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AN AGGREGATE IMPORT DEMAND FUNCTION FOR NIGERIA

ABSTRACT

Being a small open economy, Nigeria requires imports, such as capital and intermediate goods to grow and develop. This paper uses a time series econometric technique, precisely the error-correction mechanism, to identify the factors responsible for import demand. The results show that imports, income and relative prices are all cointegrated. The econometric estimates of the import-demand function for Nigeria suggests that import demand is largely determined by real income (GDP) and less sensitive to relative prices. In addition, the structural policy shift to liberalization since 1986 is found to have little but significant impact on import demand. Development of local industries with low import content is suggested given that exchange rate policy and devaluation generally are likely to be ineffective in influencing import demand of Nigeria.

Key Words: *Import demand, relative prices, real income, cointegration, Nigeria, policy structural shift.*

INTRODUCTION

In the economic literature, international trade has been largely linked to the growth process of developing economies. As a Less Developed Country (LDC), Nigeria's import of capital goods is crucial for investment in order to generate the desired level of economic growth. In addition, a rising level of import of raw materials and spare parts is needed to sustain import competitive domestic industries. In view of the strategic role of imports in the growth of the domestic economy, there have been frequent changes in import control measures in Nigeria. Such changes, nevertheless, tend to reflect the conflicting objectives which government desired to achieve from time to time. Import control measures by design are artificial barriers to the free trade doctrine of international trade.

A number of existing studies have empirically explained the aggregate import demand behaviour in Nigeria. Among them are Olayide (1968), Ajayi (1975), Fajana (1975), Mouka (1982), Obadan (1986) and Egwaikhide (2000). These studies adopted the traditional formulation of import demand equation, the volume of imported demanded to real income and relative price variables. The assumption of this approach is that the import content of

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each macro component of final expenditure (real GDP or GNP) is the same, so also are the import coefficients of all components of aggregate expenditure assumed to be equal. The implications as enunciated by Orubu, (1989) for Nigeria, Giovannetti (1989) for Italy, and Mohammed and Tang (2000) for Malaysia; Abbot and Seddighi (1996) for U.K., are that such assumptions could intuitively lead to aggregation bias. While such an assumption could be taken for granted especially given the unavailability of adequate and consistent data in the case of Nigeria, the previous studies which used Nigerian data applied the standard ordinary least squares (OLS) regression models and in some cases, partial adjustment approaches to estimate the import demand function (for instance, Olayide, 1968; Ajayi, 1975; Fajana, 1975; Mouka, 1982; Obadan, 1986; Orubu, 1989 among others). These studies did not examine the time series properties of the data set and as such, they stood the risk of doing a "nonsense" regression.

This study on Nigeria seeks to extend the analysis of demand for imports in Nigeria by employing the cointegration technique as developed by Johansen and Juselius (1992, 1994) as well as the error-correction mechanism to determine whether there exists a long-run relationship between Nigeria's aggregate imports and its determinants using annual data covering 1970-2006. Cointegration technique as the literature has it, increases the reliability of statistical modelling by taking explicit account of non-stationary data (Hickling, 2006 and Johansen, 1988). The paper also seeks to determine the effects of the various trade reforms particularly the liberalization policy since the mid 1980s on the import demand behaviour of Nigeria. It is important for the policy makers to know whether short-run disequilibrium in the import sector are eliminated in the long-run through reforms in the sector. Unless policy makers understand the determinants of import demand in Nigeria and their response to economic reforms in the long-run, they would be unable to make consistent policy prescription on imports that would ensure necessary investment and output expansion.

The rest of the paper is organized into 4 sections. Section 2 presents a brief review of trade policy and import growth in Nigeria. Following the lead by Dutta and Ahmed (2001), section 3 presents the theoretical model. In section 4 the results of the empirical analysis are discussed, while section 5 concludes the paper and summarizes the policy implications of the findings.

2. EXTERNAL TRADE POLICIES AND IMPORT GROWTH IN NIGERIA

The trend in trade policies in Nigeria has been unstable over time reflecting the desires of government to achieve different targets at different times. The main objectives which government sought to achieve through changes in trade policies and import controls may be summed up as: control of inflation, rapid expansion of the domestic economy, revenue generation, protection of domestic import substitution industries, external balance and export promotion. Prior to the 1986 economic reforms, import controls were geared toward revenue generation during the first half of 1960s. Thereafter import controls were used to check inflationary pressures, which arose from supply bottlenecks occasioned by the 1966-1970 civil war. Tariff rates were reduced on imported items such as construction equipments, raw materials electronics and raw materials. Until 1986, the import policies consisted of quantitative import controls, administered through a comprehensive import licensing which were reviewed from time to time. In addition, quantitative restrictions on imports by way of quotas and the outright ban on selected items in line with overall development policies.

The introduction of a World Bank and International Monetary Fund (IMF) inspired Structural Adjustment Programme in 1986 marked a major shift in trade policies in Nigeria. The main thrust of trade reforms was directed at altering the production structures and

consumption patterns so as to minimise dependence on imports and stimulate exports (Inang, 1995). In 1991 trade policies were reviewed in Nigeria with a view to open up the economy through the elimination of arbitrary restrictions and the extensive liberalisation of external trade. However, the shift in policy thrust can be said to have taken-off in 1986.

Aggregate imports have grown steadily in Nigeria since independence in 1960, except in the 1982-1986 periods when the value of imports declined from ten billion naira to 5 billion naira (CBN, 1998). After the discovery of crude oil in the 1950s, import recorded an average growth rate of 2.5% in the 1960s, a higher rate of 33 percent growth per annum was recorded for the 1960s and 1970s (Egwaikhide, 2000). Up to 1965, consumer goods imports dominated the import data, accounting for 41% of total imports. Capital goods imports which was second to consumer goods fluctuated between 24% and 40% during the 1960s. The pattern however changed as from 1980 when capital goods imports were followed by raw materials and consumer goods in that order (Egwaikhide, 2000).

The phenomenal growth in imports reflects the dynamics of the changing structure of the Nigerian economy. First, the import substitution industry strategy of the 1960s created a production structure that is dependent on imported raw materials and spare parts. This helps to account for reversal in the trend of raw materials and consumer goods imports. Second, the quadrupling of crude oil price in 1973-1980 period and again since 2005 and particularly, 2008 increased foreign exchange earning which facilitated a significant rise in imports particularly capital goods and raw materials. Import levels in Nigeria may have thus responded not only to income and price variables but also to the frequent change in trade policies and import controls. Figures 1 and 2 depict the trend movements of oil prices, imports and gross domestic product of Nigeria over time. An observed deduction that can be made from Figures 1 and 2 particularly after 2002 is the pronounced increase in GDP. This sharp rise can de deduced to the observed oil price changes that occurred over that same period. Equally fundamental is the volume of imports which also correspondingly rose in reaction to increased oil price levels. As depicted in Figure 1, Table 1 also shows the nominal trend movement of domestic crude oil prices in $/bbl (1946-2006).

The rise in volume of imports particularly finished and processed goods other than capital goods and spare parts in Nigeria has also been traced to the un-competitiveness of the Nigerian economy in the face of international trade due to poor infrastructural facility. For instance, the 2002 Regional Program for Enterprise Development (RPED) survey(published by the World Bank in collaboration with African Development Bank: *The African Competitiveness Report, 2007*) of Nigerian manufacturing firms concluded that firms consider power failure to their worst constraints. Nine in ten firms surveyed indicated frequent power failure as the most pressing issue in their operations; while South Africa and Algeria did not indicate it as a worrisome issue. Cost of privately provided electricity in Nigeria is about 242 percent of that provided by the Nation's Electricity Company (Power Holding Company of Nigeria, PHCN). Damage to equipment and machinery accounts for 3.3 percent of total value of the equipment as the country equally loses about N66bn yearly through power failure (http://nm.onlinenigeria.com/template/?a=293&z=2). As a result of the power shortage, some firms have modified their production process by using less electricity-intensive inputs, which may be more costly; while some others resulted to reduction in output. Output gaps resulting from underutilisation of installed capacity as increased demand outstrips growth in supply have thus been accommodated through large imports. Consequently, it may be concluded temporarily that the increased import

Figure 1

Oil Prices ($) 1946-2006

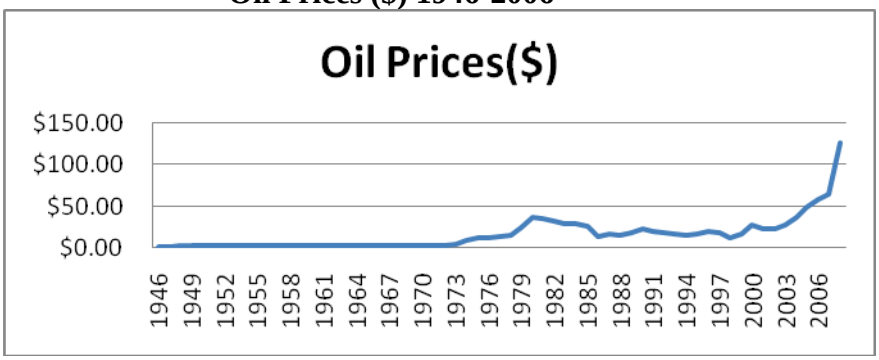

Figure 2

Gross Domestic Product and Import Volume (1970-2005)

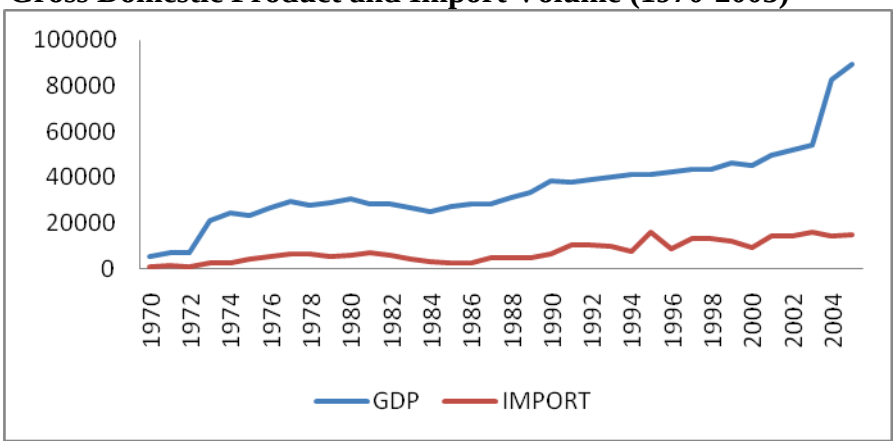

Table 1

Annual Average Domestic Crude Oil Price (1946 – 2006) U.S. Average (in $/bbl.)

