companies have needed radical changes to their organizational structures, especially their process methods. Companies need more flexible and faster organizational structures to respond effectively to their customers' growing variety of needs. This new concept of process reengineering has become an appealing alternative for companies.

Reengineering means rebuilding an organization and its entrenched conceptions and design. Competition is intensifying today; reengineering is a convenient method of establishing a new and active structure.

Reengineering tries to specify the role of performance measurement in the reengineering process. The effects of a current performance measurement system, the role of performance measurement, empowerment, integration and long-term strategic alignment are the basic subjects of reengineering. These elements are presented in this paper with positive statistical results. The results of the research and the trends observed are discussed and suggestions are presented for both managers and academicians.

Keywords:

JEL:

1. Introduction

The process of implementing Business Process Reengineering (BPR) is often incomplete and fragmented in the available literature. The solution to this problem might be achieved in two steps. The first step can be considered from two aspects. First, to achieve substantive reengineering performance, a business process should be first analyzed by certain characteristics from a high-level perspective (Teng et al., 1996).

Hammer and Champy (1993) noticed that the commonalities between companies that have chosen radical change to improve performance and those companies that succeed in achieving dramatic results.

This paper will argue some of the main concepts in business process reengineering with the goal of investigating their association with performance measurement systems. First some of the main terms will be discussed and explained. Then the research objectives will be stated followed by the research methodology and hypotheses, the results and conclusions.

*Zehir:
Gebze Institue of Technology,
İstanbul street, no: 101 – GYTE,
Çayırova Gebze/KOCAELİ - 41400
e-mail: zehir@gyte.edu.tr

*Altindag:
Gebze Institue of Technology,
İstanbul street, no: 101 – GYTE,
Çayırova Gebze/KOCAELİ - 41400
e-mail: ealtindag@gyte.edu.tr

*Gunsel:
Gebze Institue of Technology,
İstanbul street, no: 101 – GYTE,
Çayırova Gebze/KOCAELİ - 41400
e-mail: agunsel@gyte.edu.tr

2. Business Process Reengineering

The most successful business book of the last decade, Reengineering the Corporation, is a pioneering work on the most important topic in business today: achieving performance improvements (Hammer and Champy, 1993).

Reengineering is a powerful approach that can bring about radical improvements in business processes. However, the popular management literature has created more myth than practical methodology regarding reengineering. It has relied more heavily on hype than on research, common sense, or the lessons of the past. In this paper, we attempt to "demythologize" some key aspects of reengineering by describing what we have observed in our research and practice. Seven reengineering myths are identified, discussed, and dispelled. By separating rhetoric from reality, we hope to help others to have reasonable expectations for success with their reengineering initiatives (Davenport and Stoddard, 1994).

Reengineering is also known as Business Process Reengineering. Hammer and Champy (1993) define BPR as "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance, such as cost, quality, service, and speed." Johansson et al. (1993) provide a description of BPR relative to other process-oriented views, "Business Process Reengineering, although a close relative, seeks radical rather than merely continuous improvement. It escalates the efforts of JIT and TQM to make process orientation a strategic tool and a core competence of the organization. BPR concentrates on core business processes, and uses the specific techniques within the JIT and TQM "toolboxes" as enablers, while broadening the process vision."

Reengineering disregards all the assumptions and traditions of the way business has always been done, and instead develops a new, process-centere business organization that achieves a quantum leap forward in performance. To achieve reengineering success, a fresh perspective and approach is required. A clean sheet of paper is taken out and, given what is currently known about customers and their preferences, a new organization is drawn up that will optimize the process of creating satisfied customers. Reengineering is the process by which the organization that exists today is retired and the optimal version of the new organisation is constructed. Reengineering is the opportunity to develop the rules by which business in the future will be conducted rather than being forced to operate by rules imposed by someone else. As such, reengineering underpins every attempt to seize and maintain a true competitive advantage (Hammer and Champy, 1993).

There are many other definitons that are variations of the above, emphasizing different aspects of BPR depending on the application and need (Kuwaiti and Kay, 2000).

Reengineering initiatives typically lead to a business organization with these characteristics:

- Business processes are simplified rather than being made more complex.
- Job descriptions expand and become multi-dimensional – people perform a broader range of tasks.
- People within the organization become empowered as opposed to being controlled.
- The emphasis moves away from the individual and towards the team's achievements.
- The organizational structure is transformed from a hierarchy to a flatter arrangement.
- Professionals become the key focus points for the organization, not the managers.
- The organization becomes aligned with the end-to-end process rather than departments.
- The basis for measurement of performance moves away from activity towards results.
- The role and purpose of the manager changes from supervisor to coach.
- People no longer worry about pleasing the boss. They focus instead on pleasing the customer.
- The organization's value system evolves from being protective to being productive.

All of these definitions clearly recognize that the measurement of performance plays a very important role in the design and implementation of business process reengineering (Kuwaiti and Kay, 2000)

3. Performance Measurement Systems

Performance measurement systems are the auditors that in the last decade have increasingly focused on the outputs of management accounting systems. This focus has arisen due to audit practitioners and standard setters advocating that the auditor obtain a more in-depth understanding of a client's business to better aid in risk assessments and audit planning judgments. Hence, audit practitioners have turned to strategic management, especially strategic analysis, for more formal means of understanding a client's business. Strategic management research emphasizes the use of performance measures to determine how successful management is in implementing its strategy, hence leading the auditor to focus on the client's performance measurement system (Salterio et al, 2005).

Improving competitiveness through performance-measurement systems can improve competitiveness by meshing the organization's long-term goals with its administrative functions (Stewart and Lockamy 2001).

Measuring performance in the manufacturing sector has been dominated by outdated costing systems and financial reporting required by the legislature and stakeholders (Maskell, 1991). Our performance measurement system employs a balanced scorecard, given its emphasis on management accounting literature and its use by audit firms as a training tool. We predict and find evidence to support the hypothesis that auditors provided with a more extensive strategic analysis employ a broader set of performance measures in making their risk judgments than auditors provided with a less extensive strategic analysis. We also contribute by providing evidence about how differential strategic analysis extensiveness may result in different interpretations of the same outputs from a performance measurement system. (Salterio et al, 2005). Performance measurement systems have to balance a number of dimensions and to play a number of important roles in active business process reengineering to achieve the success of the whole system (Kuwaiti and Kay, 2000).

4. Empowerment

Managers indicate a desire to get work done while using less authority; that is, they desire to successfully "empower" employees (Bass et al., 1979). The concept "to empower" means to enable, to allow or to permit, and can be conceived as both self-initiated and initiated by others. Empowerment is the process of enabling workers to set their own work-related goals, make decisions and solve problems within their spheres of responsibility and authority (Litrell, 2006).

For many in Extension, empowerment is the goal we have for our programs and the volunteers, participants, or clients with whom we work. At the core of the concept of empowerment is the idea of power. The possibility of empowerment depends on two things. First, empowerment requires that power can change. If power cannot change, if it is inherent in positions or people, then empowerment is not possible, nor is empowerment conceivable in any meaningful way. In other words, if power can change, then empowerment is possible. Second, the concept of empowerment depends upon the idea that power can expand. This second point reflects our common experiences of power rather than how we think about power (Page and Czuba, 1999).

Power is often related to our ability to make others do what we want, regardless of their own wishes or interests (Weber, 1946). Traditional social science emphasizes power as influence and control, often treating power as a commodity or structure divorced from human action (Lips, 1991). Conceived in this way, power can be viewed as unchanging or unchangeable. Weber (1946) gives us a key word beyond this limitation by recognizing that power exists within the context of a relationship between people or things. Power does not exist in isolation, nor is it inherent in individuals. By implication, since power is created in relationships, power and power relationships can change. Empowerment as a process of change, then, becomes a meaningful concept.

Empowerment is a construct shared by many disciplines and arenas: community development, psychology, education, economics, and studies of social movements and organizations, among others. How empowerment is understood varies among these perspectives. In recent empowerment literature, the meaning of the term empowerment is often assumed rather than explained or defined. Rappoport (1984) has noted that it is easy to define empowerment by its absence but difficult to define in action as it takes on different forms in different people and contexts. Even defining the concept is subject to debate. Zimmerman (1984) has stated that asserting a single definition of empowerment may make attempts to achieve it formulaic or prescription-like, contradicting the very concept of empowerment.

A common understanding of empowerment is necessary, however, to allow us to know empowerment when we see it in people with whom we are working, and for program evaluation. According to Bailey (1992), how we precisely define empowerment within our projects and programs will depend upon the specific people and context involved.

As a general definition, however, we suggest that empowerment is a multi-dimensional social process that helps people gain control over their own lives. It is a process that fosters power (that is, the capacity to implement) in people, for use in their own lives, their communities, and in their society, by acting on issues that they define as important.

It's suggested that three components of our definition are basic to any understanding of empowerment. Empowerment is multi-dimensional, social, and a process. It is multi-dimensional in that it occurs within sociological, psychological, economic, and other dimensions. Empowerment also occurs at various levels, such as individual, group, and community. Empowerment, by definition, is a social process, since it occurs in relationship to others. Empowerment is a process that is similar to a path or journey, one that develops as we work through it. Other aspects of empowerment may vary according to the specific context and people involved, but these remain constant. In addition, one important implication of this definition of empowerment is that the individual and community are fundamentally connected (Page and Czuba, 1999).

5. Integration

Integration is the degree to which an individual manager's action is harmonious and consistent with that of the other departments, so that the combined action contributes to the added value to the customer and enhancing the overall performance (Kuwaiti and Kay, 2000).

Many factors can influenc the extent of this integration. The literature has identified many such mechanisms. Among the most important are shared vision, culture, goal setting and strategy formulation. For a vision to be realized, it needs to be converted into a process involving the planning and evaluation of performance. Both of these management systems rely on performance information (Sink and Tuttle, 1989; Kaplan and Norton, 1996a; 1996b) Culture has been identified as another integrating mechanism. It needs to be modified and adapted to reflect the organizational context (Kotter and Heskett, 1992).

Today, the companies that have a competitive advantage can use human resources power and its integration to long term strategy formulation (Çelik, 1993).

Integration is an important element in the philosophy. It seeks to weld the organization into a coherent and harmonious entity (Kuwaiti and Kay, 2000).

Method

Proposed Model and Research Hypotheses

The conceptual basis for the hypotheses are shown in Fig.2. This framework includes five important variables. The conclusion of the study again pointed to the need for organizations to rethink the way work is being done, and to redesign the processes to achieve an order of magnitude in a number of measures (Hammer and Champy, 1993).

1. Sample Characteristics

Hypotheses were tested using 71 small and medium sized manufacturing companies from different industries located throughout the Istanbul and Gebze areas. The target respondents were chiefs and department managers. Responses from more individuals within the company would have given a more complete picture of the firm's situation and behaviour. Excluding cases with missing data, the final sample had 200 usable questionnaires. These questionnaries were collected using mail surveys and face to face interviews.

The questionnaire included five instruments to measure the five variables. Respondents were required to respond to each of the five groups of the questionnaire.

2. Measures

All scales are adopted from previous literature (Kuwaiti and Kay, 1997) . The first of these variables is the effects of the existing performance measurement system. The instrument used a modified version of the one developed by Dixon et al (1990). The scale used is from 1 to 5, where 1 indicates low importance or emphasis and 5 denotes high emphasis (Kuwaiti and Kay, 1997). This instrument has 11 statements.

An instrument designed by Hayes (1994) was used to measure the construct of empowerment. This instrument consists of 14 statements. In the analysis, four were eliminated. Respondents were asked to rate the extent to which they agree with each of the statements on a scale from 1 (disagree) to 5 (agree).

The third variable, integration, is a construct represented by 20 statements. Its extent is like an empowerment instrument, except scaled in reverse.

In the analysis of the "long term strategic alignment" instrument 11 statements were used. Respondents were asked to rate their willingness with each statement on a scale from 1 to 5, where 1 denotes little importance and 5 high importance.

The last variable is the perceived success of performance measurement. A total of 23 statements are represented to respondents about the management's authority (Kuwaiti and Kay, 1997). The scale is from 1 (prohibitive) to 5 (supportive).

Dependent and independent variables will be discussed below.

3. Measure Validation

Coefficient alpha estimates (Cronbach's Alpha = .84; .78; .87; .85; .89, respectively, perceived success of performance measurement, empowerment, integration, long term strategic alignment and existing performance measurement system) show that the measurement scales used in this empirical study are reliable.

4. Tests of Hypotheses

Seven hypotheses are examined and tested:

H_1 : A positive and significant relationship between the effect of the existing performance measurement system and the perceived success of performance measurement.

The regression analysis result for the effects of the existing performance measurement system on the perceived success of performance measurement indicate that there is a positive and significant relationship between the two variables. Any changes in the effects of the existing performance measurement system may reflect on the perceived success of the performance measurement process.

$H2_a$:There is a positive and significant relationship between the perceived success of performance measurement and empowerment.

$H2_b$: There is a positive and significant relationship between the effect of the existing performance measurement system and empowerment.

In the regression analysis conducted to examine the effects of the existing performance measurement system and the perceived success of performance measurement on empowerment, the results show that the effects of the existing performance measurement system have a positive effect on empowerment, but the positive effect of the perceived success of performance measurement on empowerment is not supported.

$H3_a$: There is a positive and significant relationship between the perceived success of performance measurement and integration.

$H3_b$: There is a positive and significant relationship between the effect of the existing performance measurement system and integration.

The regression analysis results for the impacts of the effects of the existing performance measurement system on integration show positive effects on the integration variable. It is hard to say that the same explanation can be used for the effect of the perceived success of performance measurement on integration.

$H4_a$: There is a positive and significant relationship between the perceived success of performance measurement and long term strategic alignment.

$H4_b$: There is a positive and significant relationship between the effect of the existing performance measurement system and long term strategic alignment.

In the last regression analysis, the hypothesis about a positive and significant relationship between the effect of the existing performance measurement system and long term strategic alignment is accepted.

Discussion

1. Limitations and future research directions

This article has several limitations that should be kept in mind. The extension of the proposed model to other firms would improve the study's overall generalizability. Caution should be taken when applying the results to all organizations, rather than only manufacturing firms. Another potential limitation concerns the multidimensional nature of firm performance. Dealing with the various components of firm performance always presents a challenging set of problems for researchers. National culture, traditions and economic conditions may also influence empowerment and long term strategic alignment.

2. Conclusion

In this article, we have focused on the effect of performance measurement systems on business performance and various characteristics of organizations such as empowerment, integration and long term strategic alignment. Performance measurement systems have to provide fast feedback to analyse a firm's performance measurements truthfully.

Managers must make contact with successful workers and adapt them to the business. Empowered employess take more risks and join strategic alliences more often. During the business process reengineering activity, the firm's vision, mission and strategic plan must be upgraded. The subfactors to achieve this are empowerment and the integration of all systems. Organizations wishing to excel in today's global economy expect positive organizational outcomes based on the empowered employee's leadership behavior styles (Wegner, 2004).

In conclusion, this study reveals that manufacturing firms can also increase organizational performance by employing business process reengineering. While maintaining economies of scale, business reengineering can help companies develop personalized products and services (Tai, Huang, 2007). During the business process reengineering, managers must emphasize empowerment to develop their employee's skills, connect all layers and departments smoothly and make new raliable strategic plans. Business reengineering provides a way for manufacturers to effectively respond to the challange of changing environments. Clearly, performance measurement systems on business process reengineering practices have become increasingly more commonplace and therefore require careful empirical analysis to improve our understanding of the outputs of field research.

Tables and figures

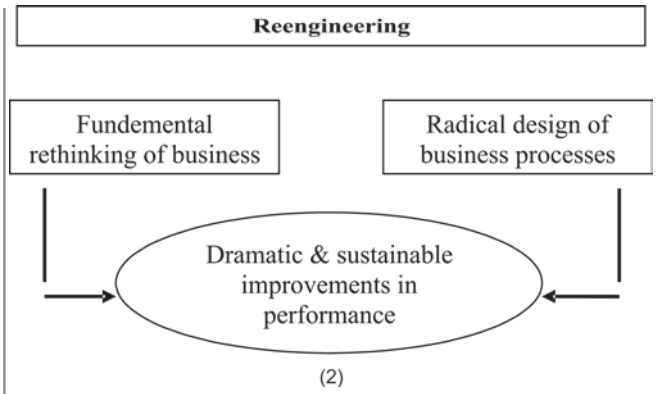


Figure1. Reengineering process

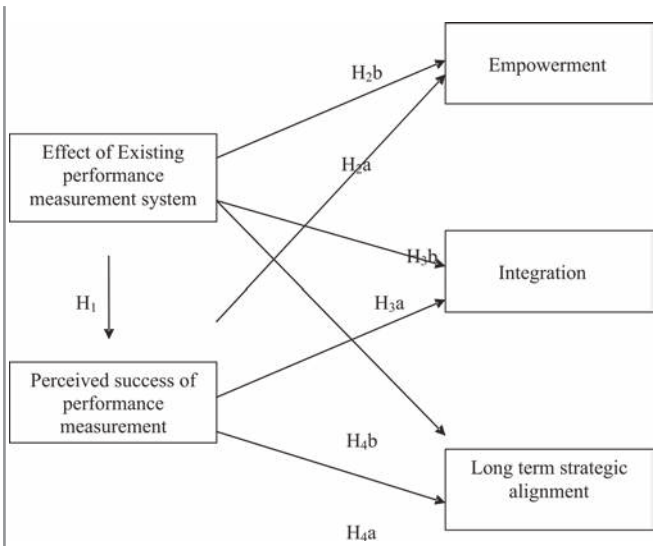


Fig.2 : Hypothesized model

Position	Number	Percentage (%)
Chief / Senior Chief	118	59
Middle Level / Department Manager	82	41
TOTAL	200	100

Table 1 . Sample Characteristics

VARIABLES	Number of Questions	Coefficient Alpha
1- Effect of existing performance measurement system	11	0,89
2- Perceived success of performance measurement	23	0,84
3- Empowerment	14	0,78
4- Integration	20	0,87
5- Long term strategic alignment	11	0,85

Table 2 . Output of Reliability Analysis

	Standardized ß	Sign	Result
Effects of existing performance measurement system	0,617	0,000	Accepted
F=171,736	R^2= 0,464		

Table 3. Effects of existing performance measurement system on perceived success of performance measurement.

	Standardized ß	Sign	Result
perceived success of performance measurement	0,184	0,052	**Rejected**
effect of existing performance measurement system	0,224	0,009	**Accepted**
F= 16,595	**R^2=** 0,144		

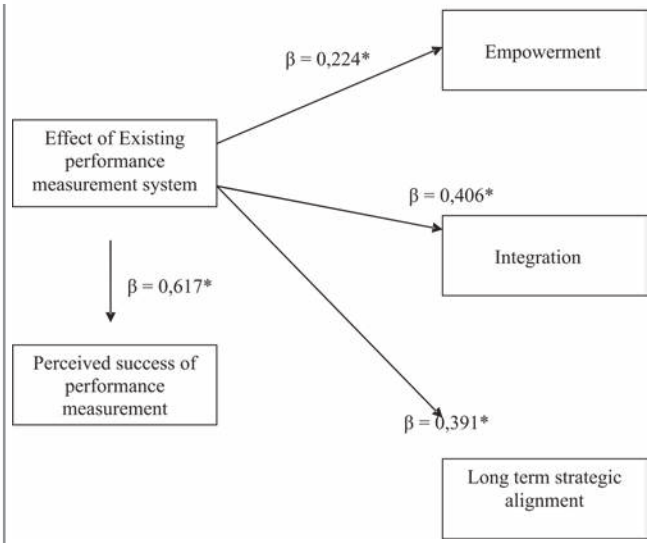
Table 4. Effects of existing performance measurement system and perceived success of performance measurement on empowerment

	Standardized ß	Sign	Result
perceived success of performance measurement	0,182	0,120	**Rejected**
effect of existing performance measurement system	0,406	0,000	**Accepted**
F= 23,779	**R^2=** 0,194		

Table 5. Effects of existing performance measurement system and perceived success of performance measurement on integration

	Standardized ß	Sign	Result
perceived success of performance measurement	7,602	0,287	**Rejected**
effect of existing performance measurement system	0,391	0,000	**Accepted**
F= 43,620	**R^2=** 0,307		

Table 6. Effects of existing performance measurement system and perceived success of performance measurement on long term strategic alignment



** Significant at 0.01 level
* Significant at 0.05 level

Fig. 3 : Results of Hypotheses tests

References

Bailey, D. (1992). Using participatory research in community consortia development and evaluation: lessons from the beginning of a story. American Sociologist, 23 (4), 71-82.

Bass, B. M., Burger, P. C., Doktor, R., & Barrett, G. V. (1979). Assessment of managers: An international Comparison. New York: Free Press.

Çelik, C. (1993). "Kalite Yönetiminde İnsan Faktörü", "Verimlilik Dergisi", MPM Publish, Special Edition (In Turkish)

Davenport, T.H., Stoddard, D.B., (1994), Reengineering: Business Change of Mythic Proportions?, MIS Quarterly, Vol. 18, No. 2, 121-127.

Dıxon, J.R. Ve Arnold, P. (1994) "Business Process Reengineering: Improving in New Strategic Directions", California Management Review

Hammer, M., Ve Champy, J. (1993). "Reengineering the coorparation"

Hayes, B. (1996) "How to Measure Empowerment," Quality Progress, February, Vol.27, No:2,

Johansson, H., McHugh, P., Pendlebury, J. and Wheeler, W. (1993), Business Process Reengineering: Break Point Strategies for Market Dominance, John Wiley and Sons, Chichester.

Kaplan, R., Norton, D. (1996) "Using the balanced scorecard as a strategic management system", Harvard Business Review, January/February

Kotter J.P., Heskett J.L., (1992). Corporate culture and performance, Maxwell Macmillan Canada

Kuwaiti, M.E. ve Kay, J. M., "The role of performance measurement in business process re-engineering", International Journal of Operations & Produciton Management, Vol.20, No:12, 2000.

Lips, H. (1991). Women, men and power. Mountain View, CA: Mayfeld.

Littrell R.F., (2007; 87-110), Influences on employee preferences for empowerment practices by the "ideal manager" in China, International Journal of Intercultural Relations

Maskell, B.H., (1991), Brian Performance measurement for world class manufacturing : a model for American companies, Productivity Press

Page, N, Czuba C. E. (1999) Empowerment: What Is It?, Empowerment: What Is It?, Volume 37 Number 5

Rapport, J. (1984). Studies in empowerment: Introduction to the issue. Prevention in Human Services, 3, 1-7.