Year	Nominal	Year	Nominal	Year	Nominal
1946	$1.63	1966	$3.10	1987	$17.75
1947	$2.16	1967	$3.12	1988	$14.87
1948	$2.77	1968	$3.18	1989	$18.33
1949	$2.77	1969	$3.32	1990	$23.19
1950	$2.77	1970	$3.39	1991	$20.20
1951	$2.77	1971	$3.60	1992	$19.25
1952	$2.77	1973	$4.75	1993	$16.75
1953	$2.92	1974	$9.35	1994	$15.66
1954	$2.99	1975	$12.21	1995	$16.75
1955	$2.93	1976	$13.10	1996	$20.46
1956	$2.94	1977	$14.40	1997	$18.64
1957	$3.14	1978	$14.95	1998	$11.91
1958	$3.00	1979	$25.10	1999	$16.56
1959	$3.00	1980	$37.42	2000	$27.39
1960	$2.91	1981	$35.75	2001	$23.00
1961	$2.85	1982	$31.83	2002	$22.81
1962	$2.85	1983	$29.08	2003	$27.69
1963	$2.91	1984	$28.75	2004	$37.66
1964	$3.00	1985	$26.92	2005	$50.04
1965	$3.01	1986	$14.44	2006	$58.30

Source: http://www.inflationdata.com/inflation/inflation_Rate/Historical_Oil_Prices_Table.asp

demand in Nigeria is due to improved oil prices, rise in demand, weak domestic supply as a result of poor infrastructure, etc.

3. MODELLING THE AGGREGATE IMPORT DEMAND FUNCTION FOR NIGERIA.

Goldstein and Khan (1985) have provided a theoretical framework in the literature on modelling aggregate import demand function using an imperfect substitution model. The model which has some relationship with Dixit (1984) framework for trade under an imperfect market structure, assumes that neither imports nor exports are perfect substitutes for domestic goods Dutta and Ahmed (2001). Given that Nigeria's annual total demand for import in relation to world demand is insignificant, it may not be out of necessity to further assume that the world's imports supply to Nigeria is perfectly elastic. By this token of infinite import supply elasticity, the model of analysis reduces the import demand function to a single equation model (Dutta and Ahmed, 2001).

It is well-documented in the economic literature that the import demand behaviour can be fully explained by income and relative price of import variables (Houthakker and Magee, 1969; Leamer and Stern, 1970, Goldstein and Khan, 1985, Senhadji, 1998 among others). Reinhart (1995-297) emphatically noted that a scale variable (income) and relative prices are both necessary and sufficient to define the long run behaviour of imports. This strongly argues against the inclusion of other variable to the import demand function. Dutta and Ahmed (2001) using the framework of studies by Khan and Ross (1977) and Salas (1982) suggest that a log-linear specification of the import demand function is preferable to a linear formulation. Consequent upon the above, the aggregate import demand function as will be estimated for by this paper uses the traditional import function as specified in equation (1).

$$M_t = F\,(Y, P_m/P_d)\; f_1 > 0, f_2 < 0 \qquad (1)$$

In equation (1), the variables are defined as; the desired quantity of imports demanded (M_t), the scale variable or real income (Y, expressed as real GDP), the price of imports (P_m is an import unit value index), and domestic prices (P_d is the GDP deflator or the consumer price index). Where f_1 and f_2 are the expected partial derivatives of real income and relative prices. We expect $f_1>0$, that is, an increase in real income will stimulate imports; while an increase in the import price relative to the domestic price level will inhibit import volume, thus $f_2<0$. To fit Equation (1) econometrically, the log-linear specification is preferable as earlier noted. Accordingly, the aggregate demand import demand function is log-linearly expressed in the form of:

$$lnM_t = \alpha_0 + \alpha_1 lnY_t + \alpha_2 ln(P_{mt}/P_{dt}) + \mu_1 \qquad (2)$$

In Equation (2), ln is the natural logarithm, other variables as previously defined, and μ is an error term that is assumed to be randomly and normally distributed with constant variance; $\mu \sim N(0, \sigma_\mu^2)$. The coefficients, particularly α_1 and α_2 are the estimated income and price elasticities of demand for imports respectively. It is *a priori* expected that $\alpha_1 > 0$ and

$\alpha_2 < 0$. It was observed in section 2 that in 1986, there was the adoption of a Structural Adjustment Programme (SAP) which marked a major shift in the trade policies of Nigeria. To determine the impact of this policy shift on the import demand function, a dummy is incorporated into Equation (2) as;

$$lnM_t = \beta_0 + \alpha\beta_1 lnY_t + \alpha\beta_2 ln\left(\frac{P_{mt}}{P_{dt}}\right) + \beta_3 DUM + \mu_1 \qquad (3)$$

where, *DUM* is a dummy variable which takes the value of 0 for 1970-1986 and 1 thereafter. The expected sign of the coefficient of the dummy variable does not have any theoretical support. However, if the coefficient is significant statistically, then the trade reform exercise of liberalization since 1986 has a significant effect on the demand for imports depending on the sign. The random term $\mu_1$obeys the classical assumptions of IID(0,σ^2), while other variables in the equation are as previously defined.

This study uses time series data of the variables in the specified models. The time series properties of the variables will be empirically tested in order to avoid the problem of misspecification and misleading statistical inference. In view of this, should unit roots of variables exist when tested for, the first difference of the variable will be equally examined in order to obtain stationarity of the series. Thus Equations (2 and 3) may be respectively recast as Equations (4) and (5) should the presumption of no-stationarity of the series or variables holds.

$$\Delta lnM_t = \alpha_o + \alpha_1 \Delta lnYt + \alpha_2 \Delta ln(P_m/P_d)_t + \mu_i \quad (4)$$

$$\Delta lnM_t = \beta_0 + \beta_1 \Delta lnY_t + \beta_2 \Delta ln(P_m/P_d)_t + \beta_3 DUM_t + \mu_i \quad (5)$$

where, $\mu_i \sim N(0, \sigma_\mu^2)\ for\ i = 1,2.$

Δ is the first difference operator. All other variables as previously defined. An important implication of Equations (4) and (5) if estimated is that the differencing ignores inference on the long-run relationship particularly for decision making. To overcome the problem of variable loss "long-run information, an error-correction term lagged by one period (EC_{t-1}) is imposed on Equations (4) and (5). The EC_{t-1} is presumed to integrate the short-run dynamics in the long-run import demand function via cointegration. In the Johansen cointegration approach, a vector error correction mechanism (VECM) of the framework to be analysed (Equation 2) can be set up as:

$$\Delta z_t = \prod z_{t-1} + A_1 \Delta z_{t-1} + \cdots + e_t \quad (6)$$

where z_t= (m_t, $p_{md,t}$) is the error correction system of Equation (2), the major equation of interest. Equation (6) can be stated simply as Equation (7); while Equation (8) is its augmented form with the inclusion of a dummy (liberalization) variable.

Equations (7) and (8) are thus the general error correction model (ECM) derived from Equations (4) and (5) respectively as:

$$\Delta lnM_t = \varphi_o + \sum_{i=1}^{n} \varphi_{1i} \Delta lnM_{t-1} + \sum_{i=1}^{n} \varphi_{2i} \Delta lnY_{t-1} + \sum_{i=1}^{n} \varphi_{3i} \Delta ln(P_m/P_d)_{t-1} + \varphi_{4i} EC_{t-1} + \varepsilon_1 \quad (7)$$

$$\Delta lnM_t = \varphi_o + \sum_{i=1}^{n} \varphi_{1i} \Delta lnM_{t-1} + \sum_{i=1}^{n} \varphi_{2i} \Delta lnY_{t-1} + \sum_{i=1}^{n} \varphi_{3i} \Delta ln(P_m/P_d)_{t-1} + \varphi_{4i} EC_{t-1} + \rho DUM + \varepsilon_2 \quad (8)$$

where EC_{t-1} is the one period lagged error-correction, ε_1 and ε_2 are white noise and normally distributed residuals. While other variables as previously defined. Based on economic theory, the signs of the coefficients are expected to be statistically significant as follows: φ_1 and $\varphi_2 > 0$; while φ_3 and $\varphi_4 < 0$.

This analysis shall thus sequentially follow the steps highlighted below:

(a) test for unit roots of individual time series (variables) except the dummy by employing the Augmented Dickey-Fuller (ADF) and the Phillip-Perron (PP) tests;

(b) if the variables are integrated of the same order, apply the Johansen-Juselius (1990) maximum likelihood test of cointegration which allows us to test for the cointegration rank and estimate the cointegration vectors or long-run relationships;

(c) since the estimated model is a single-equation error-correction mechanism (ECM), a vector error-correction mechanisms (VECM) instead shall be estimated. The reason is because there can be more than one cointegration *vector*. If so, imposing one cointegrating vector will be inefficient and could lead to loss of information. Even if only one cointegrating vector exists, the VECM also allows for the estimation of short-term and long-term inter-sector adjustments.

(d) undertake battery of tests for normality, serial correlation and stability.

Description of Data

The sample period for the study empirical analyses in Section 4 is from 1970-2005. The data collected from the period is annual.. The data on import volume and income (gross domestic product, GDP) were obtained from the publications of the Central Bank of Nigeria: *Statistical Bulletin* 2007 and other previous issues. The quantity of import demanded is nominal imports of goods and services deflated by import price index. As noted by Dutta and Ahmed (2004), the theory on import demand suggests that the quantity rather than value is a better appropriate dependent variable in the estimation of import demand. The scale variable (real income) is proxied by real GDP is nominal GDP deflated by the GDP deflator. The relative price variable is the ratio of import price to domestic price (GDP deflator). The import price is the import unit value index obtained from price indexes and based in 2000 prices.

4. EMPIRICAL RESULTS

4.1 UNIT ROOTS

It is necessary in the chosen approach of analysis in this form of study to first determine the order of integration of each variable before applying the cointegration technique. The variables to be used for the analysis must be non-stationary and integrated of the same order. First, the stationarity of the data is tested for by applying unit root test (see Table 2). The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to determine the order of integration. The lag lengths of the tests were selected using the Akaike information criterion (AIC) and the Schwarz Information Criterion (SIC). The use of these criteria is to ensure that the residuals were white noise. An optimal lag length of 1 is chosen as the two criteria reported.

The resulting t-statistics from the unit root test as summarized in Table 2 were compared with the Mackinon (1996) critical values. The object is to determine whether to accept or reject H_o:$\zeta = 0$ (if $\zeta = 0$, and $\zeta = \rho - 1$, $Y_t = pY_{t-1} + \Sigma_t$; Y_t has a unit root). If $H_o : \zeta = 0$ is rejected, the first difference stationary is confirmed implying that the variable is integrated of order one; I (1). All the variables used in this study are first difference stationary, that is, they are integrated of order one. The second step is to test for cointegration of the variables since the unit roots have been confirmed.

4.2 COINTEGRATION TESTS

The cointegration results reported in Table 3 indicate the existence of a stable long-run relationship among the variables used in the study. Both the trace test and maximum Eigenvalue statistics reject the null hypothesis of no cointegration implying that there exist a unique cointegration vector among ΔlnM_t ΔlnY_t and $\Delta ln(P_m/P_d)_{t-1}$. Thus, we can conclude that there is a stable import demand function for Nigeria.

Table 2

Stationarity Tests of the Variables

Variables	Lag	ADF Level		ADF First Difference		PP Level		PP First Difference	
		ζμ	ζφ	ζμ	ζφ	ζμ	ζφ	ζμ	ζφ
lnM_t	1	-2.392	-2.923	-7.414*	-7.481*	-2.413	-2.923	-7.367*	-7.433*
lnY_t	1	-2.789	-3.03	-5.241*	-5.258*	-2.815	-3.03	-5.223*	-5.248*
$ln(P_m/P_d)_t$	1	1.259	-3.07	-4.013**	-4.510*	0.733	-3.054	-4.014**	-5.104*

Source: Author's calculations. *. 01; ** .05

ζμ = Intercept; ζφ = intercept and trend; lnM_t = import value; lnY_t = real income, $ln(P_m/P_d)_t$ = relative price.

Table 3

Johansen-Juselius Maximum Likelihood Cointegration Test ΔlnM_t ΔlnY_t and $\Delta ln(P_m/P_d)_t$

Trace				Maximum Eigenvalue Test			
Null	Alternative	Statistic	95% Critical Value	Null	Alternative	Statistic	95% critical value
r = 0	r ≥ 1	51.725	42.915	r = 0	r =1	26.402	25.823
r ≤ 1	r = 2	25.323	25.872	r ≤ 1	r = 2	17.489	19.387

Note: *(a) r stands for the number of cointegrating vectors. The lag structure of VAR is determined by the highest value of the Akaike Information Criterion and the Schwartz Bayesian Criterion.*

(b) Trace and Max-eigenvalue tests indicate 1 cointegrating equation at 0.05 level.

Source: Author's calculations

4.4 CHARACTERISTICS OF THE VECTOR AUTOREGRESSIVE (VAR) MODEL

The literature on time series analysis recognizes that testing for cointegration analysis as developed by Johansen (1988) and Johansen and Juselius (1990) requires testing for the existence of a long-run relationship that demands a P^{th}- order structural and dynamic VAR model of the variables of interest. Consequent upon this, we continued by first setting an appropriate lag-length using some criteria; Final Prediction Error (FPE); Akaike Information Criterion (AIC) and the sequential modified LR test statistic. On the basis of

these information criteria, a best lag length of one year is selected. The VAR lag order selection criteria are reported in Table 4.

Table 4

VAR Lag Order Selection Criteria

Lag	LR	FPE	AIC
0	NA	0.00185	2.2228
1	168.678*	9.56e-05*	-3.04818*
2	6.5254	1.30e-05	-2.753705
3	11.5345	1.42e-05	-1.42e-05

Source: Authors' calculations

*Indicates lag order selected by the criterion

LR = Sequential modified LR test statistic; FPE = Final Prediction Error

AIC = Akaike Information Criterion

The VAR is estimated with 1 lag and we tested the residuals for normality and autocorrection. The normality test is analyzed using the Jarque-Bera. The results of the residual serial correlation LM and Jarque-Bera tests are reported in Table 5 (a & b).

Table 5a

Residuals Multivariete Normal Test

Components	Jarque-Bera	df	Prob.
1	1.6754	2	0.4327
2	1.9378	2	0.3795
3	1.5680	2	0.4983
Joint	5.1812	6	0.3105

Source: Authors' calculations

Table 5b

Residual Serial Correlation LM Tests

Lags	LM-Stat	Prob.
1	4.316259	0.8894
2	10.11363	0.3414
3	8.017591	0.5324
4	5.359868	0.8019

Source: Authors' calculations

The VAR residual normality test show that the VAR is normal while the LM test revealed absence of autocorrelation. Consequently we proceed to estimate the vector error correction model in order to determine the dynamic behaviour of import demand.

4.3 COINTEGRATING VECTOR

The normalized long-run relation cointegrating vector of the import demand function is given by

$$\ln M = -3.752 + 0.962^{*} \ln Y - 0.329^{*} \ln(P_m/P_d) \quad (9)$$
$$(0.132) \qquad (0.057)$$

$$\ln M = -4.781 + 1.043^{*} \ln Y - 0.260^{*} \ln(P_m/P_d) \quad (10)$$
$$(0.142) \qquad (0.956)$$

In Equation (9), the relative price variable is found to be inelastic in Nigeria as the estimated elasticity is less than unitary (with the correct sign, i.e. negative) and statistically significant given that the standard error values are those in parentheses. The scale variable (real income) is positively signed and statistically significant. The real income coefficient is approximately unit elastic. Equation (10) reports the long run cointegration vector of Equation (3), although it does not report a coefficient for the dummy(liberalization) variable (DUM). The reason is that the DUM variable entered the VEC model as an exogenous variable.[2]

Since it has been initially reported in sub-section 4.2 that the variables of interest are cointegrated, we shall proceed to estimate the error correction vector after a brief discussion on the characteristics of the vector autoregression (VAR).

4.5 ESTIMATION OF THE VECTOR ERROR CORRECTION MODEL

The analyzed vector error correction models are transformed into an interpretable form as presented in Equations (11) and (12). For space limitation, we report only the ΔInM_t results of the VECs.

Results of Equations (7) and (8) as reported Table 6, in line with our *a priori* expectations are similar in form and in numerical parameter values to several previous studies (Goldstein and Khan, 1985; Dutta and Ahmed, Chang, Ho and Huang, 2005; and Aziz and Horsewood, 2008). The value of the income elasticity of demand for imports is greater than unity (1.043 and 1.048) for the two estimated equations respectively. This implies that the demand for import increases more than proportionately to increase in real income. The aggregate import functions were found to be price-elastic, the coefficients being -0.08 and -0.233 for equations 8 and 9 in that order. The estimated coefficients from the t-values in parentheses are statistically significant at 0.05 level. The income elasticities are in consonance with Goldstein-Khan range of [1.0 and 2.0]. As for the coefficient estimate of the dummy variable in Equation 8, it is low (0.236) but statistically significant. The implication is that the trade reform or liberalization exercise since 1986 has a significant effect on import demand behaviour of Nigerians.

Table 6

Error Correction Results (Dependent Variable = ΔInM_t)

Explanatory Variables	***Equation (7)***	***Equation (8)***
Intercept	0.078	-0.026
ΔlnM_{t-1}	-0.082 (*-0.52*)	-0.222 (*-1.695*)
ΔlnY_{t-1}	1.043 (*2.537*)	1.048 (*3.313*)
$\Delta ln(P_m/P_d)_{t-1}$	-0.08 (*-1.748*)	-0.233 (*-2.295*)
EC_{t-1}	-0.682 (*-4.455*)	-0.686 (*-5.756*)
DUM		0.236 (*4.895*)

Diagnostic Test Results

Test	*Equation (7)*	*Equation (8)*
R^{-2}	0.409	0.551
F-test	6.708((2.69))	9.109((2.53))
AR(1) test	6.306[0.709]	6.621[0.677]
AR(2) test	5.467[0.792]	12.126[0.157]
Hetero test (F)	0.605[0.765]	0.508[0.855]
Normality test (χ^2)	41.633[0.729]	55.548[0.416]

Source: author's calculations

Note: R^{-2} = 0.41 and 0.55 imply that the models are of fairly good fit. F-test results indicate the overall significance of the models. The AR test of the two models is the Long range Multiplier test for detecting autocorrelation where the null hypothesis is 'no autocorrelation'. This test examines up to second order serial correlation and cannot reject the null hypothesis of 'no autocorrelation'. The 'normality test' assumes that the residuals contain all the properties of classical linear reform model and the test cannot reject the null hypothesis at 5% level of significance. 'Hetero test' assumes 'no heteroscedasticity' in the regression and the test statistic cannot reject the hypothesis. Figures in parentheses ( ) are t-values, brackets [ ] are p-values and those in double parentheses (( )) areF critical values.

The error correction term $(EC)_{t-1}$ for Equations (7) and (8) are statistically significant at 1 percent level and with the appropriate (negative) sign. This confirms the validity of a long-run equilibrium relationship among the variables analyzed. The estimated coefficients

(-0.682 and -0.686) respectively suggest that the system corrects previous period's disequilibrium by over 68 per cent annually. The diagnostic tests are similar to those reported for the residuals of the VAR in subsection 4.4. They (diagnostic statistics) show no evidence of misspecification of the functional form, no serial correlation nor presence of heteroscadasticity. The residuals are approximately normally distributed.

5. SUMMARY AND CONCLUSION

This paper has examined among others issues, the effect of trade policy shift (import liberalization)[2] on Nigeria's import demand at an aggregated level. With a relatively simple model specifying vector valued autoregressive process, the hypothesis of the existence of cointegration is formulated. Applying Nigerian data, import demand is found to be cointegrated with real income (GDP) and relative import prices. The three variables were found to be integrated of order one. That is they are *I(1).* In the estimated error-correction model (ECM), real GDP, real import prices and a dummy variable introduced to measure the effect of the structural policy shift (SAP 1986) all emerged as important determinants of import demand function for Nigeria. The estimated error correction term (-0.682 and -0.686) indicate a rapid speed of adjusted to equilibrium, while their statistical significance is an indication and a feature necessary for model stability.

From policy perspective, the results presented in this paper are important. The main domestic activity variable (real income) is unit elastic while the relative import price is inelastic. Thus, the demand for imports is less sensitive to import price changes. One policy implication of this is that exchange rate policy is likely to be ineffective in influencing import

demand in Nigeria. As such, devaluation or depreciation will not have significant favourable effects on Nigeria's trade balance. The low coefficient of the dummy variable though statistically significant reveals that the structural shift in policy and liberalization of trade policy has little but significant effect on aggregate imports. The above result suggests encouraging the development of more local industries with low import content via appropriate and enabling environment.

Endnote

1. In the unit root time series processes, a variable is said to be integrated of order d, denoted I(d), if it needs to be differenced d, times to achieve stationarity. The order of differencing depends on the number of unit roots. In the same wise, regressing two I(d,) variables, where d >0, equally leads to the problem of a spurious regression. However, if two (or more) series are linked to form an equilibrium relationship into the long-run, even if the series are non-stationary, they could nevertheless move closely together and their linear combination will be stable or stationary. If this thus happen, then the series are said to be cointegrated.