Salterio S., W.R. Knechel, N. Kotchetova (July, 2005). Performance Measurement Systems and Strategic Analysis Extensiveness: The Auditor's Usage of Balanced Scorecards and Performance Benchmarks AAA Management Accounting Section 2006 Meeting Paper

Sink, D.S., Tuttle, T.C., (1989; 989 – 999). Planning and measurement in your organization of the future,

International Journal of Operations & Production Management, Volume: 18 Issue: 9/10

Stewart L.J., Lockamy A., (2001). Improving competitiveness through performance-measurement systems:
An integrated performance-measurement system can improve competitiveness by meshing the organization's long-term goals with its day-to-day clinical and administrative functions - health care industry, Healthcare Financial Managament

Tai, D. W-S., Huang, C-E., (2007; 296-301). The relationship between electronic business process reengineering and organizational performance in Taiwan, Journal of Academy of Business, Cambridge, Volume: 10, No: 2.

Teng, J.T.C., Grover, V, Fiedler, K.D. (1996). Developing strategic perspectives on business process reengineering from process reconfiguration to organization change, Omega International Journal of Management Science 24 (3), pp. 271-294.

Weber, M. (1946). From Max Weber. H.H. Gerth & C.W. Mills (Eds.). New York: Oxford University Press.

Wegner, L.L., (2004). Organizational leaders and empowered employees: the relationship between leadership styles, perception of styles, and the impact on organizational outcomes, Capella University.

Zimmerman, M.A. (1984). Taking aim on empowerment research: On the distinction between individual and psychological conceptions. American Journal of Community Psychology, 18(1), 169-177.

Impact of Leadership Styles on Employees' Organizational Commitment in Lithuanian Manufacturing Companies

Ilona Bučiūnienė, Vida Škudienė*

Abstract:

This article investigates the relationship between employees' organizational commitment dimensions and leadership styles in Lithuanian manufacturing companies. The findings of the study reveal positive correlations between a transformational leadership style and affective and normative employee commitments. A laissez-faire leadership style was found to be negatively associated with employees' affective commitment.

Keywords: Leadership styles, Organizational commitment, Manufacturing companies, Lithuania.

JEL:

1. Introduction

The changing demographics of the work market – with baby boomers nearing retirement – has caused managers in the US and Europe to rethink work force shortage issues. Lithuania and other new members of the European Union are experiencing an even stronger effect from this phenomenon because of the workforce flow to more developed European Union countries. How to retain employees and keep them committed to an organization remains one of the most significant issues in management today. Therefore, a great deal of attention recently has been given to the study of commitment to organization (Mowday, Porter & Steers, 1979; Allen & Meyer, 1990; Jaussi, 2007). However, few studies have tested the relationship between leader behaviors and employee commitment. Even fewer studies have considered this issue in Lithuania.

The research findings (Taylor, 1998; Glisson and Durick, 1988), as well as leadership theories (behavior, cognitive, and social interaction) allow us to make the assumption that employee commitment to an organization is affected by leader behavior. However, many issues regarding this interrelationship remain unclear. For example, are some leadership styles more appropriate than others in enhancing employees' organizational commitment? Can an immediate supervisor improve the employees' commitment by adopting an appropriate leadership style?

The object of research is leadership styles and employee commitment to an organization.

The aim of this paper is to investigate the relationship between leadership styles and employee organizational commitment.

Research methodology. A quantitative descriptive research method, a questionnaire survey, was employed to obtain measures of leadership style and employee commitment. Middle-level managers from five Lithuanian manufacturing companies participated in the study. The survey data was processed using a SPSS statistical package (version 13). The relationship between the rank variables was checked by calculating Spearman's correlation coefficient (p).

* Bučiūnienė
ISM University of Management and Economics.
Kaunas E. Ožeškienės
st. 18 Kaunas 44254
Lithuania
e-mail: ilona.buciuniene@ism.lt

*Škudienė
ISM University of Management and Economics.
Kaunas E. Ožeškienės
st. 18 Kaunas 44254
Lithuania
e-mail: vida.skudiene@ism.lt

The research findings demonstrate the positive relationship between a transformational leadership style and affective commitment. Employee satisfaction with their supervisors is reported to have significant effects on employees' affective and normative commitments. The findings of this study reveal that transformational transactional leadership is more important than transactional leadership in relation to followers' organizational commitment. Laissez-faire leadership produces negative impacts on affective commitment.

Such findings clearly demonstrate the important role of transformational leadership and indicate that organizations should endeavor to nurture transformational leadership qualities among their leaders.

Theoretical Framework of Employees' Organizational Commitment

R.T. Mowday, L.W. Porter and R.T. Steers (1979) defined organizational commitment as a strong belief in the organization's goals and values and a willingness to exert considerable effort on behalf of the organization. Commitment to organization is linked to very important work-related factors: employee turnover, absenteeism and performance (Mowday, Steers & Porter, 1979; Romzek, 1990; Ward et al., 1995; Walton, 1985).

The fact that there is no agreement among organizational behavior researchers on the definition of commitment indicates that commitment may be multidimensional, having both attitudinal and behavioral components (Meyer and Allen, 1993). The attitudinal commitment, according to Jaussi (2007), has three dimensions: positive affect for the organization, identification with the organization and willingness to exert effort on behalf of the organization. Behavioral commitment emphasizes that commitment is grounded in behavior resulting primarily from perceived constraints on a worker's ability to leave the organization and from choices that bind him to the organization (Salancik, 1977).

Commitment as a function of beliefs about organization is described by L.W. Porter, R.M. Steers, R.T. Mowday & R. Boulian (1974). They define commitment to organization as the relative strength of the employees' identification with their organization. According to their definition, organizational commitment has three components: a strong belief in and acceptance of the organization's goals and values; a willingness to exert considerable effort on behalf of the organization; and a strong intention or desire to remain with the organization.

Commitment as a function of behavior according to A.M. Suliman et al. (2000) is defined as employees' attitude towards the commitment to the organization as an investment of time spent in the organization, friendly relationships with the coworkers, saved pension funds, etc. In this case it is not beneficial for employees to leave the organization because of the "sunk cost." H. S. Becker (1960) claims that employees' commitment is their association with the organization that occurs when employees calculate the costs of leaving the organization.

Building on the work of L. W. Porter et al., (1974), J. P. Meyer and N. J. Allen (1984) conceptualized commitment as a multidimensional concept consisting of three distinct psychological states: emotional attachment to the organization (affective commitment), recognition of the costs associated with leaving the organization (continuance commitment), and perceived obligation to remain with the organization (normative commitment).

However, inconsistencies across the formulations of organizational commitment exist, as scholars have characterized the construct of organizational commitment dimensions differently. For example, C. O'Reilly and J. Chatman (1986) define organizational commitment as a concept consisting of three main components: agreement associated with a certain benefit, identification associated with a need to be a member of the organization, and internalization perceived as employee's values identification with the organization's values. Moreover, J. P. Meyer et al., (2001) noticed differences in scholars' definitions of organizational commitment dimensions, formulations and components.

Affective commitment according to N. J. Allen and J. P. Meyer (1990), is an emotional attachment to an organization in which an employee "identifies with and enjoys membership in the organization." Thus, affective commitment encompasses at least three dimensions: development of an emotional involvement with an organization, identification with an organization, and a desire to remain its member.

Continuance commitment is the second organizational commitment construct defined by N. J. Allen and J. P. Meyer (1990) based on H. S. Becker's (1960) side-bet theory. It is based on the idea that the investments, or side bets, an employee makes in an organization, such as time, job effort, and the development of work friendships, organization-specific skills, and political deals, constitute sunk costs that diminish the attractiveness of external employment alternatives (Jaros, et al., 1993). The employee feels compelled to commit to the organization because the monetary, social, psychological, and other costs associated with leaving are high. N. J. Allen and J. P. Meyer (1990) advanced the concept of continuance commitment as a form of psychological attachment to an employing organization that reflects the degree to which an individual experiences a sense of being locked in place because of the high costs of leaving. This perception determines an employee's decision to stay in an organization and save the created benefit.

Normative commitment is the third organizational commitment dimension associated with an employee's sense of duty to stay in an organization. D. M. Randall and M. P. Driscoll (1997) defined normative commitment as an employee's moral commitment that manifests itself when

an organization provides moral and financial support for the employee's development.

Our view is that all three organizational commitment dimensions are caused by different reasons. Considerable disagreement remains over the concept of organizational commitment.Furthermore,commitmentresearchersremain divided over the dimensionality of attitudinal commitment and the nature of organizational commitment.

Dimensions of Leadership Styles

Although the concept of leadership has been used since the beginning of the 19th century, there has been no consistent agreement upon a method to measure the nature and consequences of successful leadership (Stogdill, 1974). J. M. Burns (1978) claims that leadership is the most observed but the least understood phenomenon in the world. Although many authors have studied this issue, there is no consensus regarding its definition. Leadership researchers in recent years have accumulated a large body of leadership definitions, which were structured by M. M. Chemers (1997). He designed the so-called "leadership definitions umbrella," which defines leadership as "a social influence process, during which one individual enables to reassure support and assistance to other individuals in order to achieve mutual goals." M. M. Chemers (1997) also found that the leadership phenomenon was not scientifically researched until the beginning of the 20th century. B. M. Bass (1985) claimed that the first theorists attempted to identify leadership using only theoretical methods. No attempt was made to explore the relationship between individual and situation variables. This was, according to B. M. Bass (1985), the main reason why no successful leadership theories were developed. Until recently, research on leadership has taken several approaches. Most research can be classified into one of four major categories (Rowden, 1999): trait approaches, situational approaches, power-influence approaches, and behavioral approaches (Yukl, 1989). However, no one method has been found to be very effective in all situations (Bass, 1990). Recently, the focus of leadership has shifted from traditional or transactional models of leadership to a new genre of leadership theories, with an emphasis on transformational leadership (Bass, 1985). The whole model of leadership presented by B. J. Avolio and B. M. Bass (1991) reveals three main leadership styles: transformational, transactional and laissez-faire. The components of transformational and transactional leadership have been identified in a variety of ways, including through the use of factor analyses, observations, interviews, and descriptions of a follower's ideal leader. Using the Multifactor Leadership Questionnaire (MLQ-Form 5X; Avolio and Bass, 2002), B. J. Avolio, B. M. Bass, and D. I. Jung (1999) and J. Antonakis (2001) identified the distinct components of transformational leadership: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Although multifactor theory is probably the most widely cited and comprehensive theory, leadership is often conceptualized within behavioral domains varying from non-leadership, or laissez-faire, to transactional leadership, which hinges on rewards and punishments, to transformational leadership, which is based upon attributed and behavioral charisma (Bass and Avolio, 1993). Transformational leaders develop relationships with their followers that go beyond pure economic and social exchange (Bass, 1985). Studies have linked transformational leadership to high levels of effort (Seltzer and Bass, 1990), satisfaction with the leader (Bass, 1985), and trust in the leader (Bass, 1985). R. J. Deluga (1992) and J. M. Howell and K. E. Hall-Merenda (1999) demonstrated that transformational leadership is significantly related to high quality exchanges. Findings in transactional leadership show mixed results. Contingent reward leadership has been found in many cases to be highly correlated to transformational leadership (Avolio et al., 1999). In general, active leadership is found to be plausibly more effective than passive leadership. However, J. M. Howell and B. J. Avolio (1993) argued that if the predominant style of the leader is to take corrective action, such behavior is expected to have a negative impact on followers' performance over time. With laissez-faire leadership being associated with dissatisfaction, unproductiveness and ineffectiveness (Deluga, 1992), it is possible that followers do not hold as much respect for their supervisors and that this style of leadership is inappropriate (Hartog et al., 1997).

Relationship between Organizational Commitment and Leadership Styles

Previous research has devoted a great deal of attention to the relationship between leadership behavior and organizational commitment. The findings in this area, however, are not entirely consistent. Several studies found a positive relationship between the two variables (Kraut, 1970; Newman, 1974; Alley and Gould, 1975; Porter et al., 1976; etc.). In contrast, C. A. O'Reilley and K. H. Roberts (1978), R. Hampton et al., 1986) reported no linkages between organizational commitment and leadership styles, whereas J. G. Hunt and V. K. C. Liesbscher (1973) discovered a negative association between these two variables.

J. Morris and R.M. Steers (1980) have linked leadership behavior to employees' organizational commitment and found positive correlations between high respect for leaders, high hierarchical structure level and organizational commitment. A.P. Brief, R.J. Aldag, and R.A. Wallen (1976) investigated police officers' organizational commitment and reported high positive relationships between respect

for their supervisors and organizational structuring level. J. Morris and R.M. Steers (1985), S. Parasuraman and S. Nachman (1987), C.E. Michaels and P.E. Sector (1982) also found positive relations between leaders' behavior and their subordinates' commitment. A.E. Reichers (1985) suggested that organizational commitment is a set of commitments to an organization's shareholders, leaders, customers, and coworkers. However, A.E. Reichers (1985) identified only one strong positive correlation between commitment and higher level leaders' goals and values. T.E. Becker (1992) found that employees' commitment to their supervisors and work groups is more expressed than general commitment to their organization.

B.M. Bass and B.J. Avolio (1993) claimed that organizations have a kind of culture, which is represented by the leaders who use transactional or transformational leadership styles. According to their findings, transactional culture creates only short-term commitment, whereas transformational culture creates long-term commitment. D.S. Carlson and P.L. Perrewe (1995) argued that when transformational leadership is enacted, members of organizations no longer seek merely self-interest, but that which is beneficial to the organization as a whole.

L. Simon (1994) studied transformational leadership impact on organizational commitment and found that transformational leadership has a positive linkage with normative and affective commitment. On the other hand, a negative relationship was found between transformational leadership and continuance commitment. P. Bycio and his colleagues (1995) reported a lower but positive relationship between normative commitment and transformational leadership, whereas transformational leadership exhibited strong positive relationships with affective commitment. However, they failed to find the hypothesized relationship between transactional leadership and commitment. The findings of F. Brown and N. Dodd (1999) indicated a strong correlation between transformational leadership dimensions and affective commitment, a weaker but still strong positive correlation with normative commitment and no relationship with continuance commitment. A negative relationship was found between transactional leadership dimensions and affective and normative commitments, and a statistically significant correlation found with continuance commitment.

Overall, the scientific literature and research analysis survey reveal that there is no consensus regarding relationships between employee commitment and leadership styles.

Hypotheses Development

N.J. Allen and J.P. Meyer (1990) define affective commitment as an employee's emotional attachment to, identification with and involvement in the organization. Identification with the organization occurs when an employee identifies his/her values with the organization's values and builds personal and social identification with the mission and goals of the organization. Previous research indicates that transformational leadership's attitude dimension, such as idealized influence, occurs when leaders are admired, respected and trusted, and they consider the follower's needs over their own. Moreover, the transformational leadership behavior dimension occurs when leaders share their values and belief with their followers and allows them to understand the importance of their decisions (Bass & Avolio, 1993). Based on these considerations' synthesis, the hypothesis tested in this study is proposed:

Hypothesis 1: Transformational leadership style is positively related to employee affective commitment.

B.S. Romzek (1990) defines the continuance commitment dimension as a transactional relationship. He claims that an employee recognizes the costs (employee's investment in an organization) and compares what benefit s/he will receive if s/he continues the activity and what the employee is going to lose if s/he leaves it. B.S. Romzek's (1990) definition of continuance commitment could be interpreted as commitment associated with exchange between the employee's assessment of costs and the organization's inducement possibilities. Meanwhile, the authors (Burns, 1978; Bass, 1985) and researchers of recent leadership theories (Owen et al., 2004) describe many kinds of valuable exchange in politics or business organizations as related to transactional leadership. Therefore, the conclusion may be drawn that transactional leadership and continuance commitment are closely related. Given the above considerations, the following hypothesis is proposed:

Hypothesis 2: A transactional leadership style is positively related to employee continuance commitment.

S.J. Jaros et al., (1993) suggest that normative commitment refers to the employee's feelings of obligation and need to work. Not surprisingly, these kinds of feelings are aroused by transformational leader characteristics. According to H. Owen et al., (2004) a leader should be aware of his/her and employees' values, to take into consideration mutual interests, to distribute power equally, to not seek only short-term goals and stakeholders' satisfaction and to pursue and meet all shareholders' needs. Moreover, normative commitment is a long-term construct that is created through transformational leadership dimensions (Bass and Avolio, 1993). On the basis of these insights the following hypothesis is put forth:

Hypothesis 3: A transformational leadership style is positively related to employee normative commitment.

Prior evidence indicates that laissez-faire leadership is less beneficial to employee affective commitment (Bass, 1990; Bass and Avolio, 1993). Therefore, the following hypothesis is proposed:

Hypothesis 4: A laissez-faire leadership style is negatively related to employee affective commitment.

Following B.M. Bass and B.J. Avolio (1993), a transformational leadership style is linked to a leader's charisma, inspirational motivation, individualized consideration, and intellectual stimulation. Meanwhile, continuance commitment according to N. J. Allen and J.P. Meyer (1990) is correlated with employees' perceived "loss." Taking into account the above considerations, the following assumption could be formed: either transformational leadership does not correlate with continuance commitment, or it is negatively correlated with it. This assumption responds to suggestions made by L. Simon (1994) that transformational leadership is negatively related to continuance commitment. Therefore, the following hypothesis is proposed:

Hypothesis 5: A transformational leadership style is negatively related to employee continuance commitment.

Several studies (Reichers, 1985; Becker, 1992) have reported that employees express commitment to their leaders more than to their organization or their commitment to an organization is based on their satisfaction with their leaders' goals and values. J.P. Meyer and N.J. Allen (1997) claim that employees' commitment to organization measures employees' commitment to their leaders. Given the above considerations, the following hypotheses are proposed:

Hypothesis 6: Satisfaction with an immediate supervisor is positively related to employees' affective commitment.

Hypothesis 7: Satisfaction with an immediate supervisor is positively related to employees' normative commitment.

The hypothetical model shown in Figure 1 is consistent with the arguments and hypotheses presented above.

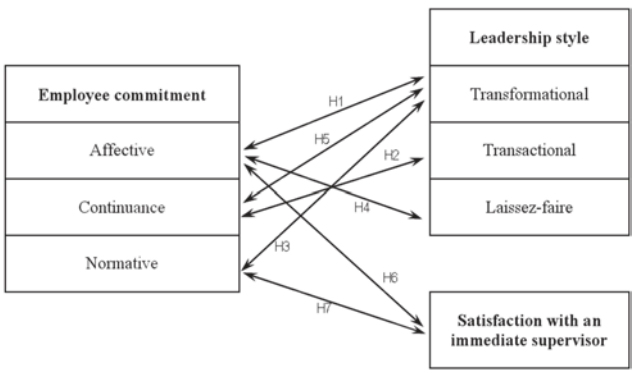


Figure 1. The hypothetical model of relationship between leadership styles and employees committment

Research Methodology

A quantitative descriptive research method - a questionnaire survey - was employed to test the above hypotheses. Given the relatively small size of the employee population, the survey included the total population of 224 middle level managers from five manufacturing companies in Lithuania. A total of 191 usable questionnaires were obtained, representing an 80 % response rate. Standard deviation coefficient was 0,027 or 2,7%.

The survey questionnaire was composed of the following parts: introduction; questions designed to identify leadership style (adapted from B.M. Bass and B.J. Avolio (1993) MLQ (Multifactor Leadership Questionnaire)) 5X short form; questions designed to measure employees' commitment to an organization (adapted from questionnaire by J.P. Meyer and N.J. Allen (1997)); and questions designed to measure satisfaction with an immediate supervisor.

The survey data was processed using a SPSS statistical package (version 13). The relationship between the rank variables was checked by calculating Spearman's correlation coefficient.

Research Findings

The descriptive statistics and correlation matrix for the items may be found in Table 1. As seen from the results, the strongest correlation was found between affective commitment, transformational leadership (0,527**), and transactional leadership (0,408**). Laissez-faire leadership style, according to the research data, is negatively related to affective commitment (-0,209**). The continuance commitment is slightly positively related to transformational leadership (0,146*) and transactional leadership (0,149*); and has no relationship with laissez-faire leadership (0,029). Normative commitment positively correlates with transformational leadership (0,385**) and transactional leadership (0,313**). A weak negative correlation was found between normative commitment and a laissez-faire leadership style (-0,162*).

	Mean	Affective commitment	Continuance commitment	Normative commitment	Satisfaction with an immediate supervisor
Transformational leadership style	7.19	0,527**	0,146*	0,385**	0,790**
Transactional leadership style	6.38	0,408**	0,149*	0,313**	0,586**
Laissez-faire leadership style	3.57	-0,290**	0,029	-0,162*	-0,569**
Affective commitment	6.83	1,000	0,341**	0,591**	0,471**
Continuance commitment	5.44	0,341**	1,000	0,344**	0,141
Normative commitment	6.62	0,591**	0,344**	1,000	0,343**
Satisfaction with an immediate supervisor	7.8	0,471**	0,141	0,343**	1.000

** p< 0.01
* p< 0.05

Table 1. Rank means and correlations between commitment dimensions, leadership style and satisfaction with an immediate supervisor

The findings confirm that transformational leadership creates the highest satisfaction with an immediate supervisor (0,790**), although a positive medium correlation was found between transactional leadership and satisfaction with an immediate supervisor (0,586**). The strongest negative effect on satisfaction with an immediate supervisor is identified in the case of a laissez-faire leadership style (-0,569**).

The present study findings report a strong positive relationship between transactional and transformational leadership styles (0,699**), a medium negative correlation between transformational and laissez-faire leadership styles (-0,548**), and an even weaker negative correlation between transactional and laissez-faire leadership styles (-0,328**).

Hypotheses Testing

The research reported here provides data on the relationships between employee commitment, leadership styles and employees' satisfaction with their immediate supervisor. The first hypothesis anticipated that a transformational leadership style would be an excellent predictor of employee affective commitment. The results supported hypothesis 1, indicating a 0,527** relationship between the two variables. Thus, hypothesis 1 was supported.

H1: Transformational leadership style is positively related to employee affective commitment was empirically supported.

As anticipated for hypothesis 2, this analysis revealed a positive weak relationship between a transactional leadership style and employee continuance commitment (0,149*). Hypothesis 2 was partially supported.

H2: A transactional leadership style is positively related to employee continuance commitment.

The transformational leadership style variable was found to have a statistically significant positive effect (0,385**) on normative employee commitment. Thus, hypothesis 3 was supported partially.

H3: A transformational leadership style is positively related to employee normative commitment.

As hypothesized, a laissez-faire leadership style is negatively related to employee affective commitment. The study revealed a negative significant association between laissez-faire leadership style and employee affective commitment (-0,290**). Hypothesis 4 was supported.

H4: A laissez-faire leadership style is negatively related to employee affective commitment.

The study results show no evidence to support the relationship between transformational leadership and employee continuance commitment. The variables have a positive, albeit very weak relationship (0,146*). Thus, hypothesis 5 was partially supported.

H5: A transformational leadership style is negatively related to employee continuance commitment.

Consistent with previous findings, satisfaction with an immediate supervisor has positive associations with employees' affective (0,471**) and normative (0,343**) commitments. Thus both hypotheses 6 and 7 were supported.

H6: Satisfaction with an immediate supervisor is positively related to employees' affective commitment.

H7: Satisfaction with an immediate supervisor r is positively related to employees' normative commitment.