2. The EViews (ver.6) software used for the analyses does not report long run cointegration coefficient for exogenous variables,

REFERENCES

Abbott, A. J. and Seddighi, (1996). Aggregate Imports and Expenditure Components in the UK: An Empirical Analysis. *Applied Economics.* 28: 1119-1125.

Ajayi, S. I. (1975). "An Econometric Analysis of Import Demand in Nigeria". *Nigerian Journal of Economic and Social Studies.* 17(3): 169-182. Central Bank of Nigeria (2007). *Statistical Bulletin.*

Chang, T, Y. Ho and C. Huang (2005) A Re-examination of South Korea's Aggregate Import Demand Function: The Bounds Test Analysis. *Journal of Economic Development.* 30(1): 119-128.

Egwaikhide, F. O. (2000). Determinants of Imports in Nigeria: A Dynamic Specification. Kenya. AERC.

Dutta, D. and N. Ahmed (2001) "An Aggregate Import Demand Function for India: A Cointegration Analysis". ASARC Working papers No. 2001-02, School of Economics and Political Science, University of Sydney, Australia.

Dutta, D. and N. Ahmed (2004) "An Aggregate Import Demand Function for India: A Cointegration Analysis". *Applied Economics Letter.* 11(10): 607-613.

Fajana, O. (1975). Estimation of Demand Equation for Merchandise Imports Under Utility Theory Assumptions. *Nigerian Journal of Quantitative Economics.* 1(2): 66- 84.

Giovannetti, G. (1989). Aggregate Imports and Expenditure Components in Italy: *An Econometric Analysis. Applied Economics.* 21: 957-971.

Goldstein, M. and M.S. Khan (1985), "Income and Price Effects in Foreign Trade", in R.W. Jones and P.B. Kenen (eds.) *Handbook of International Economics* (Vol. II), New York: Elsevier Science Publications, 1041-1105.

Hickling, R. (2006) 'Electricity Consumption in the New South Wales: An Application of Cointegration Techniques to Energy Modelling and Forecasting'. *Transgrid Economics Information Paper.* Sydney.

Houthakker, H.S. and S.P. Magee (1969), "Income and Price Elasticities in World Trade". *Review of Economics and Statistics*, 41: 111-25.

http://fapstat.fao.org/site/416/desktopdefault.aspxPageID=416.

(http://nm.onlinenigeria.com/template/?a=293&z=2).
Inang, E.E. (1995). Structural Adjustment Programmes and External Trade in Developing Countries: Lessons for Nigeria. *NES Conference Paper*
Johansen, S. (1991) Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregression Models. *Econometrics.* 59: 1551-1580.
Johansen, S. (1988) Statistical Analysis of Cointegrating Vectors. *Journal of Economic Dynamics and Control.* 12: 231-254.
Johansen, Soren, and Katarina Juselius. "Maximum Likelihood Estimation and Inference on Cointegration –With Applications to the Demand for Money". *Oxford Bulletin of Economics and Statistics* 52 (1990): 169-210.
Leamer, E.E. and R. M. Stern (1970), *Quantitative International Economics,* Boston, M.A.: Allyn and Bacon.
Mohammad, H.A. and Tang, T.C. (2000). Aggregate Imports and Expenditure Components in Malaysia: A Cointegration and Error Correction Analysis. *ASEAN Economic Bulletin.* 12: 231-254.
Mouka, A. (1982). "An Econometric Study of Nigeria's Demand for Imports 1960-1979. Unpublished M. Phill Thesis, University of Lagos.
Obadan, M. (1986) "Elasticities in Nigeria's Import Trade". *Benin Journal of Social Sciences*. 1 (2): 5 -19.
Olayide, S. (1968). Import Demand Model: An Econometric Analysis of Nigeria's Import Trade. *Nigerian Journal of Economic and Social Studies.* 10(3): 303-319.
Orubu, C. O. (1989). "A Modified Input-Output Approach to the Determination of Import Demand: Evidence from Three ECOWAS Countries". *Abraka Journal of the Social Sciences.* 1: 88-97.
Reinhart, Carmen M. (1995)"Devaluation, Relative Prices and International Trade: Evidence from Developing Countries". *IMF Staff Papers* 42, No. 2: 290-312.
Senhadji, A. (1998), "Time-Series Estimation of Structural Import Demand Equations: A Cross-Country Analysis", *IMF Staff Papers*, 45(2):236-268.

FUNKCIJA AGREGATNE POTRAŽNJE ZA UVOZOM ZA NIGERIJU

SAŽETAK

Kako Nigerija ima malo otvoreno gospodarstvo, potreban joj je uvoz kapitala i poluproizvoda kako bi rasla i razvijala se. Ovaj rad koristi ekonometrijsku tehniku vremenskih serija, točnije mehanizme korekcije greške, kako bi se utvrdili čimbenici odgovorni za potražnju za uvozom. Rezultati pokazuju da su uvoz, prihod i odnosne cijene međusobno kointegrirane. Ekonometrijske procjene funkcije potražnje za uvozom za Nigeriju sugeriraju da je potražnja za uvozom uglavnom određena realnim prihodom (BDP) i manje osjetljiva na relativne cijene. Osim toga, izgleda da promjena u strukturalnoj politici prema liberalizaciji od 1986. ima mali ali značajan utjecaj na potražnju za uvozom. Sugerira se razvoj lokalne industrije s malim udjelom uvoza s obzirom da je vjerojatno kako će tečajna politika i devaluacija biti neuspješne u utjecanju na potražnju za uvozom u Nigeriji.

Ključne riječi: potražnja za uvozom, relativne cijene, realni prihod, kointegracija, Nigerija, izmjena strukturalne politike

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FOREIGN BANK PARTICIPATION AND BANKING CRISES IN TRANSITION ECONOMIES

ABSTRACT

Using a fixed effect multivariate panel logit econometric model and taking possible endogenity problem into account, we test the hypothesis that foreign bank participation contributes to decrease in banking crises in transition economies in 1990-2006. The results suggest that foreign bank participation decreases the possibility of banking crises, controlling for other factors that may cause banking crises. This paper contributes to the literature by presenting the first empirical evidence on the negative relationship between the actual level of foreign bank presence (or foreign bank concentration) and banking crises for transition countries.

Keywords: *Financial Crises, Banks, Capital and Ownership Structure, Transitional Economies, Panel Study.*
JEL codes: *G01, G21, G32, P2, C2;*

I. INTRODUCTION

Banking crises have proliferated throughout the world in recent decades as documented by the comprehensive studies of Caprio and Klingebeil (1996 and 2003), Lindergen, Garcia and Saal (1996), Dizoebek and Pazarbasioglu (1997), Demirguc and Detragiache (1998), Kaminsky and Reinhart (1999), Demirguc-Kunt and Kane (2002), and Laeven and Fabian (2008). Lindergen, Garcia and Saal (1996) report that 133 of 181 IMF members had experienced noteworthy banking distress over the period of 1980-1996. Demirguc-Kunt and Kane (2002) document 112 incidences of systemic crises in 93 countries and 51 incidences of borderline crisis in 46 countries. Caprio and Klingebeil (2003) identify 77 financial crises episodes have taken place in 72 developing countries since the mid-1990's. Laeven and Fabian (2008) report 42 systemic banking crises from 37 countries for the period 1970 to 2007.

Acquisition and ownership of banks by foreigners in emerging markets have also increased significantly in the last decade. This trend has been more dramatic for Eastern Europe and Latin America than for East Asia, Africa, and the Middle East. In most countries in Latin America and Eastern Europe, foreign controlled banks at present dominate the banking system, controlling more than 50 percent of total banking assets. Foreigners on

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average control more than 80 percent of total banking assets in sixteen transition economies in Central and Eastern Europe.

Greater foreign bank participation may be associated with a reduced probability of banking crises. However, theoretical relationship between foreign bank participation and banking crises is ambiguous. On the one hand, the presence of foreign banks may enhance financial stability through promoting the stability of the domestic deposit base, making banking system more robust to adverse domestic or external shocks, stabilizing credit supply during a negative shock, improving prudential supervision and regulation of the domestic financial system, and enhancing the transparency in the banking sector and efficiency of the macroeconomic policies. On the other hand, foreign banks can bring financial instability through stimulating capital flight and importing shocks from their home countries or from other countries where they operate.

There is a possibility of reverse causality between foreign bank participation and banking crises. In some countries, foreign banks enter the host country following financial crises. In the aftermath of banking crises, banking authorities in the host countries reduce entry restriction to recapitalize their banking sector. Foreign banks viewed this sort of policies as opportunities to acquire domestic banks or expand their existing subsidiaries.

At the empirical level, there are two main cross-country studies on the impact of foreign bank participation on banking crises in developing countries. Using time series cross country data over the 1988-1995 time period, Demirguc-Kunt et al. (1999) find that increase in the number of foreign banks is negatively associated with the incidence of banking system fragility. However,

1) This study ignores the potential endogeneity of foreign bank participation, i.e. reverse causality between foreign bank participation and crisis.
2) They use FOREIGN ASSET (The ratio of foreign bank assets to bank assets in the economy) and FOREIGN BANKS (The number of foreign bank divided by the total number of banks in the economy) variables to study the effect of foreign bank participation on the likelihood of banking crises. In their study, the coefficient on the FOREIGN ASSET variable is statistically insignificant while the coefficient on the FOREIGN BANKS variable is negatively and significantly correlated with the likelihood of experiencing a banking crisis. Thus, their results suggest that foreign banks reduce domestic bank fragility as they enter the economy rather than as they banks gain market share.
3) Their sample includes 5 transition economies. None of transition countries in their sample had experienced banking crisis during the estimation period.

Using cross-country data, Bart et al. (2002) find that the likelihood of a major banking crisis is positively associated with greater limitations on foreign-bank participation (Limitations on Foreign Bank Entry/Ownership). Consistent with Demirguç-Kunt et al. (1999), they find that the actual level of foreign bank presence (or foreign bank concentration) and foreign-bank ownership per se is not critically linked to the likelihood of a crisis. However,

1) Their banking crises study ignores the potential endogeneity of foreign bank participation.
2) Their banking crisis data is taken from Caprio-Klingebiel (1999); however the regulatory and supervisory variables including foreign bank participation variables are measured over the 1998-2000 period. Thus, as they state in their paper, their crises regressions should be interpreted in an especially circumspect manner.
3) Their sample for banking crises regressions includes 40 countries. Their sample does not include any transition economies and banking crises in transition economies.
4) They use Limitations on Foreign Bank Entry/Ownership and Entry into Banking Requirements variables to study the link between banking crises and foreign bank participation. Limitations on Foreign Bank Entry/Ownership variable takes the value of 1 if there are any limitations or restrictions placed on the ownership of domestic banks by foreign banks and there are any limitations placed on the ability of foreign banks to enter the

domestic banking industry and takes the value of 0 otherwise. Entry into Banking Requirements variable measures the specific legal requirements for obtaining a license to operate as a bank.

Unlike the studies mentioned above, our paper takes the potential endogeneity of foreign bank participation (reverse causality between foreign bank participation and crisis) into account. Therefore, we used one period lagged values of foreign bank participation to account for any possible endogeneity problem. Contrary to Demirguç-Kunt et al. (1999) and Bart et al. (2002), we find that the actual level of foreign bank presence (or foreign bank concentration) is significantly linked to the likelihood of a crisis by using a fixed effect multivariate logit econometric model and panel data between 1990 and 2006.

None of the limited number of studies on the relationship between foreign bank participation and banking crises focuses on transition economies separately. The case of transition countries needs to be analyzed separately since the initial conditions in these countries are different from developed and developing countries. First, these countries started their privatization process with high levels of state ownership. Most of the entry of foreign banks has resulted from the privatization of state-owned banks. Second, private sector was absent or negligible when privatization process began. Third, privatizations were implemented around the same time. Finally, economic designs of the transition policies were the same. Hence, empirically verifying the existence of the relationship between foreign bank participation and banking crises in transition economies requires a separate analysis.

In present study, we explore the impact of foreign bank participation on banking crises in transition countries. Using fixed effect multivariate models and taking endogeneity problem into account, we found highly statistically significant negative relationship between foreign bank participation and banking crises across transition economies between 1990 and 2006. This paper contributes to the literature by presenting the first empirical evidence on the negative relationship between the actual level of foreign bank presence (or foreign bank concentration) and banking crises for transition countries.

The paper is organized as follows. In the next two sections, we analyze the pros and cons of foreign bank participation in terms of its impact on financial stability. We provide data and methodology in section 4. In section 5, we report and discuss estimation results. Finally, we conclude in section 6.

II. FOREIGN BANK PARTICIPATION AND FINANCIAL STABILITY

The presence of foreign banks may enhance financial stability through promoting the stability of the domestic deposit base, making banking systems more robust to adverse domestic or external shocks, stabilizing credit supply during a negative shock, improving prudential supervision and regulation of the domestic financial system, and enhancing the transparency in the banking sector and efficiency of the macroeconomic policies.

1) The presence of well-capitalized foreign banks can promote the stability of the domestic deposit base during banking crises in the host country. A bank run is the most disruptive if it takes the form of flight to currency, i.e. people hold their money in cash outside the banking system or they remove their foreign exchange funds from the country. In the case of anticipated trouble in the financial system, depositors in emerging markets often engage in capital flight. They not only try to buy foreign exchange with their domestic currency funds but also keep their funds out of the banking system. This causes stress on foreign exchange rates and the liquidity of domestic banks. Depositors generally perceive foreign banks more safer than domestic banks since foreign banks have external support of parent bank. At the presence of foreign banks, depositors may reshuffle their deposits from domestic banks to foreign banks instead of engaging in flight to currency or capital flight. As long as the foreign bank branches and subsidiaries do not have different reserve ratios than domestic banks, reshuffling deposits from domestic banks to foreign banks will not change

aggregate bank deposits, reserves or the money supply. Thus, this behavior of depositors may stabilize aggregate deposits during economic distress.

In their IMF mission to Indonesia, Malaysia, Philippines, Thailand and Korea after the Asian financial crises, Domac and Ferri (1999) observed that depositors transferred their funds from small and local domestic banks to large and nationwide domestic private and state owned banks, and from domestic banks to foreign banks. In all the countries under observation, foreign banks benefited from "the flight to quality" by depositors, and they increased their market share considerably. Similarly the IMF (2000, 42) reports that "rumors of financial difficulties at Postabank - the second largest retail bank in Hungary - led to a run by depositors that benefited in part foreign institutions". The expansion of foreign banks' presence in Argentina coincided with the phenomenon of the deposit base stability during the subsequent Asian, Russian, and Brazilian crises of late 1990s. Noting that "during more recent crises, deposits remained remarkably stable", Mathison and Roldos (2001, 42) attribute the greater stability of the deposit base to growing share of foreign banks in the Argentine financial system. Large presence of foreign banks in Pacific Islands (Fiji, Nauru, Papua New Guinea, the Solomon Islands and Vanuatu) and Jamaica have stabilized the domestic deposit base during banking crises (Tschoegl, 2003).

2) The presence of foreign banks can make banking systems of host countries more robust to adverse domestic or external shocks. Because international foreign banks have internationally diversified portfolios and only some part of their asset portfolio includes the local market exposure, they will be less affected by the host country-specific adverse shocks. Also, the branches and subsidiaries of large international banks usually have access to additional liquidity, foreign exchange and capital from their parents abroad in case of financial crises or difficulties.

Many developing countries have dollarized their financial markets in order to integrate themselves with international capital markets through liberalizing their capital accounts and financial markets. However, during financial crises, governments of those countries often found themselves lacking enough international reserves to function as a lender of last resort because a central bank cannot perform as a lender of last resort in a currency other than its own currency. During the crises, domestic banks in many emerging markets lost their access to international capital markets. Most of the domestic banks were not able to roll over their outstanding debt. The ones, who were able to renew their credit lines, had to commit very high interest rates. Because foreign international banks have better access to international financial markets and foreign exchange than domestic banks, the presence of subsidiaries and branches of international foreign banks may ease this problem by transferring liquidity at low rates into the host country in times of economic distress. By analyzing the responses of domestic banks and subsidiaries of foreign banks in the case of financial distress in Mexico during the period from December of 1997 to November of 1999, Reynoso (2002, p.26) concludes that subsidiaries of foreign banks have a better access to funding in foreign exchange in times of stress when there are weak domestic banks.

3) Foreign banks may contribute to greater stability of credit during the periods of crisis in the host country. Because foreign banks have better access to external funding sources they may be more stable lenders than domestic banks during a negative shock in the host country.

Examining the behavior of foreign and domestic banks in Latin American countries during crisis periods, Dages et al. (2000) and Cyrstal et al. (2002) find that foreign banks on average exhibited higher and more stable credit growth than domestic banks. Martinez Peria et al. (2005) find that foreign banks did not contract their credit supply during crisis in the host country. Detragiache and Gupta (2006) find no evidence that foreign banks abandoned the host country during the 1997-98 Asian crisis in Malaysia. De Haas and Van Lelyveld (2006) find evidence that while domestic banks contracted their credit supply, greenfield foreign banks did not reduce their credit supply during crisis periods in ten Central and Eastern Europe countries.

4) The presence of branches and subsidiaries of healthy international banks belonging to well-regulated financial systems can also improve prudential supervision and regulation of the host country. This is so since branches are not only supervised by supervisory authority of the host country, but also they are supervised on a consolidated basis with the parent bank by the home country's supervisory authority according to principles of the Basel committee on bank supervision. Because activities of the branches and subsidiaries of international banks are also supervised by the headquarters or supervisory authorities of the parent bank, they will bring internationally accepted disclosure, accounting, and auditing standards. As foreign banks transfer their risk management practices and internal control systems to domestic banks, the stability of financial system in the host country will improve. Analyzing the effects of foreign bank entry by evaluating the financial conditions and performance of foreign and domestic banks in seven Latin American countries over the 1995-2000 period Crystal et al. (2002) conclude that foreign banks on average sustained higher average risk-based capital ratios, followed a more aggressive provision policy against bad loans, and had better loan recovery rates reflecting their stricter loan classification standards and practices.

5) A strong presence of foreign banks can enhance the transparency in the banking sector and efficiency of the macroeconomic policies followed by the countries with weak domestic banking system and fiscal institutions. This in turn may reduce the probability of self-fulfilling currency crises and costly government rescue operations.

In emerging market economies and transition economies, it has been observed that domestic banks, whether owned by the private or government sector, are under heavy government pressure to lend directly or indirectly to the government. Since the wealth is also concentrated, there are also some special interest politics between banks and politicians. It is often the case that large banks with large bad debts are bailed out by the government since they are considered to be too big to fail. Lack of transparency in the regulatory and supervisory system allows these banks to hide and accumulate these large bad debts until they become real problem. In general, demands for bailing out coincide with the economic crises when the government most needs funds. Thus countries with weak financial systems tend to accumulate more public debt because the government has to bail out banks. Governments often finance this bail-out through higher taxes and inflation (i.e., by printing money), causing a welfare loss to the society. This in turn can result in a self-fulfilling speculative attack on domestic currency by inducing people to expect that government have to abandon its stabilization policy.

Foreign ownership of formerly government-owned banks and family-owned banks may reduce the likelihood of banking crisis. By privatizing government-owned banks, the governments in Czech Republic and Hungary removed them from their own direct control (Tschoegl, 2003). This brings a change in lending policy, risk management, and competition. Because a foreign bank knows that it is hard for the government to convince the public to bail out a foreign bank, it will be more cautious in its loan policy and credit risk underwriting. Thus, as the number of joint ventures with foreign banks increase in a domestic economy, one can expect a smaller shock to public debt generated by the banking system.

III. FOREIGN BANK PARTICIPATION AND FINANCIAL INSTABILITY

Foreing banks can bring financial instability through stimulating capital flight and importing shocks from their home countries or from other countries where they operate.

1) Foreign banks may facilitate financial instability when faced with problems in the host country. Because foreign banks have more alternative investment opportunities outside the particular host country, foreign banks may be more sensitive to adverse conditions in the host country. When host country conditions worsen, the funds of foreign banks can be reallocated outside the host country to seek external investment opportunities. In the extreme case, they may abandon the host country during the crisis.

While North American and European banks shifted their lending from Asia to Latin America and Europe during the Asian crisis, they reduced their holdings in all three regions during the Russian crisis (Van Rijckeghem and Weder, 2003). Examining the behavior of foreign banks in the US and other countries, Morgan and Strahan (2004) find that there is a positive association between foreign bank presence and business volatility. During Argentine crisis in 2001, Scotia Bank of Canada, Credit Agricole of France and Intesa of Italy refused to pump in more capital and walked away from their subsidiaries (Galindo et al., 2005; Tschoegl, 2003).

2) Foreign banks may also import shocks from their home countries or from other countries where they operate. In the extreme situation, foreign banks may abandon the host country when faced problems caused by their home country's economic conditions.

If the parent bank's financial condition is unhealthy, capital constrained parent bank may reduce activities of subsidiaries and allocate less capital to its foreign subsidiaries. On the other hand financially healthy parent banks may react in an opposite way. Financially healthy parent banks may expand their activities abroad when economic conditions in home country worsen and reduce their activities abroad when economic conditions in home country improves (Moshirian, 2001; De Haas and Van Lelyveld, 2006).