The correlations between employee commitment (affective, continuance, and normative), leadership styles (transformational, transactional, and laissez-faire) and satisfaction with an immediate supervisor are provided in Figure 2.

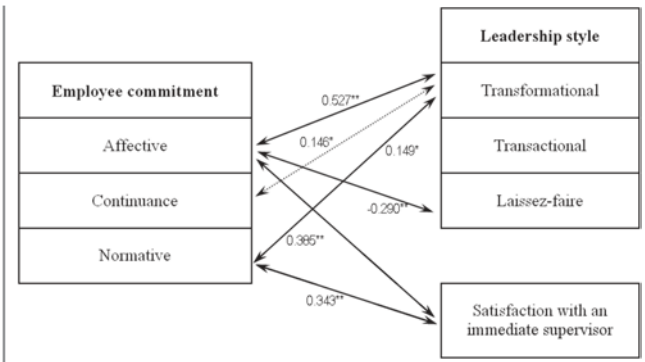


Figure 2. Correlations between employee commitment level, leadership styles, and satisfaction with an immediate supervisor.

Discussion

The study of leadership styles and employee commitment dimensions – affective, continuance, and normative - in manufacturing firms showed a strong relationship between a transformational leadership style and affective employee commitment, and a less strong relationship of this leadership style with normative employee commitment. This study, therefore, supports the suggestions by F. Brown and N. Dodd (2003) that transformational leadership and affective and normative commitment are correlated. However, this study does not support suggestions made by L. Simon (1994) that a transformational leadership style has a negative correlation with continuance commitment. The relationship between a transformational leadership style and continuance commitment exists in Lithuanian enterprises but is not very strong.

In sum, a transformational leadership style exhibited positive relationships with employee commitment in psychological, value, morale, and economic terms. This is consistent with the suggestions of D.S. Carlson and P.L. Perrewe (1995): "When transformational leadership is established, members of an organization view their own values and benefit as those of the organization." Given that a transformational leadership style is often associated with emotional aspects,

it is not surprising that transformational leadership has the greatest correlation with affective employee commitment. Consistent with previous studies, transformational leadership has positive associations with commitment dimensions (Lee, 2005). As a transformational leader helps followers develop beyond their potential and satisfy their higher order needs, s/he is likely to gain their followers' commitment to the organization (Rowden, 2000). Similar to the findings of J. Lee (2005) and P. Bycio et al. (1995), transformational leadership, according to the results of this research, has a positive but lower relationship with employees' normative commitment.

A transactional leadership style also relates positively to affective and normative employees' commitment. This finding indicates that leaders' and followers' associations, as well as in the case of transformational leadership, affects employees' emotional identification with an organization and relates to their feelings of responsibility. This finding contradicts F. Brown and N. Dodd (1999), whose empirically supported arguments stated that transactional leadership has a negative association with affective and normative commitments. An explanation of this finding may be due to the characteristics of the research sample used by F. Brown and N. Dodd (1999): they investigated employees in US municipalities. When compared to transformational leadership, transactional leadership is less effective in affecting employees' affective and normative commitments and similarly affecting employees' continuance commitment. Compared to transformational leadership, transactional leadership associated less significantly with all employees' commitment dimensions.

Employee satisfaction with their immediate supervisors in Lithuanian manufacturing organizations is reported to have significant effects on employees' affective and normative commitments. The study's findings support the results of A.E. Reichers (1985) and H.S. Becker (1992), which proved that employee commitment "hides" behind satisfaction with a leader's goals and values. J.P. Meyer and N.J. Allen (1997) also support the idea that it is likely that employees' commitment to their organization is the product of employees' commitment to their leader.

Owing to the transactional nature of exchange between transactional leaders and employees, transactional leadership has less significant associations with employees' commitment. The association with employees' continuance commitment in both leadership behavior cases is very weak. This can be attributed to a continuance commitment and economic benefit interlinks. Laissez-faire leadership, given its non-intervening nature, has negative consequences on all employee commitment dimensions and satisfaction with an immediate supervisor. The results are consistent with the literature indicating that laissez-faire leadership does not yield positive organizational behavior and produces negative impacts on followers' respect for their supervisors (Lee, 2005).

The findings of this study reveal that transformational leadership has positive associations with the dimensions of employee commitment and satisfaction with an immediate supervisor, and that transformational and transactional leadership are important in relation to followers' organizational commitment. Such findings clearly indicate the important role of transformational leadership, and the importance for organizations to nurture transformational leadership qualities among their leaders.

Conclusion

The results of this study confirm earlier findings on the relationship between leadership style and commitment dimensions (affective, normative and laissez-faire) and the positive association between satisfaction with an immediate supervisor and commitment. The important finding of this study is that transformational leadership style has a greater influence on affective employee commitment than on normative employee commitment. It can be suggested that a transformational leadership style has positive associations with employees' commitment in psychological, value, morale and economic terms. This finding also led us to conclude that transformational leadership is a better predictor of employee commitment. In a similar manner, transactional leadership style is related to both affective and normative commitment. Transactional interaction between a supervisor and an employee influences employees' affective identification with an organization and their feelings of responsibility. According to the findings, transformational and transactional leadership styles have a very weak influence on continuance commitment. This evidence lends support to the fact that continuance commitment refers to commitment based on the costs that an employee associates with economic benefit. It is also found that satisfaction with an immediate supervisor in Lithuania manufacturing companies relates positively with employees' affective commitment. Thus, in high quality exchanges characterized by affective commitment, satisfaction and professional respect, leaders create positive experiences for their employees. A laissez-faire leadership style was found to be negatively associated with employees' commitment and may intervene in the work affairs of leader-employee interaction or inhibit the successful development of an organization.

Implications for Future Research

In future research, it would be interesting to assess causal relationships and replicate this study in a longitudinal design to determine if the findings tested are likely to be sustained. Future studies can benefit by including leadership styles and other variables such as loyalty or self-efficacy beliefs in determining employee commitment. Comparisons can also be made between the service and manufacturing industries.

References

Allen, N. J., & Meyer, J. P. (1990). The measurement and variables associated with affective, continuance and normative commitment to the organization. // Journal of occupational psychology, 63.

Alley, W. and Gould, R.B. (1975). Feasibility of Estimating Personnel Turnover from Survey Data: A Longitudinal Study, Air Force Human Resources Laboratory.// Brooke Air Force Base, TX.

Antonakis, J. (2001). The validity of the transformational, transactional, and laissez-faire leadership model as measured by the Multifactor Leadership Questionnaire (MLQ 5X).// Walden University, Minneapolis, MN.

Avolio, B. J., & Bass, B. M. (1991). The full range of leadership development: basic and advanced manuals. // NY: Bass, Avolio & Associates.

Avolio, B.J., Bass, B.M. & Jung, D.I. (1999). Re-examining the components of transformational and transactional leadership using the Multifactor Leadership Questionnaire.// Journal of Occupational and Organizational Psychology, 72.

Avolio, B. J., & Bass, B. M. (2002).Manual for the Multifactor Leadership Questionnaire (Form 5X).// Walden University, Mineapolis, MN.

Bass, B. M. (1985). Leadership and performance beyond expectations. // NY: Harper & Row.

Bass, B.M. (1990). From Transactional to Transformational Leadership: Learning to share a Vision.// Organizational Dynamics, 18 (3).

Bass, B.M. & Avolio, B.J. (1993). Transformational leadership: a response to critiques. // Leadership Theory and Research: perspectives and Directions. Academic Press, San Diego, CA.

Becker, H. S. (1960). Notes on the concept of commitment. // American journal of sociology, 66, 32-40.

Becker, T. E. (1992, May). Foci and bases of commitment: are they distinctions worth making?// Academy of Management Journal, 35.

Bycio, P., Hackett, R. D., & Allen, J. (1995). Further assessments of Bass's conceptualization of transactional and transformational leadership.// Journal of applied psychology, 80.

Brief, A. P., Aldag, R. J., & Wallden, R. A. (1976). Correlates of supervisory style among policemen. // Criminal justice and behavior, 3.

Brown, F., & Dodd, N. (1999). Rally the troops of make the trains run on time.// Leadership and organizational development, 20.

Burns, J. M. (1978). Leadership.// NY: Harper & Row.

Carlson, D. S. & Perrewe, P. L. (1995). // Institutionalization of organizational ethics through transformational leadership. Journal of Business ethics, 14.

Chemers, M. M. (1997). An integrative theory of leadership. // Mahwah, NJ: Lawrence Eribaum associates.

Deluga, R.J. (1992). The relationship of leader-member exchange with laissez-faire, transactional, transformational leadership in naval environments.// Impact of Leadership. Centre of Creative Leadership, Greensboro, NC.

Glisson, C. & Durick, M. (1988). Predictors of job satisfaction and organizational commitment in human service organizations. // Administrative Science Quarterly, 33.

Hamton, R., Dubinsky, A.J. and Skinner, S.J. (1986). A model of sales supervisor leadership behavior and retail salespeople's job-related outcomes.// Academy of Marketing Science, Vol. 14.

Hartog, D. N., Muijen, J. J., & Koopman, P. L. (1997). Journal of Occupational & Organizational Psychology, 70.

Howell, J.M. and Avolio, B.J. (1993). Transformational leadership, transactional leadership, locus pf control, and support for innovation: key predictors of consolidated business unit performance.// Journal of Applied Psychology, Vol. 78.

Howell, J.M. and Hall-Merenda, K.E. (1999). The ties that bind: the impact of leader-member exchange, transformational and transactional leadership, ands distance on predicting follower performance.// Journal of Applied Psychology, Vol. 84.

Hunt, J.G. and Liesbscher, V.K.C. (1973). Leadership preference, leadership behavior and employee satisfaction.// Organizational Behavior and Human Performance, Vol.9.

Jaros, S. J., Jermier, J. M., Koehler, J. W., & Sincich, T. (1993, May). Effects of continuance, affective and moral commitment on the withdrawal process and evaluation.// Academy of Management Journal, 36.

Jaussi, K.S. (2007). Attitudinal commitment: A three-dimensional construct. //Journal of Occupational and Organizational Psychology, 80.

Kraut, A.I. (1970). The Prediction of employee Turnover by Employee Attitudes.// American Psychological Association, Boston, MA.

Lee, J. (2004). Effects of leadership and leader-member exchange on commitment.// Leadership and Organization Development Journal, Vol.26.

Meyer, J. P., & Allen, N. J. (1997). Commitment in the workplace: Theory, research and application.// London: Sage publications.

Meyer, J. P., & Allen, N. J. (1984). Testing the "side-bet theory" of organizational commitment. Some methodological consederations.// Journal of Applied Psychology, 69.

Meyer, J. P. & Allen, N. J. (1993). Commitment to organization and occupations: extension of a three-component model.// Journal of Applied Psychology, 78(4).

Meyer J. P. & Herscovich, L. (2001). Commitment in the workplace: toward a general model. // Human resources managment review, 11, 299-326.

Michael, C. E. & Sector, P. E. (1982). Causes of employee turnover. Journal of Applied Psychology, 67.

Morris, J. & Steers, R. M. (1980). Structural influences on organizational commitment. // Journal of Vocational Behavior, 17.

Mowday, R. T., Steers, R. M. & Porter, L. W. (1979). The measurement of organizational commitment.// Journal of Vocational Behavior, 14.

Newman, J.E. (1974). Predicting absenteeism and turnover: a field comparison of Fishbein's model and traditional job attitude measures.// Journal of Applied Psychology, Vol. 59.

O'Reilley, C.A. and Roberts, K.H. (1978). Superior influence and subordinates' mobility aspiration as moderators of consideration and initiating structure.// Journal of Applied Psychology, Vol.63.

O'Reilly, C., & Chatman, J. (1986). Organizational commitment and psychological attachment: the effects of compliance, identification and internalization on prosocial behavior. // Journal of Applied Psychology, 71.

Owen, H., Hodgson, V., & Gazzard, N. (2004). The leadership manual: your complete guide to effective leadership.// Pearson Professional Education.

Parasuraman, S., & Nachman, S. (1987). Correlates of organizational and professional commitment. // Group and Organizational Studies, 12.

Porter, L. W., Steers, R., Mowday, R. & Boulian, P. (1974). Organizational commitment, job satisfaction and turnover among psychiatric technicians.// Journal of Applied Psychology, 74.

Porter. L.W., Campon, W.J. and Smith, F.J. (1976). Organizational Commitment and managerial turnover: a longitudinal study.// Organizational Behavior and Human Performance, Vol. 9.

Randall, D. M. & O'Driscoll, M. P. (1997, May). Affective versus calculative commitment: human resource implications. // Journal of Social Psychology, 137.

Reichers, A. E. (1985). A review and conceptualization of organizational commitment. // Academy of Management Review, 10.

Romzek, B. S. (1990). Employee investment and commitment: the ties that bind.// Public Administration review, 50, 374-381.

Rowden, R. W. (1999). The relationship between charismatic leadership behaviors and organizational commitment.// The Leadership and Organization Development Journal, 21/1.

Rowden, R.W. (2000). The relationship between charismatic leadership behaviors and organizational commitment.// The Leadership & Organization Development Journal, 21/1.

Salancik, G. (1977). Commitment and the control of organizational behavior and belief.// St. Clare Press, Chicago, IL.

Seltcer, J. and Bass, B.M. (1990). Transformational leadership: beyond initiation and consideration.// Journal of Management, Vo.16.

Simon, L. (1994). Trust in leadership: Its dimensions and mediating role.// Kansas state university, Manhattan, KS.

Stogdill, R. M. (1974). Handbook of leadership. // NY: Appleton century-crofts.

Suliman, A. M. & Isles, P. A. (2000). The multidimensional nature of organizational commitment in a non-western context.// Journal of management development, 19(1).

Taylor, S. (1998). Employee resourcing. // London: Institute of personnel and development.

Walton, R. E. (1985). From control to commitment in the workplace.// Harvard Business Review, 63.

Ward, E. A. & Davis, E. (1995, Summer). The effect of benefit satisfaction on organizational commitment.// Compensation & Benefits Management.

Yukil, G.A. (1989). Leadership in Organizations.// Prentice-Hall, Englewood Cliffs, New Jersey.

An Introduction to the Capital Market of a Leading Petrochemical Company in Croatia: Case Study

Marina Klačmer Čalopa, Goran Bubaš, Ksenija Vuković*

Abstract:

The Croatian company under state ownership that underwent the process of an introduction to the capital market was the leading regional petrochemical company, INA Oil Industry. The process of introduction to the capital market started in 2006 when the Croatian government announced that it will sell 15% of INA shares to small investors, Croatian citizens with some pre – emptive rights and under special conditions. In the text, the authors describe the short-term and long-term performance of shares, factors that influence the perception of privatized companies and the phenomenon of underpricing of shareholder issues. Finally, the introduction to the capital market of INA shares is briefly presented as a case study. This paper reports the research results of a survey of the perception of INA company and of the introduction to the capital market of INA's shares by the potential small investors and the influence of those perceptions on stock purchase motivation.

Keywords:

JEL:

1. Introduction

This paper analyzes a case of the introduction of state-owned shares to the capital market of Croatia and the results of a survey on the perceptions among potential small investors of the company that was privatized. In the second half of 2006, the government of Croatia announced that it would sell 15% of the shares of the leading regional petroleum company, INA Oil Industry (INA), to small investors, primarily to Croatian citizens with some pre-emptive rights and under special conditions. This process of introduction to the capital market of INA shares is briefly presented as a case study. In addition, to capture at least some of the sentiment of potential investors, the authors performed a survey on the perceptions held by potential small investors of various attributes of INA, and also of various other elements associated with the privatization of INA that could have influenced their decisions. It must be noted that the privatization of INA began in 2002 when another regional petroleum company, MOL (based in Hungary), purchased 25% plus one share of INA. The introduction process of INA shares occurred in 2006 and in this paper will be referred to as the introduction to the capital market of INA shares.

Going public is always a large structural process for any company. It is connected with share issue privatization (Wang, Xu, and Zhu 2004) and government decisions to choose a public privatization method, especially in the case of formerly state-owned companies. The main reason for privatization is to create market-oriented companies competent to conduct business in an internationally competitive environment. The largest process of privatization started in the 90s when most transitional countries started to change their economic,

*Čalopa:
Faculty of Organization and Informatics Varaždin
Pavlinska 2, Varaždin, Croatia
e-mail: marina.klacmer@foi.hr

*Bubaš:
Faculty of Organization and Informatics Varaždin
Pavlinska 2, Varaždin, Croatia

*Vuković:
Faculty of Organization and Informatics Varaždin
Pavlinska 2, Varaždin, Croatia

organizational and market orientation. The corporations often chose the "go public" model after they became privatized. Through the process of introduction to the capital market, small investors for the first time had the opportunity to buy company common stocks and generate an opportunity for significant liquidity. The decision to go public for government-owned enterprises may have the following positive effects (Brau and Fawcett 2006; Gupta 2005; Megginson, Nash, and Van Randenborgh 1994; Pagano, Panetta, and Zingales 1998): (i) improved financial liquidity; (ii) increased share value; (iii) increased profitability; (iv) greater productivity and operating efficiency; (v) increased capital investment and investment in R&D; (vi) increased real sales; (vii) an increased workforce; (viii) the creation of public shares that can be used in future acquisitions, and (ix) not having to repay the raised capital, as is the case with debt securities. These potential benefits create interest in both stable and developing economies.

According to Braw and Fawcett (2006), the motives for going public may be to lower the cost of capital, to improve the firm's public relations and reputation, to facilitate takeover, or to enable insiders to sell their stock. In their survey, these authors revealed that the timing of going public was most influenced by the overall stock-market conditions, industry conditions, and the need for capital growth. Jain and Kini (1999) claim that going public is a stage in the evolution of a public company, and that for private firms this process may reflect the motivation of the directors of the firm to finance investment and expansion, rebalance accounts after periods of growth, subsequently sell a firm, and/or the assessment that growth potential is decreasing and that it is opportune for the directors to sell their holding. It must be noted that in the post stage of this type of privatization, the company may survive, fail, or be acquired, all of which is determined by a number of rather complex variables.

Various countries have different backgrounds, motives and experiences with regard to their state-owned firms going public. The history of going public shows some important differences between the markets in the USA and Europe (Ritter 2003). European markets have only recently started their development, especially in Central and Eastern Europe. At the beginning of their development, they used different methods and mechanisms for privatizing their state-owned companies. One interesting difference between the markets in the USA and Europe is that European companies (especially those from continental Europe) that are privatized by going public are usually much older than those in the USA. In the UK, large firms with issues greater than £5 million are more likely to choose a public offering instead of listings on the capital market (Goergen, Khurshed, and Mudambi 2006), with state-owned companies yielding relatively large returns to investors (Stevenson 2006), at least at the short-run. In Germany, the common result of going public is companies being controlled by old shareholders or new shareholder groups, while in the UK the post ownership is more widely dispersed (Goergen and Renneboog 2007). The Italian stock market has specific characteristics that are also shared with some other countries in continental Europe, since older and larger companies are more likely to be motivated towards going public (typical are on average up to 8 times larger than in the USA), and the likelihood of an public offering is also greater for industrial sectors with a high market-to-book ratio and for those firms that expect to rebalance their accounts after periods of growth (Pagano, Panetta, and Zingales 1998).

Research also shows that companies reduce their cost of bank credit after going public. One of the reasons for this effect could be connected with better public information and transparency, which are requirements for all listed companies. In Canada there was a tradition of state-owned and government supported public enterprises, many of which were gradually sold to private investors (Taylor and Warrack 1998). One of the reasons why Canada is rather government oriented is because of its relatively small financial and economic markets. Sometimes, under monopolistic circumstances, a country can be more competitive on the international market. In the UK, large and multinational companies are more likely to choose going public, especially when the market is "hot", while for small issues the more frequent choice is placing, which often avoids the costs and risks of the public issuing of shares (Goergen, Khurshed, and Mudambi 2006). Going public in China was a major form of privatization for large and better-performing state-owned and state-controlled enterprises. Among other things, this was motivated by the potentially positive effects on company profitability and on the reduction of debt finance (Wang, Xu, and Zhu 2004). Privatization plays a very important role in the countries of the European Union (Schneider 2003) as an element of structural reform. Still, the largest numbers of state-owned companies that underwent privatization have been in Japan. After Japan, the privatization of state-owned companies through going public was relatively frequent in the 90s in European countries such as Great Britain, Italy, France and Germany. Also, the 90s were most important for transitional countries, as for most the privatization processes started at that time. All transition countries were at first non-market oriented, but they also had a large state sector that was considering various models of privatization. In the period from 1990 to 2000 in transitional countries, the largest number of state-owned companies that underwent the privatization were in Hungary and the Czech Republic.

2. The Short-term and Long-term Performance of Stocks

After an extensive review of literature, Deventer and Malatesta (1997) conclude that there is an abundance of evidence from capital markets in numerous countries of the underpricing of shares of state-owned companies. Hill

(2006) analyzed several theories that attempted to explain the underpricing of shares and presented some of the reasons for underpricing: the possibility to limit the size of stakes in the company; the plan to achieve more widespread share ownership; the intention of the directors to maintain control of the company; the potential to increase the scale of purchasing; the intention to encourage oversubscription; an effort to persuade share owners to keep their shares; and the possibility of excessive demand among small investors. Other reasons may include the following: uncertainty about the value of the company; the existence of hot and cold time periods; privatization as a reason for the going public; the specific industry group of the company undergoing on capital market (Gerbich, Levis, and Venmore-Rowland 1995); the immaturity of the capital market; privatization in regulated industries; the intention of government officials to increase domestic political support for privatization or to achieve other benefits (Dewenter and Malatesta 1997); avoidance of the risk that the after-market price will fall below the offer price (Tiniç 1988); analyst over-optimism (Rajan and Servaes 1997); the over-optimism of gray market investors and the volume of gray market trading (Cornelli, Goldreich, and Ljungqvist 2006); the creation of a signal to investors that the firm is good for investment (Kim, Krinsky, and Lee 1993); the aspiration of underwriters to acquire analyst research coverage with stock purchase recommendations; and building stock price momentum for the sales of insiders' stocks after the expiration of the lockup period (Cliff and Denis 2004).

Underpricing and good stock performance on the first day of trade may be a means for generating publicity among investors that raises stock value on secondary markets (Chemmanur 1993). For instance, the state-owned company in Croatia (the petroleum company INA) to be privatized through an introduction to the capital market saw its stock value increase by almost 68% in the first hour of trade. This is one of the outcomes of a going public model of privatization that signals stock value to potential investors.

There are empirical findings that the initial returns from going public are positively related to limited investor accessibility to the shares in the primary market and to the level of risk associated with the absence of a substitute for a new issue in the secondary market, as well as negatively related to offering size (Mauer and Senbet 1992). It must be noted that, in some cases, when a developing market reaches a critical mass of investors and listed firms, it can experience a "snowballing" effect, with new listings of firms and new investors entering the market. This can be stimulated by relatively limited governmental action (Subrahmanyam and Titman 1999). One of the interesting anomalies related to the performance of the stocks of companies that have gone public is the occurrence of abnormally large returns on the first day of trade as an indication of deliberate underpricing to subscribing investors (Gerbich, Levis, and Venmore-Rowland 1995). A recent study reported that an average first day return in 38 countries was in the range of +5% in Denmark to +257% in China (Ritter 2003).