Peek and Rosengren (2000) report that subsidiaries of Japanese banks in the U.S. cut back lending in the U.S. during the banking crisis in Japan. This negatively affected construction and real estate sectors in the U.S. By analyzing the U.S. bank lending to emerging markets, Goldberg (2001) and Palmer (2000) conclude that the U.S. bank exposure to emerging markets are correlated with the U.S. economic conditions rather than economic fluctuations in the host countries. Jeanneau and Micu (2002) find that credit supply to emerging countries is positively correlated with the economic conditions in the major industrial countries. Examining foreign and domestic banks in ten Central and Eastern Europe, De Haas and Van Lelyveld (2006) find evidence that there is a significant negative relationship between home country economic growth and host country credit by greenfields. Martinez Peria et al. (2005) find that while Japanese banks reduce their lending to Latin America when economic conditions in their home countries worsened, other foreign banks increase their lending to Latin America when home country's economic conditions worsened.

IV. EMPIRICAL FRAMEWORK

In order to identify the determinants of banking crises in transition economies, the probability of banking crises is estimated as a function of a set of explanatory variables identified by the empirical literature as useful indicators of a bank's failure (macroeconomic factors, financial factors, and institutional factors) by using a logit model in an unbalanced panel data context. The period under study is between 1990 and 2006. Our sample includes 26 transition economies. We estimate the following fixed effect logit model specifications:

$$\Pr ob\left(y_{it}=1\right)=\frac{\exp\left(x_{it}'\beta+\alpha_i\right)}{1+\exp\left(x_{it}'\beta+\alpha_i\right)}\equiv\Lambda\left(x_{it}'\beta+\alpha_i\right)$$

where with its the largest presentation:

$$x_{it}'=\beta_1+\beta_2 Growth_{it}+\beta_3 Inflation_{it}+\beta_4\ Depreciation_{it}+\beta_5\ Interest_{it}+$$
$$\beta_6 Surplus/GDP_{it}+\beta_7 \Pr ivate/GDP_{it}+\beta_8 Creditgrowth_{it}+\beta_8 Cash/Bank_{it}+$$
$$\beta_{10} M2/\mathrm{Re}serves_{it}+\beta_{11} Foreignlag_{it}+\beta_{12} Bankreform_{it}$$

$y_{it}=1$ when a banking crisis takes place in *i-th* country at time *t*, otherwise $y_{it}=0$. α_i represents country specific effect for *i-th* country.

The theoretical and empirical literature has identified a vast array of variables potentially associated with banking crisis. The variables used in our analysis were chosen in light of the theory on the determinants of banking crises, previous studies found in the literature, country specific factors, and the availability of data. The explanatory variables

capturing macroeconomic factors, bank specific factors, external factors and institutional factors are defined below. Definitions and sources of variables are given in Table 1.

Table 1

Description of the Explanatory Variables and Sources

Variable Name	Definition	Source
GROWTH	Rate of Growth of Real GDP	IFS where available. Otherwise WDI
INFLATION	Rate of Change of the GNP Deflator	IFS
INTEREST	Real interest rate: Nominal Interest Rate minus the Contemporaneous Rate of Inflation	IFS, WDI
DEPRECIATION	Rate Of Depreciation of Local Currency Against the US Dollar	IFS
SURPLUS/GDP	Ratio of Central Government Budget Surplus to GDP	IFS
CASH/BANK	Ratio of Bank Liquid Reserves to Bank Assets	IFS
M2/RESERVES	Ratio of M2 to Foreign Exchange Reserves of the Central Bank	IFS where available. Otherwise WDI
PRIVATE/GDP	Ratio of Domestic Credit to the Private Sector to GDP	IFS
CREDITGROWTH	Rate of Growth of Real Domestic Credit	IFS
BANKREFORM	EBRD Index Of Banking Sector Reform	Selected Economic Indicators of EBRD
FOREIGNLAG	One Period Lagged Value of Asset Share of Foreign Banks (In Percent)	Selected Economic Indicators of EBRD

The dependet variable of our model is a dummy variable for crisis an it is equal to one if a country experienced a systemic banking crises at any point during the period of study as defined by Gerard Caprio and Daniella Kliengebiel (2003) and Luc Laeven and Valencia Fabian (2008), otherwise it is equal to zero. Table 2 shows crisis episodes as identified by Gerard Caprio and Daniella Kliengebiel (2003) and Luc Laeven and Valencia Fabian (2008).

Table 2

Banking Crises

Country	Crises Years	Country	Crises Years
Albania	1992-1997	Kyrgyz Republic	1990-1999
Armenia	1994-1996	Latvia	1995-1997
Azerbaijan	1995	Lithuania	1995-1996
Belarus	1995	Moldova	1994
Bosnia and Herzegovina	1992-2003	Montenegro	
Bulgaria	1995-1997	Poland	1990-1999
Croatia	1996-1998	Romania	1990-1999
Czech Republic	1991-1995	Russia	1995;1998
Estonia	1992-1995; 1998	Slovak Republic	1991-2000
FYR Macedonia	1993-1994; 1997	Slovenia	1992-1994
Georgia	1991-1996	Serbia	
Hungary	1991-1997	Tajikistan	1996
Kazakhstan	1991-1994	Ukraine	1997-1998

Macro Economic Variables

GROWTH: is the Rate of Growth of Real GDP. Negative macroeconomic shocks deteriorate the balance sheets of banks and banks' borrowers. The effects of adverse macroeconomic shocks on banking crises are captured by the rate of growth of real GDP.

INTEREST: is Real Interest Rate. Real interest rate is calculated as Nominal Interest Rate minus the Contemporaneous Rate of Inflation. Since one of the main functions of banks is maturity transformation, i.e. financing long term investments with short term borrowing, banks are subject to interest rate risk. One of the external macro economic conditions that have played a role in the banking crises especially in emerging markets is a sudden and sharp increase in world interest rates. A sharp rise in industrial country interest rates can curtail the flow of foreign funds to emerging markets and raise the cost of the foreign funds for domestic banks and firms. Thus, a large increase in short-term interest rates is likely to be a major source of systemic banking sector problems.

INFLATION: is the Rate of Change of the GNP Deflator. High inflation is associated with high net interest margins and profitability in the banking sector due to increase in the volume of banking transactions and banking activity as a result of high inflation. Hence, banking sectors of countries with a history of high inflation may face with problems after a successful stabilization program. On the other hand, a successful stabilization program also provides financial stability. Thus, in our model the expected sign for the coefficient on the rate of growth of inflation rate (the GNP deflator) is ambiguous.

DEPRECIATION: is the Rate of Depreciation of Local Currency Against the US Dollar. The rate of depreciation of the local currency is used in the model in order to test the hypothesis that bank failure may be driven by foreign exchange risk. Exchange rate shifts and foreign currency loans have been a source of banking problems in almost all financial crises in emerging markets. Unexpected exchange rate depreciations can negatively affect the banking sector directly when banks have sizeable un-hedged foreign liabilities and/or there is a maturity mismatch between bank assets and liabilities. Exchange rate depreciations can also indirectly affect the banking sector when large depreciation creates deterioration in the balance sheets of bank borrowers.

SURPLUS/GDP: is the Ratio of Central Government Budget Surplus to GDP. Measures to be taken to deal with problems in the balance sheets of banking sector may be delayed due to the budgetary difficulties of the central government. In turn, the initial problems may grow to systemic proportions and turn in to a full-fledged crisis. Thus, in our model the expected sign for the coefficient on the ratio of central government budget surplus to GDP is positive.

Financial Variables

CASH/BANK: is the Ratio of Bank Liquid Reserves to Bank Assets. If the banking system is illiquid and fragile, adverse macroeconomic conditions may affect bank balance sheets negatively and lead to banking crises. The ratio of bank cash and reserves to bank assets are used to capture liquidity in our model. The expected sign for the coefficient on the ratio of bank cash and reserves to bank assets is negative.

M2/RESERVES: is The Ratio of M2 to Foreign Exchange Reserves of the Central Bank. The ratio of M2 to foreign exchange rate reserves is used to test bank vulnerability to sudden capital outflows. Reversal of capital inflows has similar effects as bank runs by domestic depositors. When foreign investors lose their confidence, they withdraw their funds unexpectedly and refuse to roll-over existing debt stock. As domestic banks are unable to roll over their debts that are falling due, they will try to restore their liquidity by calling in domestic credits and selling their assets at fire-sale prices. This leads to financial crises and systemic crises in the market.

PRIVATE/GDP: is the Ratio of Domestic Credit to the Private Sector to GDP. In our model, the ratio of credit to the private sector to GDP is used to capture the extent to which financial liberalization has progressed. Inadequate preparation for financial liberalization has often preceded financial crises. Experiences of many countries indicates that the banking

crises occurred in countries where inadequate internal controls and inadequate prudential regulation and supervision existed when financial liberalization took place. Deregulation of a financial system and rapid credit growth can be disastrous if banking institutions and their regulators do not have adequate expertise, resources and training to monitor and evaluate risk taking. In many of the countries that have experienced financial liberalization, a significant rise in bank lending and risk taking has been observed.

CREDITGROWTH: is the Rate of Growth of Real Domestic Credit. Banking crises have often been preceded by both bank lending booms and boom-bust cycles. Lending booms, financed either by expansionary monetary and fiscal policies or large capital inflows, have often resulted in overinvestment in real assets, which leads to sharp rises in equity and real estate prices. Banks make loans to construction companies and the real estate sector since these sectors are thought to offer the best collateral. Initially, asset prices went up as borrowers bid up the price of real estate, and thus projects were seen as profitable. With this optimism, banks continue to over-lend to the projects. However, the debt servicing capacity of these sectors depends on continuous rise in property prices and strong demand, thereby creating vulnerability to an economic slowdown. A slowdown in economic growth may lead to a collapse of real estate market. When the bubble burst and real estate and equity prices decline sharply, banks face rising levels of non-performing loans and declining collateral values.

Institutional Variables

BANKREFORM: is the EBRD Index of Banking Sector Reform. Banking sector reform index is taken from EBRD which reports a yearly assessment of the level of banking restrictions in a country. The index ranges from 1 to 5 with higher values indicating greater restrictions. In constructing this index, EBRD considers the ease with which foreign banks can open branches and subsidiaries; government interference in the allocation of credit, including government ownership of banks; the ability of private banks to operate without government regulation such as deposit insurance; and the ability of banks to provide a wide range of financial services including real estate and securities transactions, and insurance. We would expect that countries that have experienced crises would have more restrictive banking environments.

FOREIGNLAG: is the lag of Asset Share of Foreign Banks (in percent). The relationship between foreign bank participation and banking crisis is ambiguous. On the one hand, the participation of foreign banks can enhance the stability of domestic banking and financial system through promoting the stability of the domestic deposit base, making banking systems more robust to adverse domestic or external shocks, stabilizing credit supply during a negative shock, improving prudential supervision and regulation of the domestic financial system, and enhancing the transparency in the banking sector and efficiency of the macroeconomic policies. On the other hand, foreign banks can bring financial instability through stimulating capital flight and importing shocks from their home countries or from other countries where they operate. The lagged value of the variable is used to account for any possible endogeneity problem.

V. ESTIMATION RESULTS

The main results of the econometric study are provided in Table 3. Table 3 presents the estimated coefficients for a number of alternative model specifications due to multicollinearity problems. The quality of the model specification is assessed based on Akaike's Information Criterion (AIC). The marginal effects are presented in Table 4.

Table 3

Selected Models

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Macroeconomic Variables						
GROWTH	-0.1708	-0.1397	0.1076	0.0124	0.2296	0.3622
	0.1008	0.1192	0.1496	0.1115	0.1813	0.2434
	[0.0903]	[0.2410]	[0.4721]	[0.9109]	[0.2054]	[0.1367]
INFLATION			0.0857	0.05903	0.0509	-0.1471
			0.0465	0.0385	0.0881	0.15709
			[0.0652]	[0.1252]	[0.5631]	[0.3489]
DEPRECIATION			0.0815	0.0545		0.1155
			0.0251	0.0212		0.0742
			[0.0012]	[0.0101]		[0.1197]
INTEREST					0.1459	0.0453
					0.1015	0.1125
					[0.1505]	[0.6873]
SURPLUS/GDP					-8.1770	-7.9732
					14.7061	16.0018
					[0.5782]	[0.6183]
Financial Variables						
PRIVATE/GDP	-0.0121	-0.0134	-0.0183			
	0.0041	0.0048	0.0052			
	[0.0033]	[0.0053]	[0.0004]			
CREDITGROWTH	-0.0040	-0.0031	-0.0065	-0.0042	-0.0119	-0.0314
	0.0018	0.0016	0.0029	0.0021	0.0094	0.0186
	[0.0316]	[0.0629]	[0.0275]	[0.0490]	[0.2065]	[0.0906]
CASH/BANK	-29.5790					
	14.6855					
	[0.0440]					
M2/RESERVES		0.0005	0.0009		0.0025	0.0043
		0.0010	0.0015		0.0039	0.0056
		[0.5930]	[0.5155]		[0.5142]	[0.4442]
Institutional Variables						
FOREIGNLAG	-0.0767	-0.0678	-0.0769	-0.0516	-0.0971	-0.1627
	0.0154	0.0185	0.0200	0.0146	0.0432	0.0806
	[0.0000]	[0.0002]	[0.0001]	[0.0004]	[0.0246]	[0.0437]
BANKREFORM		0.0666	-0.6647			
		0.8746	0.9893			
		[0.9392]	[0.5017]			
Number of observations	124	124	124	124	64	64
Number of Countries	11	11	11	11	7	7
Log likelihood	-23.813	-25.421	-16.545	-24.859	-9.610	-7.797
AIC	28.8	31.4	24.5	29.8	16.6	15.7

Note: Coefficient estimations are in bold-faces; standard deviations are in italic forms; p-values are in brackets.

Table 4

Marginal Effects

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Macroeconomic Variables						
GROWTH	-0.042	-0.0349	0.0269	0.0030	0.0574	0.0905
INFLATION			0.0214	0.0147	0.0127	-0.0367
DEPRECIATION			0.0203	0.0136	0.0365	0.0288
INTEREST						0.0113
SURPLUS/GDP					-2.0442	-1.9933
Financial Variables						
PRIVATE/GDP	-0.003	-0.0033	-0.0045			
CREDITGROWTH	-0.001	-0.0007	-0.0016	-0.0010	-0.0029	
CASH/BANK	-7.394				0.0006	-0.0078
M2/RESERVES		0.0001	0.0002			0.0010
Institutional Variables						
FOREIGNLAG	-0.019	-0.0169	-0.0192	-0.0129	-0.0242	-0.0406
BANKREFORM		0.0166	-0.1661			

As shown by results in Table 3, GDP growth, inflation and depreciation variables are significant in some specifications. In regard to financial variables, while the ratio of M2 to reserves is not significant in all specifications, the ratio of domestic credit to the private sector to GDP and the ratio of bank liquid reserves to bank assets variables are significant in all models including these particular variables. On the other hand, the rate of growth of real domestic credit is significant in some specifications.

The coefficient of the banking sector reform variable is insignificant in all models including this particular variable. Foreign bank participation variable has a significant and negative sign in all specifications. Thus, the presence of foreign banks appears to reduce the incidence of banking crisis. In terms of marginal effects, a one percentage point increase in foreign bank participation reduces the probability of banking crises in transition economies, at least by 1.29 percent and at most by 4.06, depending on the model examined. This result may be taken as evidence that the presence of foreign banks is preferable from the point of view of minimizing banking sector fragility.

We have also estimated the model using the full sample but without fixed effects (pooled logit regression model) to confirm the robustness of our findings. The results remain the same. These results are available upon request.

V. CONCLUSION

Using a multivariate fixed effect logit econometric model and taking possible endogenity problem into account, we test the hypothesis that foreign bank participation contributes to decrease in banking crises in transition economies in 1990-2006. The sample includes 26 transition economies and the data is unbalanced. The obtained results proved to be robust to different model specifications, demonstrating that there is a negative relation between foreign bank presence and banking crisis in a country during the estimation period. Thus, the results suggest that foreign bank participation decreases the possibility of banking crises in transition economies, controlling for other factors that may cause banking crises.

REFERENCES

Barth, J. R., Caprio, G. Jr., Levine, R. (2002), "Bank Regulation and Supervision: What Works Best?", *NBER Working Papers 932*, (Cambridge, Massachusetts: National Bureau of Economic Research).

Caprio, G. Jr., Klingebiel, D. (1996), "Bank insolvencies: cross country experience", *The World Bank Policy Research Paper No. 1620*, (Washington DC: World Bank).

Caprio, G. Jr., Klingebiel, D. (1999), "Episodes of systemic and borderline financial crises", *World Bank Financial Sector Strategy and Policy Department*, (Washington DC: World Bank).

Caprio, G. Jr., Klingebiel, D. (2003), "Episodes of systemic and borderline financial crises", in *Managing the Real and Fiscal Effects of Banking Crises*, ed. Daniela Klingebiel and L. Leaven, The World Bank Discussion Paper 428: 31-49, (Washington DC: World Bank)

Crystal, J. S., Dages, G. B., Goldberg, L. S. (2002), "Has foreign bank entry led to sounder banks in Latin America?", *Federal Reserves Bank of New York Current Issues in Economics and Finance*, 8 (1): 1-6.

Dages, G. B., Goldberg, L., Kinney, D. (2000), "Foreign and domestic bank participation in emerging markets: lessons from Mexico and Argentina", *Federal Reserve Bank of New York Economic Policy Review*, September: 17–36.

De Haas, R. Van Lelyveld, and I. (2006), "Foreign banks and credit stability in Central and Eastern Europe. A Panel Data Analysis", *Journal of Banking and Finance*, 30: 1927-1952.

Demirguc-Kunt, A., Detragiache, E. (1998), "The determinants of banking crises in developing and developed countries", *IMF Staff Papers 45(1)*, (Washington DC: IMF).

Demirguc-Kunt, A., Levine, R., Hong-Ghi, Min (1999), "Foreign banks: efficiency, stability and growth", in *The Implications of Globalization of World Financial Markets*, ed. Lee Seongtae, 83-105, (Seoul: Bank of Korea)

Demirguc-Kunt, A., Kane, E. J. (2002), "Deposit insurance around the globe: where does it work?", *Journal of Economic Perspectives*, 16(2): 175-195.

Detragiache, E., Gupta, P. (2006), "Foreign banks in emerging market crises: evidence from Malaysia", *Journal of Financial Stability*, 2(3): 217-242.

Domac, I., Ferri, G. (1999), "The Credit Crunch in East Asia: Evidence from Field Findings on Bank Behavior and Policy Issues", in *World Bank Workshop: Credit Crunch in East Asia: What Do We Know? What Do We Need to Know?* (Washington DC: World Bank).

Dziobek, C., Pazarbasioglu, C. (1997), "Lessons from systemic bank restructuring: a survey of 24 countries", *IMF Working Paper 97/161*, (Washington DC: IMF).

European Bank for Reconstruction and Development (2008), "Selected economic indicators", www.ebrd.com.

Galindo, A., Micco, A., Powell, A. (2005), "Loyal lenders or fickle financiers: foreign banks in Latin America", Inter-American Development Bank Research Department Working Papers 4403.

Goldberg, L. **(**2001), "When is U.S. bank lending to emerging markets volatile?", *NBER Working Paper No. 8137*, (Cambridge, Massachusetts: National Bureau of Economic Research).

International Monetary Fund (2000), *World economic and financial surveys: international capital markets: developments, prospects, and key policy issues*, (Washington DC: IMF).

Jeanneau, S., Micu, M. (2002), "Determinants of international bank lending to emerging market countries", *Bank for International Settlements Working paper No. 112*.

Kaminsky, G. L., Reinhart, C. M. (1999), "The twin crises: the causes of banking and balance-of-payments problems", *The American Economic Review*, 89(3): 471-500.

Leaven, L., Valencia, F. (2008), "Systemic banking crises: a new database", *IMF Working Paper 08/224*, (Washington DC: IMF).

Lindgren, C., Garcia, G., Saal, M. I. (1996), *Bank soundness and macroeconomic policy*, (Washington DC: International Monetary Fund).
Martinez Peria, M. S., Powell, A., Vladkova Hollar, I. (2005), "Banking on foreigners: the behavior of international bank claims on Latin America, 1985-2000", *IMF Staff Paper 53(3)* (Washington DC: IMF).
Mathieson, D. J., Roldos, J. (2001), "Foreign banks in emerging markets", in *Open doors: foreign participation in financial systems in developing countries* ed. Robert E. Litan, Paul Masson, and Michael Pomerleano, 15-55, (Washington DC: Brooking Institutions Press).
Morgan, D., Strahan, P. (2004), "Foreign bank entry and business volatility: evidence from U.S. States and other countries", in *Banking market structure and monetary policy* eds. Ahumada, Luis Antonio, and J.Rodrigo Fuentes, 241–269, (Santiago: Central Bank of Chile).
Moshirian, F. (2001), "International investment in financial services", *Journal of Banking and Finance*, 25: 317-337.
Palmer, D. (2000), "U.S. bank exposures to emerging market countries during recent financial crises", *Board of Governors of the Federal Reserve System Federal Reserve Bulletin*, 86 (2): 81-96.
Peek, J., Rosengren, E. (2000), "Collateral damage: effects of the Japanese bank crisis on real activity in the United States", *American Economic Review*, 90(1): 30-45.
Reynoso, A. (2002), "Can subsidiaries of foreign banks contribute to the stability of the forex market in emerging economies? a look at some evidence from the Mexican financial system", *NBER Working Paper 8864*, (Cambridge, Massachusetts: National Bureau of Economic Research).
Tschoegl, A. E. (2003), "Financial crises and the presence of foreign banks", *The Wharton Financial Institutions Center Working Paper Series No. 03-35*.
Van Rijckeghem, C., Weder, B. (2003), "Spillovers through banking centers: a panel data analysis of bank flows" *Journal of International Money and Finance*, 22 (4): 483–509.