Despite numerous positive reasons for the privatization of state-owned companies and the frequent relatively large short-term returns for investors, research findings indicate that on average there is a long-term underperformance of the stocks of post public offering firms. For instance, Stehle, Ehrhard, and Przyborowsky (2000) found that in the German capital market public offering did not perform as well as a portfolio of stocks of other companies that had comparable market capitalization. Nevertheless, the degree of underperformance was considerably less than in the US market.

3. Factors that Influence the Perception of Privatized Companies and Future Stock Performance

Government ownership and the decisions of the management of a state-owned company regarding privatization and share issues send diverse signals to potential investors. A one-time sale of all government-owned shares may signal the intention to transfer control to private investors, or that the government is trying to dump a company that is considered a problem (Sun, Tong and Tong, 2002). On the other hand, selling a smaller proportion of shares may signal the government's confidence in the company, or that the government's intention to continue interventions in its operation. Other signals that may have a positive effect on the interest of potential investors and the perception of firm quality are the choice of a prestigious underwriter, a reputable accounting firm for analysis, the commitment of insiders to a long lockup, a history of strong earnings, and venture capital backing (Brau and Fawcett 2006). One more reason for underpricing may be to signal the "value" of the firm to uninformed investors, with the implication that the amount of future cash flows would be in proportion to the amount of shares retained in the portfolio of the issuer (Grinblatt and Hwang 1989).

Along with the pricing and distribution services, the underwriters also provide related marketing services for issuers that occur in the pre- and post-offer period (Logue et al. 2002). These activities may also include diverse signals aimed at raising the interest of investors. A reputable and big underwriter will be more ready to support an overpriced public offering than a smaller one because the former underwriter is potentially more skilled and has a better working performance (Lewellen 2006). The reputation and quality of the underwriter positively influence the efficiency of the sale of stocks, the perception of the investors of the quality of an issuer, and the confidence of investors that the shares are being sold at a fair price. In turn, this can support the effective positioning of the stock price (see: Logue et al. 2002).

Auditor credibility is another way to signal favourable future earnings, and entrepreneurs may find it reasonable to select credible auditors for the going public (Menon and Williams 1991). Institutional investors are the most informed investors that have a central position in privatization processes with the potential to influence the price of shares (Jenkinson and Jones, 2007). The announcement of the interest of institutional investors in buying shares is one more way to signal potential share value. Finally, the amount of analyst coverage for a firm around the date of the public issue is associated with the superior performance of stocks in the mid-term period after the public offering (Das, Guo, and Zhang 2006). This should have a positive impact on first day returns.

Media provide diverse information that influences the impressions of firms that are going public and their stock turnover on the first day of trade, but the media can also reflect the public evaluation of a company and serve as a propagator of firm legitimacy (Pollock and Rindova 2003). The investors' valuation of the firms' management team may be one of the most important factors that influence investment decisions, while the public perception of management prestige can signal organizational legitimacy (Lester et al. 2006), with a potential positive effect on investor valuations of firms. Furthermore, the credibility of management and its reputation for extracting only low levels of private benefits may also have a positive effect on the valuation of the firm by minority shareholders (see: Gomes 2000). Venture capitalists are often members of the board of directors, and venture-backed firms may perform better after going public because they can participate in the selection of the firms' management and may continue to provide access to capital for the firm (Brav and Gompers 1997). Finally, firms that have a CEO who is the founder of the firm, those with more stable boards of directors, and with an outside blockholder present are more likely to survive (without takeover) during the first five years after going public (Howton, 2006).

4. The Case of the Privatization of the INA Petroleum Company

Privatization in the form of the deliberate sale of state-owned companies occurs in countries around the world, with growing evidence that such forms of privatization are associated with both promises and perils (for an overview of privatization worldwide, see Megginson and Netter, 2001). The privatization model in Croatia was depended on the company, and was also part of a social programme resting on a coupon privatization process. Until this time, Croatia did not have a defined model of privatization, and decisions regarding the form of privatization depended on the company's activity, its organizational structure, and its importance to the Croatian economy. The legal basis of Croatian privatization was the Transformation Act of 1991 and the Privatization Act of 1993, amended in 1996. It must be noted that in Croatia large infrastructure and utility industries, such as those in the fields of oil and telecommunications, are privatized on the basis of special laws. Most of the early privatization activities in Croatia have generally been perceived as socially unacceptable and economically inefficient (see: Druzic and Gel, 2006).

Until recently, the process of an introduction to the capital markets in Croatia was not a standard mode of raising capital for financing company projects, i.e. for further company development. The reasons for this are privatization processes that from the beginning of the 1990s were conducted by using the model of employee shareholding or by selling the company to a strategic partner.

In July 2003, the Croatian government decided to offer 25% plus one INA shares to INA's strategic partner - Hungarian Oil and Gas (MOL). That process marked the first phase of INA's privatization, when 2,500,001 shares of a nominal value of EUR 121.62 (HRK 900) per share were sold to the strategic partner MOL. Having acquired 25% plus one shares, MOL gained the right to participate in strategic decision-making in INA. Through this strategic partnership, INA became part of a regional partnership in the oil and gas industry.

The introduction to the capital market of 15% of shares was announced by the Croatian government in October 2006. There was also a potential option to sell an additional 2% of INA shares. This model of privatization marked the second, more significant privatization stage of the biggest oil company in Croatia. International institutional investors based outside Croatia were also able to buy regular INA shares. In parallel to the process of introduction to the capital market, there was the gathering of necessary documentation for the listing of regular INA shares on the First Quotation of the Zagreb Stock Exchange. The preparation for attracting institutional investors was also made by listing regular INA shares on the London Stock Exchange. The listing of shares on the First Quotation of the Zagreb Stock Exchange was supposed to encourage the development of the Croatian capital market and to encourage a greater number of Croatian citizens to actively participate in the capital market.

5. INA Introduction to the Capital Market and the Perceptions of Potential Small Investors

To investigate the perceptions of potential small investors in the INA company, and of the introduction to the capital market of INA shares, a survey was performed regarding the perceptions of different attributes of INA and various aspects of the introduction to the capital market of INA shares. The data collected from this survey were analyzed to determine the elements that influence motivation to purchase INA shares in the process of its introduction to the capital market.

5.1. Problem and Hypotheses

The main aim of this study was to investigate if the perceptions of the attributes of the INA company and of the aspects of the introduction to the capital market of INA shares influence the motivation of potential small investors to buy the shares of INA in the process of its introduction.

The first hypothesis of this study is connected to the main aim of this paper, and is defined as follows:

H1: The perceptions among potential small investors with regard to the various attributes of the INA company and different aspects of the introduction of INA shares to the capital market are related to the investors' motivation to purchase INA shares in the process of introduction.

Since diverse types of attributes of the INA company and aspects of the introduction to the capital market of INA shares were investigated in the survey, one important research question was related to the possible categorization of those attributes and aspects. Therefore, a second hypothesis was defined:

H2: The perceptions of the attributes of the INA company and different aspects of the introduction of INA shares to the capital market can be categorized by the basic factors influencing the motivation of potential small investors to purchase INA shares.

5.2. Method

A survey was designed with 95 items related to the perceptions of different attributes of INA and various aspects of its introduction to the capital market, and also to variables that were an indication of the intent to purchase INA shares, and demographic data. The convenience sample in the survey consisted of 171 subjects aged 18-72 years, of whom 59% were male, and 89% were employed or retired. The data collection was performed by students who were asked to administer the survey to adults who had considered purchasing INA shares. The survey was performed before the shares were listed on the Croatian capital market.

5.3. Results of data analysis

A correlation analysis was performed between the variables of the survey that represented the perceptions of different attributes of the INA company and aspects of the introduction of INA shares, and the motivation to purchase the shares of INA in the introduction process. The motivation variable was represented with the survey item "If I had available funds and an opportunity to do so, I would purchase as many shares of the INA company under the discount price as I could." All of the items in the survey that were used in this correlation analysis were statements (see Table 1) to which the subjects responded on a Likert-type scale ranging from "1 – totally untrue of me", to "5 – totally true of me". As can be concluded from the data presented in Table 1, as many as 41 variables were found to have a statistically significant positive correlation at the level of $p<0.01$ with the motivation to purchase INA shares. The highest correlation ($r=0.51$) was found between motivation to purchase INA shares and the assessment that the number of people who had signed up to purchase INA shares was an indication of the profitability of investment in that company. Also, a high influence on motivation was the expectation of a rise in the value of INA shares in the following 2-3 years ($r=0.50$; this opinion was shown in the media) and in the perception of the sincerity of the government of Croatia and the transparency of the introduction process ($r=0.40$). The motivation to purchase INA shares was also influenced by the perception of the good relationship of INA with its customers ($r=0.39$) and by the earlier steep rise in the value of shares of Pliva ($r=0.38$), the leading pharmaceutical corporation in the region. Other diverse attributes of INA and aspects of introduction to the capital market also positively influenced the motivation to purchase shares. In addition, several attributes of INA and aspects of the introduction process were found to have a statistically significant ($p<0.01$) negative correlation with the motivation to purchase INA share.

To categorize the attributes of INA and the aspects of the introduction process that had a statistically significant positive or negative correlation with the motivation to purchase shares of INA, a factor analysis of 66 related variables was performed. The results of this analysis are presented in Table 2 (only the five variables with highest loading on each the uncovered factors are displayed). Three factors shown in Table 2 explain 30% of the variance and represent the most interpretative factor solution for a given set of variables and data collected from subjects ($N=171$). It must be noted that 21 factors were found in the initial unrotated factor solution with eigenvalues greater than 1.0, and that the Scree test indicated that 3-4 factors should be used for further analysis with varimax rotation. The variables with the predominant projection of the first factor (F1) in Table 2 appear to be related to the perceptions of the positive corporate image of the INA company. The second factor (F2) in Table 2 can be interpreted as the perceptions of the political aspects of the introduction process of INA and the privatization environment in Croatia. Finally, the third factor (F3) is related to shareholder pessimism and the elements of negative corporate image of the INA company. It must be noted that because of space limitations, only the first five variables with the highest loading on respective factors are displayed in Table 2.

Correlation withmotivation	PERCEPTIONS OF THE ATTRIBUTES OF THE INA COMPANY AND OF THE ASPECTS OF THE INA INTRODUCTION PROCESS
.51	It is my assessment that the number of people who have signed up for the purchase of the shares of INA is an indication that investment in this company will be profitable.
.50	I expect that the price of shares of the INA company will considerably increase in the next 2-3 years.
.40	I have confidence that the activity of selling INA shares conducted by the government of Croatia is sincerely motivated and transparent.
.39	I believe that the relationship of the INA company and its customers is especially good.
.38	The sudden increase in the value of shares of the Pliva† corporation before takeover has had a positive influence on my view that people who buy shares of the INA company can make a good profit.
.38	I assume that the introduction to the capital market of INA shares is politically motivated, with the goal that people who become shareholders in this company are in the end satisfied with their purchase of INA shares.
.37	I believe that, regarding its geographical position in the region, INA has a great strategic advantage.
.36	In my opinion, the products and services of INA are above average on the domestic market.
.35	I consider as very attractive the promise that the owners of the shares of INA that are purchased during the introduction process, who do not sell their stock in the first 12 months after purchase, will receive one more extra complimentary share.
.35	I assume that INA will employ more personnel than they will dismiss.
.34	I believe that especially negative events should not be expected in the business environment of INA in the next several years.
.32	I consider INA to be a well-organized firm.
.31	I notice that INA, over a longer time period, and not only in the last month or two, is more and more admired in the eyes of its customers/clients.
.30	I think that I can always rely on the quality of INA products.
.29	In my opinion, the management of INA is known for its good decisions.
.29	I think that the production facilities of INA are very modern.
.28	It is my opinion that the generally low interest rates for bank savings have a considerable influence on the assessment of profitability of investment in a company like INA.
.28	I think that INA stands out by its size in relation to other similar companies in the region.
.27	I do not see any reason for a decrease in the production of INA in the next several years.
.26	I think that the business results achieved by INA in the last several years have been very good.
.25	There is greater risk of losing the value of cash deposited in a bank than there is of losing by investing in a company like INA.
.25	I think that INA is good at combining exploration directed at discovering new oil and gas deposits with the activities of production, distribution and sales.
.24	I see the biggest advantage of INA in its well-developed retailing network.
.23	I assume that the management of INA will be in the hands of conscientious and competent people.
.23	I suppose that the eventual obsoleteness of some production facilities will not have a serious negative impact on the profitability of INA.
.22	INA has a great advantage because of the numerous qualified experts that it employs.
.22	The influence of the state on the INA company is predominantly stimulating and oriented toward its development.
.22	I consider the product prices of INA to be very competitive.
.22	According to my insight into the content of the electronic (TV, radio, Internet) and printed media (daily and weekly newspapers and magazines), the marketing of INA products is very good.
.21	I do not expect that in the near future (several years) there will be any problem for INA regarding raw material and crude oil for its products.
-.21	I have considered that restrictions on carbon dioxide emissions on account of global warming can have a negative impact on the business activities of energy companies like INA.
-.21	I am aware that the inability of INA to modernize its refineries in Sisak and Rijeka†† on time and comply with the European norms for fuel quality may have a negative impact on its business success.
-.21	In my opinion, INA has numerous internal weaknesses that have a negative impact on its business.
-.21	I believe that some other energy/petrochemical companies in the wider region are better placed as leaders on the market than is the case with INA.
-.23	It seems to me that the great competitors of INA are better organized and more efficient.
-.24	I believe that the reputation of INA as the leading petrochemical company in the region has been impaired during the last 2-3 years.
-.25	It is my assessment that Croatia is an unstable country in which the long-term stability of a company like INA is questionable.
-.26	I think that the events in the Middle East, and in other countries that produce crude oil (e.g. Russia, Venezuela, Mexico) can have a negative impact on the profitability of INA.
-.30	I think that behind the selling of shares of INA through an introduction process there are some motives that are hidden from the general public.
-.30	I am aware that there is possibility that dividends paid for INA shares will be no greater than the interest rate for cash deposits in a bank.

† Pliva is a leading regional pharmaceutical company.
†† Sisak and Rijeka are the locations of two major refineries of INA.

Table 1. Attributes of the INA company and aspects of the introduction process of INA shares that are correlated with the motivation to purchase the shares (N=171; p<0.01 for all correlations)

To test if the three factors presented in Table 2 were related to the motivation to purchase INA shares, the factor scores were calculated and the factors were correlated with the motivation variable "If I had available funds and an opportunity to do so, I would purchase as many shares of the INA company at the discount price as I could." It was found that the first factor (F1) correlated 0.26 ($p<0.01$), the second factor (F2) correlated 0.45 ($p<0.01$), and the third factor correlated -0.19 ($p<0.05$) with the motivation to purchase INA shares. It can be concluded that the factor political aspects of the introduction process of INA and the privatization environment in Croatia (F2) was in highest correlation with the motivation to purchase INA shares.

PERCEPTIONS OF THE ATTRIBUTES OF INA AND OF THE ASPECTS OF THE INA INTRODUCTION PROCESS	FACTORS*		
	F1	F2	F3
I think that I can always rely on the quality of INA products.	**.70**		
I consider INA to be a well-organized firm.	**.67**		-.31
I believe that the relationship of INA and its customers is especially good.	**.64**		
I think that INA is good at combining exploration directed at discovering new oil and gas deposits with the activities of production, distribution and sales.	**.61**	.34	
I have always considered INA to be a very profitable firm.	**.61**		
I expect that the price of INA shares will increase considerably in the next 2-3 years.		**.63**	
I have confidence that the activity of selling INA shares conducted by the government of Croatia is sincerely motivated and transparent.		**.61**	
It is my assessment that Croatia is an unstable country in which the long-term stability of a company like INA is questionable.		**-.55**	.34
I assume that the introduction to the capital market of the shares of INA is politically motivated with the goal that people who become shareholders of this company will in the end be satisfied with their purchase of INA shares.		**.53**	
I think that the introduction to the capital market of INA shares is directed toward improving the image of privatization that was formerly conducted in Croatia.		**.53**	
I notice that the market share of INA is decreasing in Croatia and in the wider region.	-.35		**.60**
In my opinion, INA has numerous internal weaknesses that have a negative impact on its business.	-.47		**.57**
I believe that the loss of market share has had an important negative impact on the business of INA.			**.55**
I do not believe that those who have an influence on the business of INA in the near future will keep in mind the interests of small investors.			**.51**
I think that INA has so far been too little concerned with unnecessary expenditures in its business operations.	-.34		**.48**

* Factor loadings below 0.30 are omitted.

Table 2. Potential categories of the attributes of the INA company and aspects of the introduction process of INA shares that are the results of factor analysis (N=171)

6. Conclusion

Numerous variables related to the perceptions of the attributes of INA and the aspects of introduction to the capital market of INA shares were analyzed by correlation and factor analyses. It can be concluded that the motivation to purchase INA shares was positively and negatively influenced by many variables whose number does not permit a more detailed elaboration of the findings in this paper. However, the first hypothesis (H1), that the perceptions among potential small investors of various attributes of INA and different aspects of the introduction process of INA shares are related to their motivation to purchase INA shares in their introduction to the capital market, is confirmed. A factor analysis was performed to test the second hypotheses and three general factors were revealed that were related to the positive perception of corporate image (F1), political aspects of the introduction process of INA and the privatization environment in Croatia (F2), and also to shareholder pessimism and the negative perception of the corporate image of INA (F3). Therefore, the second hypothesis (H2), that the perceptions of the attributes of the INA company and different aspects of the introduction process of INA shares can be categorized into basic factors based on the motivation of potential small investors to purchase INA shares, is confirmed. It must be emphasized that because of the rather small convenience sample in this study, the findings cannot be generalized.

The results of this study can be used to create interest in the process of introduction to the capital market and also to assist in marketing efforts that precede an introduction process. However, it is necessary to attempt to reproduce at least some of the findings in another introduction to the capital market of a large state-owned company.

References

Brau James C., Fawcett Stanley E. (2006) Initial Public Offerings: An Analysis of Theory and Practice, Journal of Finance, Vol LXI, No. 1, 399-436.

Brav Alon, Gompers Paul A. (1997) Myth or Reality? The Long-Run Underperformance of Initial Public Offerings: Evidence from Venture and Nonventure Capital-Backed Companies, Journal of Finance, Vol LII, No. 5, 1791-1821.

Chemmanur Thomas J. (1993) The pricing of Initial Public Offerings: A Dynamic Model with Information Production, Journal of Finance, Vol XLVIII, No. 1, 285-304.

Cliff Michael T., Denis David J. (2004) Do Initial Public Offering Firms Purchase Analyst Coverage with Underpricing?, Journal of Finance, Vol LIX, No. 6, 2871-2901.

Cornelli Francesca, Goldreich David, Ljungqvist Alexander (2006) Investor Sentiment and Pre-IPO Markets, Journal of Finance, Vol LXI, No. 3, 1187-1216.

Das Somnath, Guo Re-jin, Zhang Huai (2006) Analysts' Selective Coverage and Subsequent Performance of Newly Public Firms, Journal of Finance, Vol LXI, No. 3, 1159-1185.

Dewenter Kathryn L., Malatesta Paul H. (1997) Public Offerings of State-Owned And Privately-Owned Enterprises: An International Comparison, Journal of Finance, Vol LII, No. 4, 1659-1679.

Druzic Ivo, Gel Tomislav (2006) Swot Analysis & Privatisation In Croatia, Ekonomskianali168,http://www.doiserbia.nbs.bg.ac.yu/img/doi/0013-3264/2006/0013-32640668121D.pdf, accessed 10 September 2007.

Gerbich Marcus, Levis Mario, Venmore-Rowland, Piers (1995) Property initial public offerings: regulations, costs and price reactions Journal of Property Finance, Vol. 6 No. 1, 38-54.

Goergen Marc, Khurshed Arif, Mudambi Ram (2006) The Strategy of Going Public: How UK Firms Choose Their Listing Contracts Journal of Business Finance & Accounting, 33(1) & (2), 79–101.

Goergen Marc, Renneboog Luc (2007) Does ownership matter? A study of German and UK IPOs, Managerial Finance Vol. 33 No. 6, 368-387.

Gomes Armando (2000) Going Public without Governance: Managerial Reputation Effects, Journal of Finance, Vol LV, No. 2, 615-646.

Grinblatt Mark, Hwang Chuan Yang (1989) Signalling and the Pricing of New Issues, Journal of Finance, Vol. XLIV, No. 2, 393-420.

Gupta Nandini (2005) Partial Privatization and Firm Performance, Journal of Finance, Vol LX, No. 2, 987-1014.

HANFA (2006) Annual Report [Online], Croatian Financial Services Supervisory Agency, Zagreb, Croatia, http://www.hanfa.hr/uploads/AR_2006_final.pdf, accessed 10 September 2007.

Hill Paula (2006) Ownership Structure and IPO Underpricing, Journal of Business Finance & Accounting, 33(1) & (2), 102–126.

Howton Shelly W. (2006) Effect of Governance Characteristics on the State of the Firm after an Initial Public Offering, The Financial Review 41, 419-433.

Jain Bharat A., Kini Omesh (1999) The Life Cycle of Initial Public Offering Firms, Journal of Business Finance & Accounting, 26(9) & (10), 1281-1307.

Jenkinson Tim, Jones Howard (2007) IPO pricing and allocation: a survey of the views of institutional investors, American Finance Association Meetings (AFA), Social Science Research Network, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=891396, accessed: 10 September 2007.

Kim Jeong-Bon, Krinsky Itzhak, Lee Jason (1993) Motives for going public and underpricing. New findings from Korea, Journal of Business Finance & Accounting, 20(2), 195-211.

Klačmer Čalopa Marina, Bubaš Goran, Vuković Ksenija (2007), The 6th International Symposium, Economy & Business 2007, Economic Development and Growth, Scientific articles, Bourgas, Bulgaria, September 10 -14 2007.

Lester Richard H. S., Certo Trevis, Dalton Catherine M., Dalton Dan R., and Cannella, Jr. Albert A. (2006) Initial Public Offering Investor Valuations: An Examination of Top Management Team Prestige and Environmental Uncertainty, Journal of Small Business Management 2006 44(1), 1–26.

Lewellen Katharina (2006) Risk, Reputation, and IPO Price Support, Journal of finance, Vol LXI, No. 2, 613-653.

Logue Dennis E., Rogaiski Richard J., Seward James K., Foster-Johnson Lynn (2002) What Is Special about the Roles of Underwriter Reputation and Market Activities in Initial Public Offerings? Journal uf Business, vol. 75. no. 2, 213-243.

Mauer David C., Senbet Lemma W. (1992) The effect of the secondary market on the pricing oh initial public offerings: theory and evidence, Jurnal of financial and quantitative analysis, Vol 27, No. 1, 55-79.

Megginson William L., Netter Jeffry M. (2001), Froma state to market: A survey of empirical studies of privatization, Journal of Econimic Literature, Vol XXXIX, 321-389.

Megginson William L., Nash Robert C., Van Randenborgh Matthias (1994) The Financial and Operating Performance of Newly Privatized Firms: An International Empirical Analysis, Journal of finance, Vol XLIX, No. 2, 403-452.

Menon Krishnagopal, Williams David D. (1991) Auditor Credibility and Initial Public Offerings, The Accounting Review, Vol. 66, No. 2, 313-332.

Pagano Marco, Panetta Fabio, Zingales Luigi (1998) Why do Companies Go Public? An Empirical Analysis, Journal of Finance, Vol LIII, No 1, 27-64.

Pollock Timothy G., Rindova Violina P. (2003) Media Legitimation Effects In The Market For Initial Public Offerings, Academy of Management Journal, Vol. 46, No. 5, 631–642.

Rajan Raghuram, Servaes Henri (1997) Analyst Following of Initial Public Offerings, Journal of finance, Vol. LII, No. 2, 507-529.

Ritter Jay R. (2003) Differences between European and American IPO Markets, European Financial Management, Vol. 9, No. 4, 421–434.

Schneider Friedrich (2003) Privatisation in OECD Countries: Theoretical Reasons and Results Obtained, http://www.economics.unilinz.ac.at/schneider/PrivatizationOECDcorr.pdf , accessed: 10.09.2007.

Stehle Richard, Ehrhard Olaf, Przyborowsky Rene (2000) Long-run stock performance of German initial public offerings and seasoned equity issues, European Financial Management, Vol 6, No. 2, 173-196.

Subrahmanyam Avanidhar, Titman Sheridan (1999) The going public decision and the development of financial markets, Journal of Finance, Vol LIV, No. 3, 1045-1082.

Sun Qian, Tong Wilson H. S., Tong Jing (2002) How Does Government Ownership Affect Firm Performance? Evidence from China's Privatization Experience, Journal of Business Finance & Accounting, 29(1) & (2), 1-27.

Taylor D. Wayne, Warrack Allan A. (1998) Privatization of state enterprise: policy drivers and lessons learned International Journal of Public Sector Management, Vol. 11 No. 7, 524-535.

Tinic, Seha M. (1998) Anatomy of Initial Public Offerings of Common Stock, Journal of finance, Vol XLIII, No. 4, 789-822.

Wang Xiaozu, Xu Lixin Colin, Zhu Tian (2004) State-owned enterprises going public, The case of China, Economics of Transition Vol 12 (3), 467–487.

Law on the Privatization of INA Petroleum Industry [in Croatian] (2002) Narodne novine [Official Gazette], 32/02, Retrieved 26 March 2007, URL: http://www.vlada.hr/ina-privatizacija//materijali.html, accessed 10 September 2007.

HRM in Transition Economies: The Case of Serbia

Biljana Bogićević Milikić, Nebojša Janićijević, Mirjana Petković*

Abstract:

While the convergence vs. divergence debate has gained broad recognition among both HRM scholars and practitioners, it seems that a closer insight into current HRM developments in the South Eastern European transition economies has yet to be achieved. This paper, therefore, aims to highlight current HRM practices in Serbia and address possibilities for implementing the North American HRM model in a highly incompatible cultural setting. Investigation of HRM practices in Serbia is based on the "CRANET survey on Strategic International HRM" (Brewster et al., 2004) and on interviews with the HR managers of 38 randomly selected companies operating in Serbia. The Serbian national culture has been included a priori in the initial research design as an explanatory variable. Research findings suggest that both the incompetence of HR managers and professionals, as well as a slow-moving transition, need to be carefully considered to explain the distinctiveness of HRM in transition economies. On the other hand, national culture seems to be a key obstacle to the achievement of full convergence of performance appraisal and performance-related pay.

JEL: M14, M52

1. Introduction

Transition towards a free-market economy has encouraged Serbian companies to introduce management systems and to apply tools generally recognized and accepted in developed market economies and successful companies world-wide. Among others, there is a broad awareness and acknowledgment of HRM systems and policies, which are becoming an institutionally accepted pattern of behavior among Serbian companies, regardless of size, maturity, industrial sector or ownership structure. Moreover, the HRM function and HR departments have been set up by law for all government bodies and courts as mandatory. These developments are especially peculiar, keeping in mind that not so long ago HRM practices in Serbia were rather underdeveloped and focused primarily on administrative issues and a traditional approach to HR, as in other ex-socialist countries such as Slovenia (Zupan & Kaše, 2005), Bulgaria and the Czech Republic (Koubek & Vatchkova, 2004). In most Serbian companies, as in other former socialist countries, the "Personnel Function" usually meant maintaining personnel records, administering

* Bogićević Milikić:
Faculty of Economics, Kamenička 6,
11000 Belgrade, Serbia
e-mail: bbiljana@Eunet.yu

*Janićijević:
Faculty of Economics, Kamenička 6,
11000 Belgrade, Serbia
e-mail: jnebojsa@Eunet.yu

*Petković
Faculty of Economics, Kamenička 6,
11000 Belgrade, Serbia
e-mail: mirjana.ekof@beotel.yu

the beginning and termination of employment and placements, keeping records on paid leave, maternity leave and other issues required by the Labor Code (Koubek & Brewster, 1995; Tung & Havlovic, 1996). Core HR activities, such as recruitment, selection, training, career planning, compensation, performance appraisal and employee development were rather neglected and underdeveloped. Consequently, most personnel departments in transition economies were not involved in strategy, policy or operational HR decision making (Tung & Havlovic, 1996). Despite the organizational position, size and professional capacity of the "Personnel department", which actually reflect its power within the organization (Truss et al., 2002; Bowen et al., 2002), it was often grouped together with the legal unit and support operations unit within the same department, and employed lawyers (often only one person with a university degree) and many clerical staff lacking appropriate HRM competencies.

Nowadays many Serbian companies introduce the HRM function by looking at the "North American HRM model" (Brewster et al., 2004), irrespective of several critical differences between North American and Serbian institutional contexts, including cultural and social norms, legislation, economic environment, corporate governance, political environment, education system and tradition, any of which may prevent convergence (Holden, 2001). In this context, from the institutional perspective, it would be challenging to investigate whether HRM, widely accepted as a product of the North American setting (Gooderham et al., 2004), is easily transferable to the Serbian context, especially in view of the characteristics of Serbian national culture, such as high collectivism, high power distance, femininity and high uncertainty avoidance, all of which are quite opposite to the characteristics of the national culture of the US (Hofstede, 1980, 2001a, 2001b), and may strongly prevent full convergence. We believe that a better understanding of HRM policies and practices in Serbia will contribute to comparative HRM. While countries such as the USA, UK, Japan, France and Germany (Clark et al., 1999, p. 526) have been studied thoroughly, there is not much evidence on HRM practices in Central and Eastern European transition economies (Zupan & Kaše, 2005, p.883).

Convergence vs. Divergence in Comparative HRM

Comparative HRM refers to the research of HRM policies and practices in national or regional contexts, and is mainly focused on HR trends and differences in HRM policies across different countries or regions (Holden, 2001). A central theme in the area of comparative HRM is the convergence vs. divergence perspective, which is closely related to the following questions: does globalization imply convergence and, therefore, application of unified HR policies, or do the cultural and institutional differences between countries (or regions) make HR policies and practices more distinctive?

Convergence perspective dates back to the 1960s, and suggests that technological changes produce similar organizational models and work systems, therefore increasing the number of similar organizational structures (Kerr et al., 1960). Nowadays, convergence of management systems and practices is seen as the main result of the globalization process, which will unify not only institutional contexts in different countries, but will also lead to the convergence of national cultures (Vertinsky et al., 1990; Ralston et al., 1997). It may, therefore, be expected that cultural differences will become less important in the future (Child & Tayeb, 1983), and will result in the formation of a single, that is, optimal management model (Prentice, 1990). Some empirical studies confirm the dominance of the convergence perspective in the area of HRM (Sparrow & Hiltrop, 1994). However, most studies link the convergence perspective with the macro level, whereas on the micro level they allow for divergence through focusing on individual attitudes, behaviors and performances. Moreover, relevant literature reveals two versions of the convergence perspective (Gooderham et al., 2004). First, the traditional one explains the convergence of HRM practices through the pressure of market and technological forces, as well as through strong US influence on the rest of the world. The newer, institutional version, argues that institutionally driven convergence is taking place within the EU (p. 20).

Divergence perspective recognizes two approaches: cultural and institutional (Holden, 2001). Cultural differences cause differences in organizational behavior, including work motivation, communications, conflicts, work-orientation, definition of goals, performance appraisal and rewarding, decision making and management style (Rollinson & Broadfield, 2002), which proves that cultural values do have a prevailing influence on the every-day work-related behavior of employees and managers (Schuler et al., 2001). Since cultural differences are on the increase, globalization will not facilitate the convergence of national cultures, but rather the modification and spread of diversity of managerial technologies. Perhaps it is only in the US that culture is not regarded as the factor which dominantly shapes HRM practices, since all management theories and concepts are deeply rooted in the American national culture (Hofstede, 1980, 1991, 2001a, 2001b; Gomez-Mejia et al., 2001). Other factors that do not allow for the convergence of HR practices are the national R&D system, the historical roots of industrialization, the political system and tradition, corporate governance, the characteristics of the labor and

capital markets, the education system, and the legal system (Holden, 2001).

At this stage, there is a consensus in literature that: (a) both convergence and divergence forces strongly influence global business (Child, 1981), (b) full convergence has not yet been achieved (Brewster et al., 2004), (c) significant differences between different contexts facilitate further divergence (Mayrhofer et al., 2004), and (d) separation of influences of convergence and divergence forces is a priority in further research (Holden, 2001). This study, therefore, aims to identify both convergent and divergent HRM practices in Serbia to separate the influence of the two forces.

Serbian National Culture

Since culture has been most frequently used in the majority of articles as an explanatory variable in discussing differences or similarities between HRM practices in different countries (Clark et al., 1999), we shall include the Serbian national culture in the initial research design a priori as a credible explanatory variable. This is further justified by the fact that the characteristics of the Serbian national culture are completely opposite to those of the US culture (Hofstede, 1980, 2001a, 2001b). From different cultural studies (Hofstede, 1980, 1991, 2001a, 2001b, 2002; Hampden – Turner & Trompenaar, 1994; Schneider & Barsoux, 1997; Schuster & Copeland, 1996; Usunier, 1996; Schneider, 1992; Schwartz, 1992, 1994), we have chosen Hofstede`s research, since it included Serbia, or to be more precise, the former Yugoslavia.

The former Yugoslavia is the only Eastern European socialist country included in Hofstede's original research of national cultures. However, civil wars that broke out in Yugoslavia divided it into several independent states: Slovenia, Croatia, Macedonia, Bosnia and Herzegovina, Montenegro and Serbia. The disintegration of Yugoslavia gave rise to the question of whether there ever was a unique model of Yugoslav national culture. The former Yugoslavia was a controversial country with many differences within itself. However, since all nations of the former Yugoslavia are of Slavic origin (including Bosnian Muslims) and share a similar geographical and natural environment, it is reasonable to assume that the cultural assumptions of the nations of the former Yugoslavia are common to each. Hofstede himself confirmed this. After the disintegration of Yugoslavia, the original data he had collected were broken down into data on the national cultures of Slovenia, Croatia and Serbia (Hofstede, 2001b, 2002). All of the three cultures were classified as national cultures that are close to one another. It is likely that during the last ten years some divergent developments were recorded in these three national cultures, but it is too short a period for these cultures to have diverged significantly. Also, it is reasonable to assume that Serbian national culture has changed the least with regard to the original research, due to the very slow process of transition towards political democracy and a market economy. Thus, we may assume that data on the national culture of Yugoslavia actually reflects the Serbian national culture characterized by high power distance, high uncertainty avoidance, collectivism (low individualism) and femininity. According to Hofstede`s research (2001b), there are maor differences between Serbian and Anglo-Saxon cultures in terms of all of the above dimensions.

Research methodology

In order to obtain a closer insight into current HRM policies and practices in Serbia, in this exploratory study we have focused on the following research questions: (1) What are the elements of the Serbian HRM model?(What is the role of HRM function and HR strategy in Serbian companies, particularly with regard to its organizational position and scope? What is the role of HR strategy in the overall business strategy? How are HRM responsibilities distributed between HR department and line managers? What is the size of HR departments, etc.?) (2) Which HRM practices are adopted by the Serbian companies? (3) Are there any differences between the Serbian and the North American HRM models? (4) How can these differences be explained, especially in terms of the distinctive cultural milieus? (5) Is it more likely that the Serbian HRM model will converge with or diverge from the North American HRM model in the future?

In order to answer these questions, we conducted a survey in thirty eight randomly selected Serbian companies. The sample included 66,419 employees, of which 819 were employed in HR departments. The sample included medium and large companies from twelve industrial sectors (only companies from two sectors: agriculture, hunting, forestry and fishing, and local government were not included in the sample) in private (57.9%), state (26.3%) or mixed ownership (15.8%). Of the selected companies, 63% were established in Serbia, and the average level of maturity of selected companies was 43.9 years.

The research was carried out during 2006 in the form of face-to-face visits to HR directors, HR managers and specialists working within HR departments. Hence, an important criterion in the selection of companies for this research was easy, direct access to companies. We investigated the HRM model by using the CRANET (Cranfield Network project) survey on Strategic International HRM, which is explained in detail and used in research of HRM in Europe (Brewster et al., 2004, p. 451-463). Although this survey is meant for and used

in international research projects, we applied it within the national context for the following two reasons: (1) it enables comprehensive investigation of current HRM practices in Serbia, and (2) it would enable us to compare our findings with those obtained via the European HRM model (Brewster et al., 2004) and possibly add some new insights into the convergence-divergence debate, especially with regard to South-Eastern European transition economies.

After collecting completed questionnaires, we interviewed Senior HR /personnel managers, which made it possible for us to obtain accurate and more detailed data on the current HRM policies and practices in selected companies.

The HRM areas included in the research are: the role of the Personnel/HRM function (15 questions), staffing (8 questions) and flexible working practices (3 questions), employee development (10 questions) and appraisal (3 questions), compensation and benefits (4 questions), employee relations and communications (6 questions). We also collected some general data about selected organizations regarding their size, industry sector, employee structure by age, education and vocation, number of expatriates if any, main HR problems, etc. (21 questions). The data were processed by using descriptive statistics and the results are presented in the following section.

The Evidence

The role of Personnel/HRM function

Research findings about the role of HRM function in Serbia are as follows:

- The majority of the selected companies have a separate HR/Personnel department (86.8%).

- The average size of a Personnel/HR department, measured by the number of employees, is nearly 22 employees (21.6), whereas the size of HR departments ranges from 2 to a maximum of 200 employees.

- The ratio of the number of HR department staff members to the overall number of employees in a company varies from 0.3 to 9.4, with an average of 1.8 (employees in HR department per 100 employees). Keeping in mind that the average size of a company in the selected sample, measured by the number of employees, is 1,748 employees, the ratio of HR employment indicates that HR departments in Serbia are over-staffed compared, for instance, with the US, where the ratio for large companies is approximately 0.8.1 Furthermore, the majority of HR staff do not perform core HR activities, but engage in administrative tasks.

- In the majority of companies (75.7%), the Head of the Personnel/HR function does not sit on the main Board of Directors. In 60% of such companies, the general manager (GM) has the greatest responsibility on the Board for resolving personnel-related issues.

- The HR department is involved in strategy implementation in only 36.4% of the selected companies.

- One third of the companies surveyed (34%) do not systematically evaluate the performance of the personnel/HR function/department.

- Only 50% of selected companies have a written personnel/HRM strategy. The majority of companies do not have a written policy on employee communication (76.3%), equal opportunity/diversity (78.9%), flexible working practices (76.3%), or management development (57.9%).

- Regarding the responsibility for major policy decision making on HR issues, the research findings reveal mixed results (see Table 1).

	Line management	Line management in consultation with HR department	HR department in consultation with management	HR department
Pay and benefits	45.16	22.58	25.8	6.45
Recruitment and selection	33.33	23.33	30	13.33
Training and development	36.67	13.33	33.33	16.67
Industrial Relations	53.85	15.38	19.23	11.54
Workforce expansion/ reduction	36.67	36.67	20	6.66

Table 1. Responsibilities for major HR issues (% of companies)

At first glance, data in Table 1 suggest that the line management has the primary responsibility for HR issues (either solely or in consultation with the HR department). These data also indicate that the responsibility of the line management over the HR issues has increased over the last three years in 20% of the companies. However, the interviews with the HR managers reveal that the primary responsibility for HR issues is not with the line managers, but rather with the GMs.

Staffing practices

Regarding the current staffing practices, the research findings reveal the following:

- The number of companies that increased the total number of their employees by more than 5% in the last three years is equal to the number of companies that decreased the total number by as much (42%). The average increase came to 134.6%, and the average decrease to 29.6%.

- The following methods were used for downsizing purposes: recruitment freeze (31.25%), early retirement (56.25%), voluntary redundancies (81.25%), compulsory redundancies (18.75%), outplacement (6.25%), no renewal of fixed-term/temporary contracts (31.25%) and outsourcing (50%).

- The majority of companies experience difficulties in recruiting/retaining two staff categories: managers (55.3%) and professionals. When recruiting senior and middle managers, the majority of companies use internal recruitment rather than external, whereas for filling junior management positions they mostly go for external recruitment through advertising available positions in newspapers (60.6%). When recruiting candidates from the labor market, most companies specifically target university graduates (62%).

- In selecting the best candidates, the Serbian companies extensively rely on one-to-one interviews, data from application forms and letters of reference (see Table 2).

- The dominant working arrangements in Serbia are fixed-term contracts and shift working (see Table 3), although the use of some flexible arrangements, such as overtime (41.6% of companies), subcontracting/ outsourcing (27.8%), and temporary/casual arrangements (26.6%) has increased over the last three years.

Working arrangements	Not used	Less than 1%	1-5%	6-10%	11-20%	More than 20%
Part-time	51.8	27.6	13.8	3.4	0	3.4
Temporary/ casual	23.3	20	26.7	13.3	3.3	13.4
Fixed-term	18.7	6.2	3.2	3.2	3.1	65.6
Home-based work	91.2	5.9	2.9	0	0	0
Tele-working	82.4	5.9	2.9	0	5.9	2.9
Shift working	16.1	3.2	12.9	6.5	0	61.3
Annual hours contract	45.2	12.9	0	12.9	0	29

Table 3. The app. proportion of the workforce on the selected working arrangements (in % of companies)

Selection method	For every appointment	For most appointments	For some appointments	For few appointments	Not used
Interview panel	18.9	18.9	13.6	10.8	37.8
One-to-one interview	55.3	23.7	13.2	5.2	2.6
Application forms	76.3	5.3	7.9	2.6	7.9
Psychometric test	16.2	16.2	8.1	5.4	54.1
Assessment centre	2.8	11.1	2.8	5.6	77.7
Graphology	0	8.1	2.7	0	89.2
References	22.2	22.2	30.6	2.8	22.2

Table 2. The most frequently used selection methods (in % of companies)

Employee development and appraisal

Regarding employee training and development practices, the research findings reveal the following:

- HR managers in the majority of companies (73.7%) could not tell what proportion of the company's annual salaries and wages bill was spent on employee training.
- In companies where this data was available, the average spending on employee training accounted for 4.85% of the salaries bill, and if we exclude one company with extremely extensive training activities, the average spending on such activities accounted for 2.94% of the annual wages and salaries bill. Our findings show that 47.3% of total employment in the selected companies is involved in training activities, and in only 2 companies is the proportion of employees involved in training activities lower than 5%. These data suggest that Serbian companies consider training activities an important HRM area.
- HR managers did not know the average number of training days per year for each employee in 63.2% of the companies selected. The results for the remaining companies are presented in Table 4.

Staff category	The average number of training days per year
Management	19.8
Professional/technical	12.2
Clerical	8.7
Manual	11.6

Table 4. The average number of training days per year in different staff categories

- 40.5% of the selected companies do not engage in systematic analysis of their training needs. The rest identify their needs, but only a small proportion does on a regular basis (see Table 5).

Methods for identifying training needs	Always	Often	Sometimes	Never
Analysis of projected business plans	33.33	12.5	20.83	33.33
Training audits	25	12.5	29.25	29.25
Line management requests	41.7	29.2	16.6	12.5
Performance appraisals	41.7	20.8	12.5	25
Employee requests	20.8	37.5	29.2	12.5

Table 5. The use of different methods for identification of training needs (in % of companies)

- Of the selected companies, 44.4% do not monitor the effectiveness of training activities. Of those which do, 57.8% do so on a regular basis - 36.8% immediately after the training, and 21% some months after the training is completed. The monitoring of the effectiveness of training is performed through an assessment of the response/evaluation expressed by the participants (78.3%), examination of the results defined as changes in organizational performance (82.6%), and evaluation of the behaviors defined as changes in job performance (69.6%).
- Regarding employee development, our data indicate that this HR area has been almost neglected in Serbian companies, since between 70% and 85% of companies do not implement any development schemes, such as formal career plans, assessment centers, succession plans, planned job rotation, international experience schemes for managers, etc.
- Half of the selected companies have not yet established an appraisal system. In those which have, all staff categories are included in the appraisal process. The appraiser is most frequently the immediate superior (in 66% of companies) or next level superior and other employees (in 34% of companies). The main purposes of the appraisal system are as follows: setting individual performance-related pay (in 60.6% of companies) and identification of individual training needs (51.5%).

Compensation and Benefits

Regarding compensation and benefits, research findings in the selected Serbian companies reveal the following:

- In the majority of companies the individual's base pay across different staff categories is determined at the level of the company (see Table 6).

Level	Mana-gement	Professional/ Technical	Clerical/ administrative	Manual
National/ industry-wide collective bargaining	21	28.9	34.2	31.6
Regional collective bargaining	2.6	7.9	5.3	5.3
Company/ division	39.5	50	47.4	50
Establishment/ site	5.3	5.3	2.6	2.6
Individual	50	36.6	21	21

Note: The sum in columns is not 100, since participants could choose more options.

Table 6. Level(s) of determining basic pay (in % of companies)

• Regarding key elements of the total reward package, half of the companies increased the share of variable pay over the past three years through different incentives (see Table 7), but no clear distinction in offered incentive schemes is made across different staff categories such as management, professionals, clerical and manual staff.

• In more than 90% of companies only management is acquainted with the business strategy, whereas professional/technical staff, clerical (41.7%) and manual workers (27.8%) are mainly informed about work organization. Some changes in communications occurred during the last 3 years; namely, there was an increase of communication through immediate superior and team briefings (in 38.9% of companies).

Selected incentive schemes	Management	Professional/ Technical	Clerical/ Administrative	Manual
Employee share options	2.6	2.6	2.6	2.6
Profit sharing	10.5	7.9	13.2	13.2
Group bonus	13.2	10.5	13.2	10.5
Merit/performance-related pay	15.8	28.9	26.3	21
Profit sharing and group bonus	5.3	5.3	2.6	2.6
Group bonus and Merit/performance-related pay	18.4	10.5	13.2	13.2
Profit sharing and merit/performance-related pay	7.9	5.3	0	0
Profit sharing, group bonus and merit/ performance-related pay	2.6	0	0	0
Not used	23.7	28.9	28.9	36.8

Table 7. Incentive schemes in selected Serbian companies (in % of companies)

• Regarding benefits above statutory requirements, apart from the education/training break (in 39.5%of companies) no other benefits are exercised in selected Serbian companies.

Employee relations and communication

Regarding employee relations and communication, research findings in Serbian companies point to the minor role of trade unions and very poor communication between managers and employees:

• 18.4% of HR mangers are not aware what proportion of employees are members of trade unions, whereas in 39.5% of companies, employees are not members of any trade union;

• In 57.9% of companies, trade unions do not exercise any influence within the organization;

• Only 10.5% of companies feel that the influence of trade unions on the organization has increased over the course of the last three years;

• In 84.2% of companies there are neither joint consultative committees nor workers' councils;

• Managers use an electronic mail system as the main channel of communication with their employees (in 89.2% of companies).

Discussion

The Role of HRM Function and HRM strategy

The evidence clearly indicates that Serbian companies do have autonomous HR departments. However, the individual details of the majority of senior HR managers suggest that the selected Serbian companies have only recently established HR departments. In 43% of companies, the most senior HR managers have less than 5 years of experience in HRM. Compared to the North-American HRM model, our data suggest that HR departments in Serbia are too big and over-staffed (the ratio for large organizations is 1.8 compared to 0.8 in the US). This over-employment is even greater given that the majority of Serbian HR departments do not perform all HR functions, neither themselves nor through external providers. In fact, the majority of HR staff within HR departments still performs mostly administrative tasks required under the Serbian Labor Code. Besides, HR departments still do not exercise a considerable influence within companies, as they are not included in strategy design and implementation. It is still the General Manager who, independently or in consultation with HR

departments, has a primary responsibility for making decisions regarding HR issues.

Overall, the research evidence indicates that the role of the HRM function and HR strategy in Serbia, as in other transition economies, is still relatively weak (Zupan & Kaše, 2005). This divergence from the North-American HRM model cannot be fully explained by the distinctive cultural context, but rather, as Sparrow & Hiltrop (1997) suggested, by factors related to the roles and competences of HRM professionals – a long tradition of performing rather traditional personnel instead of HRM function, lack of appropriate education programs and suitable choices for HR professionals within the university education system, employing lawyers and clerical staff within HR departments and an attitude of managers that the main role of HR department is to ensure observance of the legal terms of employment. However, the fact that a growing number of Serbian companies are introducing the HRM function and, consequently, launching HR departments, may be seen as a promising sign of convergence toward the North American HRM model. Further changes in managerial mind-sets may be expected with the improvement in the professional competence and capacities of HR departments in Serbia. Nevertheless, a longitudinal study in upcoming years is needed to explore whether additional convergence will occur.

On the other hand, regarding Brewster & Larsen's model of European HRM (1992) which includes two dimensions, the integration and devolution of HRM, the research evidence indicates that the integration of HRM with business strategy in Serbian companies is very low, whereas the devolvement of HRM responsibilities to managers is pretty high. However, keeping in mind that in real organizational life Serbian line managers actually do not have the authority and responsibility for the main HR decisions, but rather the general managers (high power distance), contrary to evidence, we believe that actual devolvement of HRM in Serbian companies is extremely low. At the same time, contrary to Brewster & Larsen's model, this does not automatically imply that the HR managers in Serbia hold the main responsibility for HR issues. Actually, the Brewster & Larsen's model cannot be applied in the Serbian HRM model, since devolvement of HRM as they define it can neither be applied nor understood, which prevents us from comparing the Serbian HRM model to the European one.

Staffing practices

A large share of Serbian companies uses traditional staff selection methods, such as one-to-one interviews, filling in application forms and reviewing letters of reference. This is one example of convergence toward the European HRM practice (Brewster et al., 2004). Use of psychometric tests, assessment centers and other methods for collecting data about personal characteristics, widespread in both US companies and American HRM literature, is almost negligible in Serbia.

We believe that the dominant staffing practice in Serbia may be explained by cultural factors and those related to the role and competence of HRM professionals. The interview is well-matched with certain characteristics of the Serbian national culture i.e. collectivism and femininity, where the personal interaction and direct conversation with a candidate are always preferred and more trusted than objective data about him or her obtained by other, more "objective" selection methods (Hofstede, 2001b). On the other hand, the fact that HR professionals are still not fully competent facilitates the HRM practices that do not require great professional knowledge and expertise. The first interview with candidates in Serbian companies is frequently done by the prospective immediate supervisor, and not by HR specialists. HR specialists are usually involved in checking application forms and letters of reference for the candidates. Psychometric tests and assessment centers require more professional expertise within HR departments, which Serbian companies still lack.

Compensation and Benefits

Though still quite low, the share of employees in Serbian companies whose compensation packages include employee share options, profit sharing, group bonus or merit/performance related pay, is increasing. This is a clear sign of divergence from the North American HRM model and the dominant European HRM practices.

This area of divergence is primarily caused by the characteristics of the Serbian national culture, but may also be explained, at least partially, by the fact that the Serbian financial market is still underdeveloped. High collectivism, femininity, high power distance, and high uncertainty avoidance in Serbian culture create a context where people prefer security rather than high earnings, and good social relationships rather than achievement (Hofstede, 2001b). Therefore, they appreciate reward in the form of social status and security as well as praise. The attitude of an individual toward her or his company is more emotional and ethical, so that equality, not equity, is the preferred principle of distributive justice. Accordingly, incentives are not based on individual, but rather on group achievement, seniority, skills and knowledge (Hofstede, 2001a). Risk-related forms of reward, like bonus and commission or right to purchase company shares, are not preferred primarily because of high uncertainty avoidance. Consequently, the proportion of compensation that is under a risk is usually not higher than 10-20% in Serbian companies. This confirms what Sparrow & Hiltrop (1997) suggest, i.e. that cultural factor

such as the national understanding of distributive justice needs to be appreciated in comparative HRM.

Besides, there is no significant difference in offered incentive schemes for different staff categories such as management, professionals, clerical and manual staff in Serbia. In our opinion, this could be explained by strong collectivism in the Serbian culture. In collectivistic and egalitarian culture, no individual or group can be treated differently than others, as it would destroy the collective spirit. The same incentive packages for all employees represent an additional sign of divergence of Serbian HRM practices.

Options and other long-term incentives, which represent regular North-American managerial incentives, are missing from the "Serbian HRM model" mainly because the Serbian financial market is still underdeveloped. However, since current legislation promotes ending the privatization process by end-2009, as well as the free trade of shares on the Belgrade Stock Exchange, it may be expected that with further development of the financial market, long-term incentives will be more frequently used in rewarding Serbian top managers. This fact actually suggests that besides labor legislation, social security provisions and trade unions, suggested by Sparrow & Hiltrop (1997), and other institutional factors, such as the degree of capital market development, also have to be taken into account in comparative HRM, at least in transition economies, as indicated by Holden (2001).

It would, however, be fair to note a change that may be understood as a sign of convergence of the Serbian HRM model toward the North American HRM model. The fact that half of the selected Serbian companies increased the share of variable pay in the total reward package in the course of the past three years actually indicates that the Serbian HRM model is changing toward the North American HRM model, although this change is quite incongruent with the Serbian national culture.

Employee development and Appraisal

Data on Serbian companies that calculate training costs (24%) show that the proportion of training costs to annual salary and wage bill (4.85%) is similar to the EU average (Brewster et al., 2004), and lower than in the U.S. where, including the indirect costs of training, the average US employer spends over 10% of payroll on education and training (Noe, 2002, p. 179). However, when drawing conclusions, one has to take into account the following facts: (1) the average salaries and wage bill in Serbia is several times lower than in the EU or the US, so the proportion of the same training costs (in absolute terms) to annual salaries bill is higher; (2) use of in-house trainers in Serbia is very rare, which increases the overall training costs; (3) it is probable that employees and managers in Serbian companies will need much more training as we are in the initial phase of the transition and restructuring process, which is usually accompanied with large layoffs and obsolete competencies of employees, and will result in increased overall training costs in the forthcoming years.

In terms of performance appraisal, the research evidence indicates that only half of the selected Serbian companies introduced performance appraisal, whereas among those applying it, the majority of companies expressed problems in implementation. This is also one area of divergence from the North American HRM model that can be fully explained by a distinctive cultural context. High uncertainty avoidance, power distance, collectivism and femininity create a context where objective and formalized evaluation of performance is often not feasible. Open dialog between the employee and the appraiser, which is mandatory in the performance appraisal process, is not acceptable for either managers or for employees because it introduces a high level of uncertainty in their relationship, as well as a kind of equality between them. In the Serbian national culture, characterized by high collectivism and high power distance, the usual metaphor of a company is a patriarchal family, with a "father" at the top, and where children are not allowed to discuss with their father his comments on their behavior. Individual and public evaluation of group members' performances may destroy the group spirit that is so important in collectivist cultures. Furthermore, in feminist cultures, individual performances are not the most important factor in employee evaluation, but personal qualities such as loyalty, honesty and friendship. For all these reasons, performance appraisal in Serbian companies remains informal, implicit and group-based rather than formal, explicit and individually based.

Employee communications and the Role of trade unions

The proportion of employees in Serbian companies who are informed about the company strategy and financial performance is very low. Poor communication between management and employees in Serbia has been confirmed in numerous researches, which indicates that the majority of employees feel uninformed about important facts concerning the company, and which is consistent with findings in other transition economies (Zupan & Kaše, 2005; Koubek & Vatckova, 2004). In addition, the level of participation of employees in decision making in Serbian companies is very low. This is a striking point because, only 16 years ago, self-management was an official management system in Serbia in all companies as required by the Company law, whereas all employees were members of trade unions. Nowadays, less than 20% of total employment in Serbia

is organized through trade unions, which underlies the very weak role of trade unions in Serbia. This is actually an area of convergence toward the North American HRM model and at the same time, an area of divergence from European HR practices (Gooderham et al., 2004).

The weak role of trade unions, as well as the low level of influence of employees on company policy in Serbia, can be explained by both institutional and cultural factors. The institutional setting in Serbia is very much framed by the fact that Serbia has not concluded negotiations over EU accession, and consequently, has not accepted the framework of EU employment relations institutions and procedures, so that Serbian companies, like companies in other SEE countries, are quite free to manage employment relations according to their own interests (Martin & Cristescu-Martin, 2003). In addition, the high level of unemployment in Serbia makes the position of trade unions and employees in Serbian companies very weak. On the other hand, the privatization process (which has not yet ended) makes the position of every employee in Serbian companies very uncertain, and decreases his or her motivation to participate in the union's activities.

On the other hand, the high power distance in the Serbian national culture creates a context in which employees regard unequal distribution of power as a "natural state of affairs". Hence, it is expected that only managers should make decisions, while employees should obey them ("Managers are here to make decisions and solve problems, we are here to implement solutions").

However, it seems contradictory that these same cultural values were shared during the long period of socialism and self-management in Serbia. The high power distance and collectivism prove that the proclaimed self-management system and the leading role of Serbian workers and trade unions were actually faked. At that time, every company had a trade union and a workers' council with very powerful roles in corporate governance. That, however, was only a cover-up for the real power of the Communist Party and state bureaucrats. During the transition, the legal obligation to organize themselves within trade unions ceased, so employees could freely remove this façade. From the employees' point of view, the only change during transition is who wields the power ("fathers") – instead of the state and the communist bureaucrats, it is the tycoons who are the bosses now.

Organization of Work: Flexible Working Practices

Even though traditional fixed work schedules still prevail, the proportion of Serbian companies using flexible working practices, like annual hour contracts and outsourcing, has increased over the past three years. This is an example of convergence with the North American model as well as with European HR practices (Brewster et al, 2004), but at the same time a sign of divergence from the Serbian national culture. High uncertainty avoidance represents a built-in barrier for implementation of flexible working practices, and is probably the reason for their not being more widely used in Serbian companies, though current legislation even facilitates them. Increased use of flexible working practices in Serbian companies can be explained primarily through changes in institutional factors, such as changes to labor legislation and labor market surpluses, which came about as a result of privatization and restructuring processes and produced large layoffs. Private ownership in Serbian companies was significantly augmented by the privatization process and increased the use of cheaper and less risky (for the employer) flexible working arrangements.

Conclusions and Implications for Management

In this study the authors aim to highlight the emergent HRM practices in Serbia in order to investigate possibilities for implementation of the North American HRM model in a specific and highly incongruent cultural milieu. The research evidence indicates that the formal HRM function in Serbia would be better considered as a personnel department than a HR department, as it is primarily concerned with bureaucratic tracking of HR and maintaining personnel records, rather than being involved in strategy and policy HR decision making, which is consistent with the findings in some other transition economies (Tung & Havlovic, 1996).

In terms of the convergence vs. divergence debate, our research reveals mixed findings. It appears that some HRM practices in Serbia, as for instance the role of trade unions, do converge with the North American HRM model, in spite of the highly incompatible Serbian cultural context. This, in fact, implies that, in some HRM areas institutional factors and the transition process, in spite of a large cultural incongruence, may effectively facilitate the convergence of HRM practices.

On the other hand, the research evidence indicates that the majority of HRM practices in Serbia (the role and scope of HRM function and HR strategy, performance appraisal and performance related pay, staffing practices, employee development and employee communication) largely diverge from those of the US. This is congruent with the thesis that the organizational autonomy on which the HRM concept is advocated in the US is neither espoused nor practiced elsewhere in Europe (Brewster, 1993) and with the findings of some other studies on HRM in transition economies (Tung & Havlovic, 1996; Zupan & Kaše, 2005; Koubek & Brewster, 1995; Alas & Svetlik, 2004; Koubek & Vatchkova, 2004). As already discussed in the previous section, the explanation for the identified differences can be found in three groups of factors, as

suggested by Sparrow & Hiltrop (1997): (1) cultural factors, such as national understanding of distributive justice and manager-subordinate relationships, (2) institutional factors, such as the scope of labor legislation and social security provisions, role of trade unions, and (3) factors relating to the roles and competences of HR professionals (p.202). Our evidence also confirms, as many authors suggested and Holden summarized (2001), that among institutional factors, the differences in capital market development need to be carefully considered when explaining divergence in comparative HRM, especially in transition economies where financial markets are still underdeveloped. This conclusion is congruent with the assumption of institutional theory that organizations are structured in terms of templates that are institutionally derived (Meyer & Rowan, 1977). The speed and success of adopting the new institutional template, as for instance the North American HRM model, depends on its availability and clarity, as well as on the ability and willingness of powerful actors in organizations to implement them. The more elaborated and transparent an institutionally imposed template becomes, the stronger the pressure would be for companies to adopt it, and more companies would obey (Dacin et al., 2002; Greenwood & Hinnings, 1996). Hence, the convergence of HRM practice in Serbia towards the North American HRM model will depend on its elaboration as a part of the development of the free-market economic model in Serbia as an institutional context for companies operating in Serbia. The institutional environment beyond the organization's boundaries skews corporate behavior in particular ways (Hoffman, 1999). Once a field becomes well established, there is an inexorable push towards homogenization, whereas the process of "structuration", apart from other elements, depends on the emergence of sharply defined interorganizational structures of domination and patterns of coalition (DiMaggio & Powell, 1983). Thus, the transition in Serbia may be interpreted as a process of building a new institutional context as the free-market economic model becomes increasingly dominant. For that reason, the scope and speed of the transition process seem to be the key for changing the institutional or the "external HR context" (Zupan & Kaše, 2005) in Serbia towards a free-market economy, so that further, rather evolutionary convergence of HRM practices may be expected, but not in the short term due to the slow-moving transition.

Contrary to our assumptions about the credibility of the national culture as an explanatory variable in understanding the specific HRM model, the research evidence suggests that the national culture does not seem to be the most important variable of identified divergences in transition economies. It is only the HRM divergence relating to performance appraisal and performance-related pay that can be fully explained by cultural differences (Schuler et al., 2001; Weinstein, 2001; Schuler & Rogovsky, 1998; Ralston et al., 1995; Kim et al., 1990) and this finding is congruent with the cultural divergence hypothesis (Hofstede, 1991; Trompenaars, 1993, Hampden-Turner & Trompenaars`, 1994). In the case of Serbia, the role and incompetence of HR professionals and institutional factors proved to be of much greater importance in explaining the divergence observed.

In addition to the abovementioned three groups of factors causing HRM divergence, it seems that in Serbia, as in other transition economies (Zupan & Kaše, 2005), the managerial mind-set also presents an important determinant of divergence in HRM practices, especially in terms of the absence of a more profound strategic involvement of the HRM function. The Serbian top managers are still very rarely aware of the fact that human resources are an important source of organizational competitive advantage in the marketplace. They are still mainly occupied with, in their opinion, more complex and important problems, such as acute financial crisis, replacement of obsolete technology, or the response to competition from foreign newcomers. Human resources are not viewed as a critical factor of the company's success, especially in a situation where there are plenty of qualified people waiting for a job, as on the Serbian labor market. In such a context, HRM is still considered a Personnel function that does not regard employee development as an important HR issue nor a section that needs to be consulted in the process of strategy formulation and implementation (Tung & Havlovic, 1996). More strategic orientation of HRM in Serbia will certainly require that, beside managers, the HR staff also acquires new competences such as business competence, professional-technical knowledge of state-of-the-art HRM practices, competence to successfully manage the process of change and the competence to integrate the three other competences in order to increase the company's value (Noe et al., 2006). As Zupan and Kaše (2005) suggested, the HR facilitators of the development of strategic HRM in transition economies will include the following: creation of a HR knowledge base, availability of information resources (e.g. HR research and education, transfer of HR knowledge to organizations, professional associations and networking, access to HR literature), and the availability of HR services (p. 895). The strategic role of the HRM department has also been viewed as an upgrading of its organizational status (Bowen et al., 2002).

Overall, it seems that our findings have in fact confirmed the findings of Sparrow and Hiltrop (1994), who suggested that there is a convergence in the use of HRM for competitive advantage, although some cultural and institutional differences do exert influence on some divergent practices. It seems that in the case of Serbia, further convergence of HRM practices will require the

following: (1) fostering a new generation of highly competent HR managers and professionals, (2) changing a managerial mind-set to become more aware of the role of HRM function in gaining the competitive advantage, (3) integration of the HRM function in strategic management, and (4) placing a stronger emphasis on employee development. In order to smooth the progress of further convergence, Serbia needs faster transition process dominated by a free market economic model

In terms of culturally influenced divergences, our findings are quite congruent with the so-called "cross-vergence" hypothesis (Ralston et al., 1997; Vertinski et al., 1990), assuming that management system and practices in transition economies, like Serbia, will change in some aspects and in some areas because of a strong need to adjust to standard managerial technology consistent with a market economy. On the other hand, in some areas and in some aspects, management systems and practices in transition countries will remain the same because of the pressure of existing values and assumptions coming from a national culture. Researchers and managers in transition economies should find out in which areas standard managerial models and practices can be implemented regardless of the national culture's values, and in which areas standard Western managerial models and practices should be modified and adjusted to the local conditions, both in cultural terms and in terms of the availability of human skills (Tayeb, 1995, p. 602). Our research has shown that, in the area of HRM, performance appraisal and pay for performance schemes diverge from the Western models and have to take into account assumptions and values of Serbian national culture. On the other hand, all other HRM areas seem to be changeable toward the North American HRM model, in spite of huge cultural differences, whereas the scope and speed of convergence will depend on the speed and success of the transition process (Alas, Svetlik, 2004).

However, there are several limitations to this study that should be recognized. First, the narrowness of our approach in focusing only on surveying 38 randomly selected Serbian companies prevented us from broader generalizations of our results. In addition, we could not observe the possible influence of business structure on HR practices, suggested by Sparrow and Hiltrop (1997) as an important factor that needs to be appreciated in comparative HRM. Second, our initial research design adopted the national culture as the most probable explanatory variable for possible differences from the North American HRM model. As our research evidence indicated, other factors, such as institutional and factors related to the competence of HR professionals should have also been introduced in our research design a priori in order to provide for deeper understanding of local circumstances. Third, we used Hofstede`s research on national culture in spite of the many constraints to this work summarized by Sondergaard (1994, p. 419) and Tayeb (1994, p. 435). However, Hofstede`s research is the only available research that provides precise indications of cultural values of the population in this region. Finally, our research design, including one survey of selected companies, prevented us from addressing possible changes in the development of Serbian HR practices and policies.

Nevertheless, this paper represents a first step to understanding some of the unique challenges and responses of companies from specific cultural contexts in coping with their problems with the implementation of Western management policies and systems. Future research should expand on the present investigation through exploration of a much larger sample and the longitudinal study of HRM developments in Serbia in the coming years.

Endnotes

1. See Human Resource Compensation Survey (1993), Dearfield, Ill: Wiliam M. Mercer Inc; also Bulletin to Management (1993) 'Human Resource Compensation Survey'. 22 July, 228-229.

References

Alas, R. & Svetlik, I. 2004. Estonia and Slovenia: Building Modern HRM Using a Dualist Approach. In Human Resource Management in Europe: Evidence of Convergence? Edited by C. Brewster, W. Mayrhofer & M. Morley, 353-83. Elsevier Butterworth-Heinemann.

Bowen, D.E., Galang, C. & Pillai, R. 2002. The Role of Human Resource Management: An Exploratory Study of Cross-country Variance. Human Resource Management 41(1): 103-22.

Brewster, C. & Larsen, H.H. 1992. Human resource management in Europe: evidence from ten countries. The International Journal of Human Resource Management 3(3): 409-34.

Brewster, C., Mayrhofer, W. & Morley, M. 2004. Human Resource Management in Europe: Evidence of Convergence? Elsevier Butterworth-Heinemann.

Child, J. 1981. Culture, contingency and capitalism in the cross-national study of organizations. In Research in Organizational Behavior edited by B. Staw & L. Cummings Vol. 3. London: JAI Press.

Child, J. & Tayeb, M. 1983. Theoretical perspectives in cross-national organizational research. International Studies of Management and Organization 7(3-4): 23-70.

Clark, T., Gospel, H. & Montgomery, J. 1999. Running on the spot? A review of twenty years of research on the management of human resources in a comparative and international perspective. The International Journal of Human Resource Management 10(3): 520-44.

Dacin T., Goodstein J. & Scott R. 2002. Institutional Theory and Institutional Change: Introduction to the Special Research Forum. Academy of Management Journal 45(1): 45-57.

DiMaggio, P. & Powell, W.W. 1983. The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. American Sociological Review 48(4): 147-60.

Gomez-Mejia, L.R., Balkin, D.B. & Cardy, R.L. 2001. Managing Human Resources. 3rd ed. Prentice Hall.

Gooderham, P., Morley, M., Brewster, C. & Mayrhofer, W. 2004. Human Resource Management: A Universal Concept? In Human Resource Management in Europe: Evidence of Convergence? Edited by C. Brewster, W. Mayrhofer & M. Morley, 1-26. Elsevier Butterworth-Heinemann.

Greenwood R. & Hinnings C. 1996. Understanding Radical Organizational Change: Bringing Together The Old and The New Institutionalism. Academy of Management Review 21(4): 1022-54.

Hampden-Turner, C. & Trompenaars`, F. 1994. The Seven Cultures of Capitalism. London: Piatkus Books.

Hoffman, A. 1999. Institutional evolution and change: environmentalism and the U.S. chemical industry. Academy of Management Journal 42(4): 351-71.

Hofstede, G. 1980. Motivation, Leadership and Organization: do American Theories Apply Abroad. Organizational Dynamics, Summer: 42-46.

Hofstede, G. 1991. Cultures and Organizations: Software of the Mind. London: McGraw-Hill.

Hofstede, G. 2001a. Culture's Consequences. Thousand Ouks, CA: Sage Publications.

Hofstede, G. 2001b. Difference and Danger: Cultural Profiles of Nations and Limits to Tolerance. In International HRM: Managing Diversity in the Workplace edited by M. Albrecht, 9-23. London: Blackwell.

Hofstede, G. 2002. Images of Europe: Past, Present and Future. In Managing Across Cultures edited by M. Warner & P. Joynt, 93-103. Padstow: Thompson.

Holden, L. 2001. International human resource management. In Human Resource Management: a contemporary approach edited by I. Beardwell & L. Holden, 633-78. Third edition. Prentice Hall.

Kerr, C., Dunlop, J. T., Harbison, F. & Myers, C. A. 1960. Industrialism and Industrial Man. Cambridge, Mass.: Harvard University Press.

Kim, K., Park, H. & Suzuki, H. 1990. Reward Allocations in the United States, Japan, and Korea: a Comparison of Individualistic and Collectivistic Cultures. Academy of Management Journal 33(1): 188-98.

Koubek, J. & Brewster, C. 1995. Human resource management in turbulent times: HRM in the Czech Republic. The International Journal of Human Resource Management 6(2): 223-47.

Koubek, J. & Vatchkova, E. 2004. Bulgaria and Czech Republic: Countries in Transition. In Human Resource Management in Europe: Evidence of Convergence? Edited by Brewster, C., Mayrhofer, W. & Morley, M., 313-51. Elsevier Butterworth-Heinemann.

Martin, R. & Cristescu-Martin, A. 2003. Employment relations in Central and Eastern Europe in 2002: towards EU accession. Industrial Relations Journal 34(5): 498-509.

Mayrhofer, W., Morley, M. & Brewster, C. 2004. Convergence, stasis, or divergence? In Human Resource Management in Europe: Evidence of Convergence? Edited by Brewster, C., Mayrhofer, W. & Morley, M., 415-36. Elsevier Butterworth-Heinemann.

Meyer, J.W. & Rowan, B. 1977. Institutionalized Organizations: Formal Structure as Myth and Ceremony. American Journal of Sociology 83(2): 340-62.

Noe, R.A. 2002. Employee Training & Development. Second edition. McGraw-Hill.

Noe, R. A., Hollenbeck, J. R., Gerhart, B. & Wright, P. W. 2006. Human Resource Management: Gaining a Competitive Advantage. Fifth edition. Irwin: McGraw-Hill.

Prentice, G. 1990. Adapting management style for the organization of the future. Personnel Management 22(6): 58-62.

Ralston, D., Holt, D., Terpistra, R. & Kai-Cheng, Y. 1997. The Impact of National Culture and Economic Ideology on Managerial Work Values: A Study of the United States, Russia, Japan and China. Journal of International Business Studies 28(1): 177-207.

Ralston, D.A., Stepina, L. P., Kai-Cheng, Y., Fadil, P. & Terpstra, R. H. 1995. The Relevance of Equity Values in Eastern Cultures. In Whose Business Values? Edited by S. Stewart S. & G. Donleavy, 69-87. Hong Kong: Hong Kong University Press.

Rollinson, D. & Broadfield, A. 2002. Organisational Behaviour and Analysis. 2nd edition. Prentice Hall.

Schneider, S. & Barsoux, J. 1997. Managing Across Cultures. Hertfordshire: Prentice Hall Europe.

Schneider, S. C. 1992. National vs. Corporate Culture: Implications for Human Resource Management. In Globalizing management edited by V. Pucik, N. Tichy & C. Barnett, 32-45. New York: John Wiley & Sons.

Schuler, R., Jackson, S., Jackofsky, E. & Slocum, J. 2001. Managing Human Resources in Mexico: A Cultural Understanding. In International HRM: Managing Diversity in the Workplace edited by M. Albrecht, 261-70. London: Blackwell.

Schuler, R. & Rogovsky, N. 1998. Understanding Compensation Practice Variations across Firms: The Impact of National Culture. Journal of International Business Studies 29(1):159-77.

Schuster, C. & Copeland, M. 1996. Cross-Cultural Communications: Issues and Implications. In International Business Negotiations edited by P. Ghauri & J. Usunier, 131-153. Oxford: Pergamon Books.

Schwartz, S.H. 1992. Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries. Advances in Experimental Social Psychology 25: 1-65.

Schwartz, S. H. 1994. Beyond individualism/collectivism: New cultural dimensions of values. In Individualism and Collectivism: Theory, Method and Applications edited by U. Kim, H.C. Triandis, C. Kagitcibasi, S,C. Choi S.C. & G. Yoon, 85-119. Thousand Oaks, CA: Sage.

Sondergaard, M. 1994. Research Note: Hofstede`s Consequences: A Study of Reviews, Citations and Replications. Organization Studies 15(3): 447-56.

Sparrow, P., Hiltrop, J. M. 1994. European Human Resource Management in Transition. Hemel, Hempstead: Prentice Hall.

Sparrow, P., Hiltrop, J. M. 1997. Redefining the Field of European Human Resource Management: A Battle between National Mindsets and Forces of Business Transition. Human Resource Management 36(2): 201-19.

Tayeb, M. 1994. Organizations and National Culture: Methodology Considered. Organization Studies 15(3): 429-46.

Tayeb, M. 1995. The competitive advantage of nations: the role of HRM and its socio-cultural context. The International Journal of Human Resource Management 6(3): 588-605.

Trompenaars`, F. 1993. Riding the Waves of Culture. London: Nicholas Brealey.

Truss, C., Gratton, L., Hope-Hailey, V., Stiles, P. & Zaleska J. 2002. Paying the Piper: Choice and Constraint in Changing HR Functional Roles. Human Resource Management Journal 12(2): 39-63.

Tung, R. L. & Havlovic, S. J. 1996. Human resource management in transitional economies: the case of Poland and the Czech Republic. The International Journal of Human Resource Management 7(1): 1-19.

Usunier, J. 1996. The Role of Time in International Business Negotiations. In International Business Negotiations edited by P. Ghauri & J. Usunier, 153-173. Oxford: Pergamon Books.

Vertinsky, I., Tse, D., Wahrung, D. & Lee, K. 1990. Organizational Design and Management Norms: A Comparative Study of Managers' Perceptions in the People's Republic of China, Hong Kong and Canada. Journal of Management 16(4): 853-68.

Weinstein, M. 2001. Emergent Compensation Strategies in Post-Socialist Poland: Understanding the Cognitive Underpinnings of Management Practices in a Transition Economy. In Managing Organizational Change in Transitional Economies edited by D. Denison, 361-96. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Zupan, N. & Kaše, R. 2005. Strategic human resource management in European transition economies: building a conceptual model on the case of Slovenia. International Journal of Human Resource Management 16(6): 882-906.

A Portfolio Management Approach in Accounts Receivable Management

Grzegorz Michalski*

Abstract:

The basic financial purpose of an enterprise is the maximization of its value. Trade credit management should also contribute to the realization of this fundamental aim. Many of the current asset management models that are found in financial management literature assume book profit maximization as the basic financial purpose. These book profit-based models could be lacking in what relates to another aim (i.e., maximization of enterprise value). The enterprise value maximization strategy is executed with a focus on risk and uncertainty. This article presents the consequences that can result from an operating risk that is related to purchasers using payment postponement for goods and/or services. The present article offers a method that uses portfolio management theory to determine the level of accounts receivable in a firm. An increase in the level of accounts receivables in a firm increases both net working capital and the costs of holding and managing accounts receivables. Both of these decrease the value of the firm, but a liberal policy in accounts receivable coupled with the portfolio management approach could increase the value. Efforts to assign ways to manage these risks were also undertaken; among them, special attention was paid to adapting assumptions from portfolio theory as well as gauging the potential effect on the firm value.

Keywords: Accounts receivable, Trade credit management, Incremental analysis, Value based management, Portfolio analysis

JEL: G32, G11, M11, D81, O16, P33, P34

1. Introduction

The basic financial aim of an enterprise is the maximization of its value. At the same time, both theoretical and practical meaning is researched for determinants that increase the enterprise value. Financial literature contains information about numerous factors that influence enterprise value. Among the contributing factors is the extent of the net working capital and the elements shaping it, such as the level of cash tied up in accounts receivable, inventories, the early settlement of accounts payable, and operational cash balances. The greater part of classic financial models and proposals relating to optimum current assets management was constructed with net profit maximization in mind. This is the reason why these models need reconstruction in order to make them suitable to firms that want to maximize their value. The decision whether or not to extend trade credit terms is a compromise between limiting the risk of allowing for the payment postponement from unreliable purchasers and gaining new customers by way of a more liberal enterprise trade credit policy. This decision shapes the level and quality of accounts receivable.

The question discussed in this article concerns the possibility of using portfolio theory in making decisions about selecting which customers should be given trade credit. In this article, we will show that it is possible that the firm can sell on trade credit terms to some customers who previously were rejected because of

* Michalski:
Wroclaw University of Economics,
ul. Komandorska 118/120, pok. 704-Z, PL53-345
Wroclaw, Poland,
e-mail: grzegorz.michalski@ae.wroc.pl

too great an operational risk with the positive outcome of creating increased firm value. This extension of trade credit is possible only if the firm has purchasers from various branches, and if these branches have different levels of operating risk. The key to success for a firm is to perform portfolio analysis with the result of a varied portfolio of customers with a spectrum of managed levels of operating risk.

2. Value Based Management of Accounts Receivable

If holding accounts receivable on a level defined by the enterprise provides greater advantages than negative influence, the firm value will grow. Changes in the level of accounts receivable affect on the value of the firm. To measure the effects that these changes produce, we use the following formula, which is based on the assumption that the firm present value is the sum of the future free cash flows to the firm (*FCFF*), discounted by the rate of the cost of capital financing the firm:

$$\Delta V_p = \sum_{t=1}^{n} \frac{\Delta FCFF_t}{(1+k)^t}, \qquad (1)$$

where ΔV_p = firm value growth; $\Delta FCFF_t$ = future free cash flow growth in period *t*; and *k* = discount rate[1].

Future free cash flow is expressed as:

$$FCFF_t = (CR_t - CE_t - NCE) \times (1-T) + NCE - Capex - \Delta NWC_t \qquad (2)$$

where CR_t = cash revenues on sales; CE_t = cash expenses resulting from fixed and variable costs in time *t*; *NCE* = non-cash expenses; *T* = effective tax rate; ΔNWC = net working growth; and *Capex* = capital expenditure resulting from the growth of operational investments (money used by a firm to acquire or upgrade physical assets, such as property, industrial buildings, or equipment).

Similar conclusions related to the results of changes in trade credit policy on the firm value can be estimated on the basis of economic value added, the extent to which residual profit (the added value) increased the value of the firm during the period:

$$EVA = NOPAT - k \times (NWC + CD) \qquad (3)$$

where *EVA* = economic value added; *NWC* = net working capital; *OI* = operating investments; and *NOPAT* = net operating profit after tax, estimated on the basis of the formula:

$$NOPAT = (CR_t - CE_t - NCE) \times (1-T) \qquad (4)$$

The net working capital (NWC) is the part of current assets that is financed with fixed capital. The net working capital (current assets less current liabilities) results from lack of synchronization of the formal rising receipts and the real cash receipts from each sale. It is also caused by a divergence during time of rising costs and time when a firm pays its accounts payable.

$$NWC = CA - CL = AAR + INV + G - AAP \qquad (5)$$

where *NWC* = net working capital; *CA* = current assets; *CL* = current liabilities; *AAR* = average level of accounts receivable; *INV* = inventory; *G* = cash and cash equivalents; and *AAP* = average level of accounts payable.

During estimation of the free cash flows, the holding and increasing of net working capital ties up money used for financing net working capital. If net working capital increases, the firm must utilize and tie up more money, and this decreases free cash flows. Production level growth necessitates increased levels of cash, inventories, and accounts receivable. Part of this growth will be covered with current liabilities that automatically grow with the growth of production and sales. The remaining cash requirements (that are noted as net working capital growth, ΔNWC) will require a different form of financing.

Trade credit policy decisions changing the terms of trade credit create a new accounts receivable level. Consequently, trade credit policy has an influence on firm value. This comes as a result of alternative costs of money tied in accounts receivable and general costs associated with managing accounts receivable. Both the first and the second involve modification of future free cash flows and as a consequence firm value changes. In Figure 1, we show the influence of trade credit policy changes on firm value. These decisions change:

- future free cash flows (*FCFF*),
- life of the firm (*t*) and
- rate of the cost of capital financing the firm (*k*).

Changes to these three components influence the creation of the firm value (ΔVp).

1 To estimate changes in accounts receivable levels, we accept discount rate equal to the average weighted cost of capital (WACC). Such changes and their results are strategic and long term in character, although they refer to accounts receivable and short run area decisions (T.S. Maness 1998, s. 62-63).

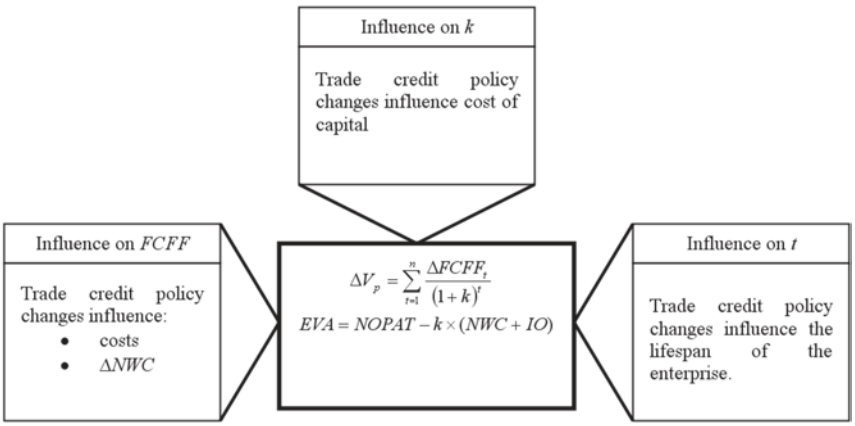


Figure 1. The trade credit policy influence on firm value

where *FCFF* = free cash flows to firm; ΔNWC = net working capital growth; k = cost of the capital financing the firm; and t = the lifespan of the firm and time to generate single *FCFF*.

Source: own study.

Accounts receivable changes (resulting from changes in trade credit policy of the firm) affect the net working capital level and also the level of accounts receivable management operating costs in a firm; these operating costs are a result of accounts receivable level monitoring and recovery charges).

Trade credit terms give evidence of a firm trade credit policy. They are the parameters of trade credit and include:

- the maximum delay in payment by purchasers (trade credit period);
- the time the purchaser has to pay with a cash discount; and
- the rate of the cash discount.

The length of the cash discount period and the maximum delay in payment by purchasers give information about the character of a firm trade credit policy. These trade credit conditions are:

ps/os, net ok **(6)**

where *ps* = cash discount rate, *os* = cash discount period, and *ok* = maximum payment delay period.

The terms of a trade credit sale are the result of a firm's management decision made on the basis of information about factors such as:

- market competition,
- the kind of goods or services offered,
- seasonality and elasticity of demand,
- price,
- type of customer, and
- profit margin from sale.

It is important to match the length of the trade credit of a firm to its customer's capabilities. The enterprise giving the trade credit should take into account the purchasers' inventory conversion cycle as well as its accounts receivable conversion cycle. These two elements make up the operating cycle of a purchaser. The shorter this cycle, the shorter should be the maximum payment delay period offered to a purchaser. The maximum payment delay period for purchaser is the maximum expected period of accounts receivable cycle for a seller.

In order to choose what terms of sale should be proposed to the purchaser a firm management can use the incremental analysis as final criterion, as well as compare the influence of these proposals on firm value. Incremental analysis is a tool for estimating the effects of changes in trade credit policy on the enterprise. This analysis usually takes into account three basic elements:

(1) Estimation of the results of changes on sales as well as losses resulting from bad debts.

(2) Estimation of the changes in the firm accounts receivable level.

Accounts receivable growth we have as:

$$\Delta AAR = (ACP_1 - ACP_0) \times \frac{CR_0}{360} + VC \times ACP_1 \times \frac{CR_1 - CR_0}{360}, \text{ if } CR_1 > CR_0$$
$$\Delta AAR = (ACP_1 - ACP_0) \times \frac{CR_1}{360} + VC \times ACP_0 \times \frac{CR_1 - CR_0}{360}, \text{ if } CR_1 \le CR_0$$

(7)

where ΔAAR = accounts receivable growth; ACP_0 = receivables collection period before trade credit policy change; ACP_1 = receivables collection period after trade credit policy change; CR_0 = cash revenue before trade credit policy change; CR_1 = cash revenue after trade credit policy change; and VC = variable costs (in percent from sales incomes).

(3) Estimation of the firm value change:

$$\Delta EBIT = [(CR_1 - CR_0) \times (1 - VC) - k_{AAR} \times \Delta AAR + - (l_1 \times CR_1 - l_0 \times CR_0) - (sp_1 \times CR_1 \times w_1 - sp_0 \times CR_0 \times w_0)]$$

(8)

where $\Delta EBIT$ = earnings before interests and taxes growth; k_{AAR} = operating costs of accounts receivable management in a firm; I_0 = bad debts losses before trade credit policy change; I_1 = bad debts losses after trade credit policy change; sp_0 = cash discount before trade credit policy change; sp_1 = cash discount after trade credit policy change; w_0 = part of purchasers using cash discount before trade credit policy change; and w_1 = part of purchasers using cash discount after trade credit policy change.

To check how changes in the accounts receivable level and *EBIT* influence on firm value, it is possible to use changes in future free cash flows. First we have changes in *FCFF* in time 0:

$$\Delta FCFF_0 = -\Delta NWC = -\Delta AAR \tag{9}$$

Next the free cash flows to firm in periods (from 1 to *n*), as:

$$\Delta FCFF_{1...n} = \Delta NOPAT = \Delta EBIT \times (1 - T) \tag{10}$$

Example 1. An enterprise CR_0 = 500 000 000 €. VC = 50% × CR. Operating costs of accounts receivable management in a firm, k_{AAR} = 20%. WACC = 15%. T = 19%. Before trade credit policy change half of firm customers pay before delivery. 25% of them use 2% cash discount paying on the 10th day. The remaining customers pay on the 30th day. Assuming bad debts losses account for 3% of *CR*, the trade credit policy changes (from 2/10, net 30 to 3/10, net 40) considered by the firm will have the following result: 40% of firm customers will pay before delivery; 30% of them will use the 3% cash discount paying on the 10th day. The remaining customers will pay on the 45th day. Assuming bad debts losses account for 4% of *CR*, CR_1 = 625 000 000 €. The effects of changes in trade credit policy would be felt for 3 years.

Because 50% of sale before change of policy is done in cash, 25% of principle is collected on the 30th day, and 25% on principle of charge regulated up to the 10th day, the ACP_0 is:

$$ACP_0 = 0{,}5 \times 0 + 0{,}25 \times 10 + 0{,}25 \times 30 = 10 \text{ days}.$$

The ACP_1 after change is:

$$ACP_1 = 0{,}4 \times 0 + 0{,}3 \times 10 + 0{,}3 \times 45 = 16{,}5 \text{ days}.$$

This is why the expected increase of average level of accounts receivable will be:

$$\Delta AAR = (16{,}5 - 10) \times \frac{500000000}{360} + 0{,}5 \times 16{,}5 \times \frac{125000000}{360} = 11\,892\,361 €.$$

Therefore, as a result of trade credit policy change, the average state of accounts receivable will grow to 11 892 361 €.

Next we have $\Delta EBIT$:

$$\Delta EBIT = 125000000 \times 0{,}5 - 20\% \times 11892361 - (4\% \times 625000000 - 3\% \times 500000000) + -(3\% \times 625000000 \times 30\% - 2\% \times 500000000 \times 25\% = 46\,996\,527{,}8 €$$

Using equations nine and ten, we can estimate firm value growth:

$$\Delta V = -11\,892\,361 + \frac{46\,996\,527{,}8 \times 0{,}81}{0{,}15} \times \left(1 - \frac{1}{1{,}15^3}\right) = 75\,023\,598 €.$$

As we see, the trade credit policy change will increase the firm value. Similar information is given by estimation of ΔEVA after trade policy change:

$$\Delta EVA = 0{,}81 \times 46\,996\,527{,}8 - 15\% \times 11\,892\,361 = 36\,283\,333 €.$$

As one can see through the case discussed, the first half and then 40% of sales are realized on the principle of cash sale. This results from the fact that those customers who created sales only for cash did not fulfill the requirements relating the risks, which is considered a percentage of delayed payments. Therefore, the firm stopped offering these purchasers sales on the principle of trade credit. This was despite the fact that their financing with the trade credit made it possible to notice much greater activity and larger level of income from sales than would have been seen had trade credit been relinquished.

3. A Portfolio Theory Approach in Trade Credit Decisions

A portfolio is a set of assets (for example, accounts receivable). The portfolio approach to accounts receivable management can be used by utilizing the rate of profit (rate of advantage from assets) as one of the basic criteria that the firm giving the trade credit should encourage the purchaser to consider when making decisions (Jajuga 1994, p. 80-110). The profit rate resulting from the trade credit can be defined as:

$$R_{nAR} = \frac{\Delta CR - \Delta Costs}{\Delta Costs} \tag{11}$$

where R_{nAR} = profit rate from giving the trade credit to purchasers *n*, ΔCR = cash revenue growth generated from additional sale to *n* customers instead of the cash sale, and $\Delta Costs$ = growth of costs resulting from offering the trade credit to purchaser *n*.

The present rate of profit is realized amid conditions of risk and uncertainty. The rate of profit changes varies according to the various probabilities. These probabilities result from customers' marketable situations, which influence their ability to regulate their accounts payable to the seller in an appropriate manner. The risk measure connected with the accounts receivable of a concrete purchaser varies according to the following equation:

$$V = \sum_{i-1}^{m} p_i \times (R_i - R)^2 \tag{12}$$

where p_i = based on historical data probability of R_i, and R_i = expected rate of return from accounts receivable from the group of purchasers *i*.

The measure of risk also can be defined according to standard deviation:

$$s = \sqrt{V} = \sqrt{\sum_{i-1}^{m} p_i \times (R_i - R)^2} \quad (13)$$

Both the variation and the standard deviation can be estimated for the historical data of a purchaser.

The next element is the correlation of profit from the trade credit given to the purchaser (or to the group of purchasers) in which the profits of the trade credit are given to other purchasers (or to different groups of purchasers). If the firm completes the transactions with more than one group of purchasers, it is possible to distinguish two or more homogeneous groups in relation to the risk and profit from giving the trade credit. In this case, the portfolio approach can be used. These groups can belong to definite trades[2], and a connection does or can exist between the accounts receivables of these groups of purchasers. The measure of such a connection is usually a coefficient of correlation:

$$\rho_{1.2} = \frac{\sum_{i=1}^{m} p_i \times (R_{1i} - R_1) \times (R_{2i} - R_2)}{s_1 \times s_2} \quad (14)$$

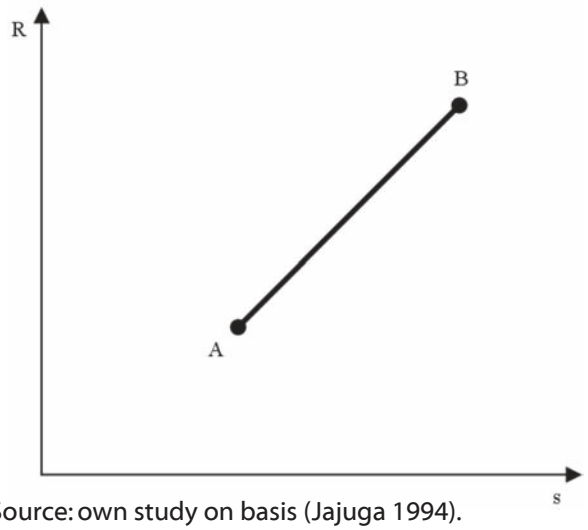
where $\rho_{1.2}$ = coefficient of the first and second groups of accounts receivable correlation; R_1 = expected rate of return from accounts receivable of the first group of purchasers; R_2 = expected rate of return from accounts receivable of the second group of purchasers; s_1 = standard deviation for the first group; s_2 = standard deviation for the second group; R_{1i} = individual rate of return from accounts receivable of purchaser *i* from the first group of purchasers; R_{2i} = individual rate of return from accounts receivable of purchaser *i* from the second group of purchasers; and p_i = probability of individual rate of return from accounts receivable of purchaser *i*.

To show how portfolio approach can be used in accounts receivable management, we will use the portfolio of two groups of accounts receivable as examples.

2 In Polish business practice purchasers coming from one trade group have similar payments because they serve the same market and have similar customers with similar payment habits.

Example 2. The firm cooperates with two homogenous groups of purchasers. The first group of purchasers delivers its services to industry A, the second group of purchasers serves customers from industry B. Creating a portfolio of two kinds of accounts receivable makes sense only when the correlation between profits from the giving trade credit for these groups is less than 1.

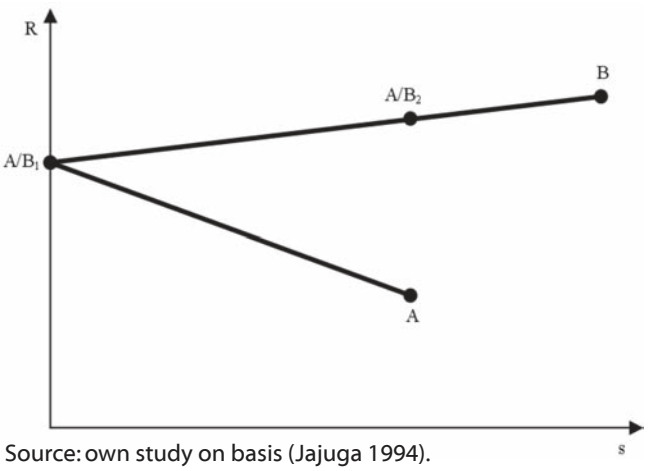
Example 2, Case 1. Correlation coefficient between accounts receivable profits from Groups A and B equals 1, $\rho_{A,B} = 1$.



Source: own study on basis (Jajuga 1994).

Figure 2 shows that there is no possibility of increasing profit from diversification without increasing risk if $\rho_{A,B} = 1$.

Example 2, Case 2. Coefficient of correlation equal (- 1), $\rho_{A,B} = (-1)$ Perfect negative correlation.

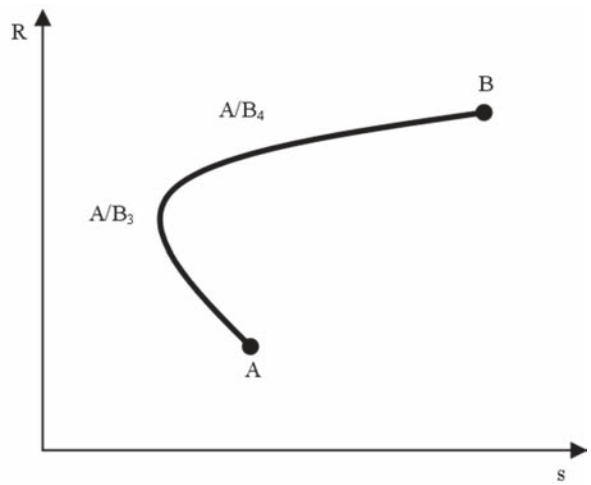


Source: own study on basis (Jajuga 1994).

Figure 3. The profit - risk relation for portfolio of accounts receivable for two groups of purchasers if $\rho_{A,B} = (-1)$

At Point A we offer trade credit only to Group A. At point B we offer trade credit to Group B. If we are following from Point A (and we are enlarging the contribution of Group B to the accounts receivable portfolio) to A/B_1, the risk *s* is decreasing and the profit *R* is increasing. As we see in Figure 3, it makes no sense to possess accounts receivable only from Group A. This is because with identical risk *s*, the portfolio A/B_2 offers higher profit *R*.

Example 2, Case 3. Coefficient of correlation equal 0, $\rho_{A,B} = 0.$ This is a situation where the benefits from giving trade credit to Group A and Group B are not related to each other in any way.



Sou

Figure 4. The profit - risk relation for portfolio of accounts receivable for two groups of purchasers if $\rho_{A,B} = 0.$

In such a situation the only possibility is the partial reduction of risk. The reasonable firm should not choose any portfolio of charge lying on the A - A/B_3 line, because it is always possible to find a more profitable equivalent on the A/B_3 - A/B_4 line, which with the same risk s gives higher profit R. The skilful construction of two groups of accounts receivable portfolios can lead to a considerable reduction of risk. The inclusion of a single-asset portfolio second component almost always leads to risk decreasing, sometimes even with simultaneous profit growth (Brigham 2004, p. 77; Jajuga 1994, p. 119; Jajuga 1997; Jajuga 1993; Wait 2002; Fabozzi 2000; Jajuga 2002).

Example 3 (continuation of example 1). After the historical data analysis had been acquired, firm managers noticed that the expected profits were higher and correlated negatively with profits generated from purchases by current customers. This was certainly from allowing trade credit to customers who had made cash purchases because of the high risk during the receivables collection period. These trends lead to the expectation[3] of a lower risk of profits from accounts receivable and growth in profits from sales in general at the same time. A 3% cash discount was proposed for customers who paid within 10 days along with an extension of the payment deadline to 45 days for any remaining customers. As a result, 4% of sales would be paid for in cash, while 40% of customers would take advantage of the cash discount by paying by the 10th day. Remaining customers (46% of sales) would make their payments on the 45th day. Bad debts = 1% × CR. CR_1 = 700 000 000 €. The effect of these changes in trade credit policy would be felt for three years. In addition, VC would be reduced from 50% to 49% thanks to the positive advantages of scales resulting from larger sales (and increased production).
So, we have:

$$DSO_2 = 0{,}04 \times 0 + 0{,}40 \times 10 + 0{,}46 \times 45 = 24{,}7 \text{ days}$$

$$\Delta AAR = (24{,}7 - 10) \times \frac{500\,000\,000}{360} + 0{,}49 \times 24{,}7 \times \frac{200\,000\,000}{360} = 27\,140\,556\,€.$$

$$\Delta EBIT = 200\,000\,000 \times 0{,}51 - 20\% \times 27\,140\,556 - (1\% \times 700\,000\,000 - 3\% \times 500\,000\,000) +$$
$$- (3\% \times 700\,000\,000 \times 40\% - 2\% \times 500\,000\,000 \times 25\% = 98\,671\,889\,€$$

From this, we have the following change in the firm value:

$$\Delta V = -27\,140\,556 + \frac{98\,671\,889 \times 0{,}81}{0{,}15} \times \left(1 - \frac{1}{1{,}15^3}\right) = 155\,344\,454\,€.$$

The firm value will increase. The proposed change will be more profitable than in example 1 without using the portfolio approach. This related information comes from the estimation of EVA growth:

$$\Delta EVA = 0{,}81 \times 98\,671\,889 - 15\% \times 27\,140\,556 = 75\,853\,147\,€$$

4. Conclusion

Accounts receivable management decisions are very complex. On the one hand, too much money is tied up in accounts receivable because of an extremely liberal policy of giving trade credit. This burdens the business with higher costs of accounts receivable service with additional high alternative costs.
Additional costs are further generated by bad debts from risky customers. On the other hand, the liberal trade credit policy could help enlarge income from sales. In the article, the problem was linked to the operational risk of purchasers interested in receiving trade credit who, as separately considered groups, may be characterized by too high a risk level. However, if they are considered one of several groups of enterprise customers, and if their payment habits are correlated with the payment habits of the remaining groups, what was formerly impossible could become possible, and may even turn profitable.

3 with admittance of taking both groups simultaneously on trade credit principles

The portfolio of assets, like the portfolio of accounts receivable, sometimes presents a lower risk to acceptable advantages than the independently considered groups of purchasers.

Preferences

Brigham E.F., Daves P.R., Intermediate Financial Management, Thomson, Mason 2004.

Czekaj J., Z. Dresler, Zarządzanie finansami przedsiębiorstw. Podstawy teorii, WN PWN, Warszawa 2002.

Fabozzi F. J., G. Fong, Zarządzanie portfelem inwestycji finansowych przynoszących stały dochód, WN PWN, Warszawa 2000.

Jajuga K., Zarządzanie kapitałem, Wydawnictwo AE, Wrocław 1993.

Jajuga K., T. Jajuga, Inwestycje. Instrumenty finansowe. Ryzyko finansowe. Inżynieria finansowa, WN PWN, Warszawa 2002.

Jajuga K., T. Jajuga, Jak inwestować w papiery wartościowe, WN PWN, Warszawa 1994.

Jajuga K., K. Kuziak, P. Markowski, Inwestycje finansowe, Wydawnictwo AE, Wrocław 1997.

Luenberger D. G., Teoria inwestycji finansowych, WN PWN, Warszawa 2003.

Maness T.S., J.T. Zietlow, Short-Term Financial Management, Dryden Press, Fort Worth 1998.

Michalski G., Leksykon zarządzania finansami, CHBeck, Warszawa 2004.

Piotrowska M., Finanse spółek. Krótkoterminowe decyzje finansowe, Wydawnictwo AE, Wrocław 1997.

Pluta W., G. Michalski, Krótkoterminowe zarządzanie kapitałem, CHBeck, Warszawa 2005.

Reilly F. K., K. C. Brown, Analiza inwestycji i zarządzanie portfelem, PWE, Warszawa 2001.

Scherr F. C., Modern Working Capital Management. Text and Cases, Prentice Hall, Englewood Cliffs 1989.

Guide for Submission of Manuscripts The South East European Journal of Economics and Business

Guide for Submission of Manuscripts

The South East European Journal of Economics and Business

http://www.efsa.unsa.ba/see

The South East European Journal of Economics and Business (SEE Journal) primarily addresses important issues in economics and business, with a special focus on South East European and countries in transition. Articles may involve explanatory theory, empirical studies, policy studies, or methodological treatments of tests.

Manuscripts are reviewed with the understanding that they

- are substantially new;
- have not been previously published, unless without copyrights as part of the proceedings of a conference sponsored by the School of Economics and Business;
- have not been previously accepted for publication;
- are not under consideration by any other publisher, and will not be submitted elsewhere until a decision is reached regarding their publication in the SEE Journal.

The procedures guiding the selection of articles for publication in the Journal require that no manuscript be accepted until it has been reviewed by the Editorial Board and at least two outside reviewers who are experts in their respective fields (often members of the International Editorial Board). Manuscripts are reviewed simultaneously by geographically separated reviewers. It is the
Journal's policy to remove the author's name and credentials prior to forwarding a manuscript to a reviewer to maximize objectivity and ensure that manuscripts are judged solely on the basis of content, clarity, and contribution to the field. All manuscripts are judged on their contribution to the advancement of science, the practice of economics and business, or both. Articles should be written in an interesting, readable manner, and technical terms should be defined. In some highly exceptional circumstances, the Journal will publish a solicited manuscript from a noted scholar on a topic deemed of particular interest to the development of the fields of economics and business.

Manuscripts submitted to the Journal can be processed most expeditiously if they are prepared according to these instructions.

Manuscript Preparation

Manuscripts should be typed double-spaced, including references, and formatted for the A4 (21cm x 29,7cm) paper size. Single spacing should not be used aside from tables and figures. Page numbers are to be placed in the upper right-hand corner of every page. A tab indent should begin each paragraph. Please allow the text to wrap, rather than placing a hard return after every line. Manuscripts ordinarily should be between 4,000 and 6,000 words (ca. 15 typewritten pages of text)

using Times New Roman l2-point type. Articles of shorter or longer length are also acceptable. Please refrain from using first person singular in the text of the manuscript unless it is a solicited article or book review.

Submit manuscripts electronically, in Word format, to seejournal@efsa.unsa.ba. The author's name should not appear anywhere except on the cover page. The author should keep an extra, exact copy for future reference.

In the article, please be sure that acronyms, abbreviations, and jargon are defined, unless they are well-known or in the dictionary or The Chicago Manual of Style, 15th edition (e.g., Table 14.4 and sec. 15.55). Quotes of 10 or more words must include page number(s) from the original source. Every citation must have a reference, and every reference must be cited.

For any details of manuscript preparation not included in the following sections, see The Chicago Manual of Style, 15th edition, Chicago and London: University of Chicago Press, 2003, and review recent issues of the Journal.

1. What Goes Where?

The sections of the manuscript should be placed in the following order: cover page, title page, body, appendices, endnotes, reference list, tables, figures. Each section should begin on a new page.

Cover Page - Article title, with full name of author(s), present position, organizational affiliation, full address including postal code and country, telephone/fax numbers, and e-mail address. Author(s) must be listed in the order in which they are to appear in the published article. Please clearly indicate which author will serve as the primary contact for the Journal and be especially sure to provide a fax number and e-mail address for this person. A 40-word (maximum) narrative on each author's specialty or interests should also appear on this page, as should any acknowledgment of technical assistance (this page will be removed prior to sending the manuscript to reviewers).

Title Page - Title of paper, without author(s) name(s), and a brief abstract of no more than 150 words substantively summarizing the article. JEL classification code to facilitate electronic access to this manuscript should also be listed on this page.

Body - The text should have its major headings centered on the page and subheadings flush with the left margin. Major headings should use all uppercase letters; side subheadings should be typed in upper and lowercase letters. Do not use footnotes in the body of the manuscript. If used, please place endnotes in a numbered list after the body of the text and before the reference list; however, avoid endnotes wherever possible because they interrupt the flow of the manuscript. Acronyms, abbreviations, and jargon should be defined unless they are well-known (such as IMF) or they can be found in the dictionary. Quotes of 10 or more words should include page number(s) from the original source. Every citation must have a reference, and every reference must be cited.

Tables and Figures - Each table or figure should be prepared on a separate page and grouped together at the end of the manuscript. The data in tables should be arranged so that columns of like materials read down, not across. Non-significant decimal places in tabular data should be omitted. The tables and figures should be numbered in Arabic numerals, followed by brief descriptive titles. Additional details should be footnoted under the table, not in the title. In the text, all illustrations and charts should be referred to as figures. Figures must be clean, crisp, black-and-white, camera-ready copies. Please avoid the use of grayscale shading; use hatch marks, dots, or lines instead. Please be sure captions are included. Indicate in text where tables and figures should appear. Be sure to send final camera-ready, black-and-white versions of figures and, if possible, electronic files.

References - References should be typed double-spaced in alphabetical order by author's last name. Reference Citations within Text - Citations in the text should include the author's last name and year of publication enclosed in parentheses without punctuation, e.g., (Johnson 1999). If practical, the citation should be placed immediately before a punctuation mark. Otherwise, insert it in a logical sentence break. If a particular page, section, or equation is cited, it should be placed within the parentheses, e.g., (Johnson 1990, p. 15). For multiple authors, use the full, formal citation for up to three authors, but for four or more use the first author's name with "et al." For example, use (White and Smith 1977) and (Brown, Green, and Stone 1984). For more than three authors, use (Hunt et al. 1975), unless another work published in that year would also be identified as (Hunt et al. 1975); in that case, list all authors, e.g., (Hunt, Bent, Marks, and West 1975).

Reference List Style - List references alphabetically, the principal author's surname first, followed by publication date. The reference list should be typed double-spaced, with a hanging indent, and on a separate page. Do not number references.

Please see the reference examples below as well as reference lists in recent issues. Be sure that all titles cited in the text appear in the reference list and vice versa. Please provide translations for non-English titles in references, page ranges for articles and for book chapters, and provide all authors' and editors' names (not "et al." unless it appears that way in the publication).

Journal article:

Smith, J. R. 2001. Reference style guidelines. Journal of Guidelines 4 (2): 2-7 [or 4:2-7].

_____.2001. Reference style guidelines. Journal of Baltic Studies 4 (2): 2-7.

Book:

Smith, J. R. 2001. Reference style guidelines. Thousand Oaks, CA: Sage.

Chapter in a book:

Smith, J. R. 2001. Be sure your disk matches the hard copy. In Reference style guidelines, edited by R. Brown, 155-62. Thousand Oaks, CA: Sage.

Editor of a book:

Smith, J. R., ed. 2001. Reference style guidelines. Thousand Oaks, CA: Sage.

Dissertation (unpublished):

Smith, J. R. 2001. Reference style guidelines. Ph.D. diss., University of California, Los Angeles.

Paper presented at a symposium or annual meeting:

Smith, J. R. 2001. A citation for every reference. and a reference for every citation. Paper presented at the annual meeting of the Reference Guidelines Association, St. Louis, MO, January.

Online:

Smith, J. R. 2001. Reference style guidelines. In MESH vocabulary file (database online). Bethesda, MD: National Library of Medicine. http://www.sagepub.com (accessed October 3, 2001).

Mathematical Notation - Mathematical notation must be clear within the text. Equations should be centered on the page. If equations are numbered, type the number in parentheses flush with the right margin. For equations that may be too wide to fit in a single column, indicate appropriate breaks. Unusual symbols and Greek letters should be identified by a marginal note.

Permission Guidelines – Authors are solely responsible for obtaining all necessary permissions. Permission must be granted in writing by the copyright holder and must accompany the submitted manuscript. Authors are responsible for the accuracy of facts, opinions, and interpretations expressed in the article.
Permission is required to reprint, paraphrase, or adapt the following in a work of scholarship or research:

- Any piece of writing or other work that is used in its entirety (e.g., poems, tables, figures, charts, graphs, photographs, drawings, illustrations, book chapters, journal articles, newspaper or magazine articles, radio/television broadcasts);
- Portions of articles or chapters of books or of any of the items in the preceding paragraph, if the portion used is a siz able amount in relation to the item as a whole, regardless of size, or it captures the "essence" or the "heart" of the work;
- Any portion of a fictional, creative, or other nonfactual work (e.g., opinion, editorial, essay, lyrics, commentary, plays, novels, short stories);
- Any portion of an unpublished work.

Manuscript Submission

Submit manuscripts electronically, in MS Word format, to seejournal@efsa.unsa.ba.

All correspondence should be addressed to:

The South East European Journal of Economics and Business
University of Sarajevo, School of Economics and Business
Trg Oslobodjenja-Alija Izetbegovic 1
71 000 Sarajevo
Bosnia and Herzegovina

Telephone and fax: 00387-33-275-922
E-mail: seejournal@efsa.unsa.ba; http://www.efsa.unsa.ba.

Submission of Final Manuscripts

Authors of final manuscripts accepted for publication should submit manuscripts electronically, in MS Word format, to seejournal@efsa.unsa.ba. The author should keep an extra, exact copy for future reference. Figures are acceptable as camera-ready copy only.

Call for Papers

With great pleasure we inform you that after publishing the Vol. 3, No. 2 issue of The South East European Journal of Economics and Business, the School of Economics and Business in Sarajevo is announcing a

Call for Papers

for the Vol. 4 No. 1 issue of "The South East European Journal of Economics and Business"

The South East European Journal of Economics and Business is a research oriented journal that deals with topics in the field of economics and business, highlighting the transitional economies of South East Europe, and their importance for global economic growth. Our goal is to establish an academic journal in the field of economics and business based on both regional and an international focuses, original articles, rigorous selection, continuous publication and talented authors.

The papers submitted for the previous issues were reviewed by prominent reviewers from all over the world, and all submitted papers were reviewed using the double blind review method. We succeeded in gathering talented authors with new perspectives on regional economies and business activities.

After the successful release of our previous issues, we would like to welcome you and your colleagues to submit original works of research concerning economic theory and practice, management and business focused on the area of South East Europe. Topics may particularly relate to individual countries of the region or comparisons with other countries. All submissions must be original and unpublished. Submissions will be reviewed using a "double-blind" review method. Submissions should be delivered in English.

This Journal is indexed in the EconLit and Business Source Complete databases and also available on the website of the School of Economics and Business, University of Sarajevo: http://www.efsa.unsa.ba/see

Although the Journal is open for the submission of papers, it should be emphasized that if you desire to submit your paper for publication in the seventh issue to be published in April 2009 you should confirm and provide the title of your research as soon as possible. The deadline for submission of final papers is February 15th, 2009. You should send your papers to the following address: seejournal@efsa.unsa.ba

The South East European Journal of Economics and Business is open to cooperation with authors from all over the world. Authors, reviewers and all interested parties can find information about the Journal at http://www.efsa.unsa.ba/see, which includes all required information for potential authors and reviewers and electronic versions of previous issues. We are looking forward to your participation in the establishment of the Journal as a prominent publication.

Please share this announcement with your colleagues.

Fikret Čaušević,
Editor