PARTICIPACIJA STRANIH BANAKA I BANKARSKE KRIZE U TRANZICIJSKIM GOSPODARSTVIMA

SAŽETAK

Koristeći multivarijatni panelni logit ekonometrijski model s fiksnim učinkom i uzimajući u obzir mogući problem endogenosti, testirali smo hipotezu da participacija stranih banaka doprinosi smanjenju bankarskih kriza u tranzicijskim gospodarstvima u periodu od 1990-2006. Rezultati ukazuju na to da participacija stranih banaka umanjuje mogućnost za bankarske krize kontrolirajući ostale faktore koji takve krize mogu uzrokovati. Ovaj rad doprinosi literaturi tako što predstavlja prve empirijske dokaze negativnog odnosa stvarne razine prisustva stranih banaka (koncentracije stranih banaka) i bankarskih kriza u tranzicijskim gospodarstvima.

***Ključne riječi**: financijske krize, banke, struktura kapitala i vlasništva, tranzicijska gospodarstva, panel istraživanje*

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POSSIBILITIES OF RISK DIVERSIFICATION IN REGIONAL STOCK EXCHANGES

ABSTRACT

This research investigates diversification possibilities of the four West Balkan capital markets: Sarajevo, Banja Luka, Zagreb and Belgrade Stock Exchanges. Although these markets are highly segmented with different regulations, the capital flow between them is without constraints. By analyzing six main stock market indices in a 34-month period, from 2006 till 2008, we found low to medium positive statistically significant correlation between indices returns pairs. Even though the analyzed period included the second half of 2008, when the ongoing financial and economic crisis became global, the results are encouraging. By Markowitz portfolio selection process, the diversification effect was proven on the analyzed capital markets.

JEL Classification: G11, G32

Keywords: *Risk Diversification, Stock Indices, West Balkan Capital Markets, Markowitz Model*

1. INTRODUCTION

Investors prefer holding portfolios of securities rather than a single security due to risk-reducing effects called diversification. Diversification means spreading out the investments to reduce risk. When investing in capital markets, the fluctuations of single securities returns less affect a diverse portfolio, so it has lower risk than any single security.

Since diversification reduces the portfolio risk, it can consequently reduce portfolio returns. Diversification is often called "the only free lunch in finance".

International diversification of portfolios has always been an area of great interest for investors, researchers and especially international fund managers. There is considerable academic research on the benefits of international diversification.

Investors who buy stocks in domestic as well in foreign markets seek to reduce risk through international diversification. This risk reduction takes place only if the various markets are not perfectly correlated. The increasing correlation among the developed and emerging markets has restricted the scope for international diversification (Srivastava, 2007).

International stock market linkages are the subject of extensive research due to the following reasons: (1) rapid flow of capital among countries due to financial deregulation, [1]

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[1] The ongoing global financial and economic crises has revealed the need for new regulation of financial markets and banks.

(2) information availability, (3) reduction of transaction costs, and (4) potential gains from international diversification of investment portfolios (In, Kim and Yoon, 2002).

Most stock markets in the world tend to move together, in the same direction, implying positive correlation. The regional stock markets (Sarajevo Stock Exchange - SASE, Banja Luka Stock Exchange - BLSE, Zagreb Stock Exchange - ZSE and Belgrade Stock Exchange - BSE) have also shown close connectivity in the past few years. Thus, this paper aims to research if there are any diversification opportunities in the four regional stock markets and among the three neighboring countries (Bosnia and Herzegovina, Croatia and Serbia).

This research attempts to examine the connectivity of the regional stock exchanges in the last few years. It examines the possibility of international diversification on the regional stock exchanges. We have tested the following hypothesis: It is possible to reduce risk by investing in the regional stock exchanges. The hypothesis is being tested by statistical methods and by Markowitz portfolio optimization process (Markowitz, 1991). The research results will allow more efficient securities portfolio management on the capital markets in the region.

This paper is organized in five sections, including introduction. Section 2 shows the theoretical background, Section 3 deals with data and methodology, Section 4 presents the results, and in Section 5 we conclude the study.

2. THEORETICAL BACKGROUND

The integration of global equity markets has been a well-studied topic in the last two decades, particularly since October 1987 stock market crash. Most studies are conducted for the developed markets like the US, West Europe and Japan. The findings were that the degree of international co-movements among stock prices has substantially increased in the post-crash regime (Arshanapalli and Doukas, 1993). After the Asian crisis, the literature started focusing on the emerging Asian markets as well. Co-movement of the West Balkan markets is the subject of this research.

International market integration has several definitions. One states that assets of equal risk provide the same expected returns across integrated markets. This means fewer opportunities for the risk diversification if the markets are integrated. Second definition states that in integrated markets national stock market indices move together over the long run with possibility of short run divergence.

Vizek and Dadić (2005) researched multilateral integration between the emerging markets of Central and Eastern Europe (CEE) and the German equity market, for the period from January 1997 till June 2005. Authors find that equity markets of Croatia and other CEE emerging equity markets, namely of Poland, Czech Republic, Slovenia and Hungary, are multilaterally integrated. Additionally, their results indicate multilateral integration between the CEE equity markets and the German equity market. When analyzing Croatian and German equity markets alone, they find no evidence of bilateral integration.

Within the theoretical context of market integration, international stock market linkages and interdependence form a cornerstone of the modern portfolio theory, especially in relation to asset diversification. This theory suggests that investors diversify their assets across national borders as long as stock returns in other markets are less than perfectly correlated with those of the domestic markets (Masih and Masih, 1997).

Financial integration between equity markets can be assessed by different methodology. Fratzschner (2001) used uncovered interest parity, Korajczyk (1995) used multifactor Arbitrage Pricing Theory, Bekaert and Harvey (1995) and Dumas and Solnik (1995) used Capital Asset Pricing Model. Co-integration analysis is used to test stability of long run relationship across financial markets (Dickinson, 2000, Vizek and Tadić, 2005).

Risk diversification has two basic sources; one concept developed by Markowitz (1952) and another developed by Sharpe (1964). Markowitz revolutionized the finance with

his paper "Portfolio Selection," published in Journal of Finance, 1952. He introduced the notion of a (mean-variance) efficient portfolio that (1) provides minimum variance for a given expected return and (2) provides maximum expected return for a given variance.

Diversifying risk by selecting weakly correlated securities implies that decision is made based on information about standard deviation and correlation between securities' returns. This diversification is called Markowitz or efficient diversification, because Markowitz was the first who developed the procedure for calculating efficient portfolios.

Sharpe finds that one can reduce risk of a portfolio just by adding randomly selected securities in a portfolio, in a way that all securities have the same weights. By this procedure, systematic risk is being diversified; unsystematic risk becomes the only risk to be rewarded on the capital market. This approach doesn't explicitly assume that securities' returns are uncorrelated. Sharpe calls this diversification random diversification, essentially because an investor does not have to know information about standard deviation and correlation between securities' returns.

In this paper we adopted Markowitz' methodology to demonstrate the diversification possibilities on the regional capital markets. Efficient frontier of every possible portfolio of stocks, regardless of the number of stocks in the portfolio, lies between the portfolio with minimal standard deviation (also minimum variance) and the portfolio with maximum rate of return (mean). The portfolio with maximum rate of return is the upper, final point of efficient frontier. If the short sales are not allowed, the final portfolio (up on the right) in the efficient frontier will always be represented by only one share with the highest return in the portfolio. In case the short sales are allowed, no share is lying on the efficient frontier. No rational investor will invest in the portfolio which is not on the efficient frontier, because each point outside of the efficient frontier has the lesser efficiency than any point on the efficient frontier.

Markowitz used the technique of quadrate programming for solving the standard portfolio selection problem. To find a portfolio lying on efficient frontier, we are minimizing standard deviation, σ_p, in respect to weights, y_i.

$$\sigma_p = \sqrt{\sum_{j=1}^{n}\sum_{i=1}^{n} y_j y_i Cov(R_i, R_j)} \qquad (2.1)$$

where

$$\sum_{i=1}^{n} y_i \overline{R}_i = \overline{R}_p^{*} \text{ and } \sum_{i=1}^{n} y_i = 1 \qquad (2.2)$$

The solution to this problem results in weights, y_i, of efficient portfolio. By varying expected return, $\overline{R}_p$, we can find all portfolios lying on efficient line.

Asset risk can be determined as a probability that the expected rate of return on that asset will not be realized (Orsag, 2003). The greater the volatility of expected return, the higher is the risk for the investor. Risk, as a quantified uncertainty or quantified probability of realizing expected return on financial asset investment, encompasses the possibility of anticipating the most probable outcome and, also, measuring dispersion of probability distribution. Besides the danger of loss, the term risk includes dispersion of possible outcomes (results) related to the one most likely to happen.

Total holding period return is measured by the following formula (Bodie, Kane and Marcus, 1996):

$$R = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}} \qquad (2.3)$$

where R is total rate of return, D_t cash dividend for the period "t", P_t price at the end of the period "t" and P_{t-1} price at the beginning of the period "t". Total holding period return is the rate at which the investors' initial funds have grown during the investment period, usually one year. It is represented by the occasional payments during the holding-period increased by

the amount of which the price of security has changed during the period. An occasional payment on stocks represents the current income or dividend yield that can be omitted. The positive difference in price changes is called a capital gain, and the negative is called a capital loss. This measure is one of the best *ex-post* measures of the return on an investment for holding periods up to one year. Total rate of return is the sum of dividend yield and capital gain/loss.

A rational investor will try to diversify the risk by combining different securities in his portfolio. The portfolio consists of two and/or more securities into which the investor puts his money, in specific proportions, aimed at reducing the overall risk. Generally, it can be stated that the investor's assets in his portfolio are less risky than the ones he keeps isolated (Orsag, 2003). In the analyses of the portfolio risk, basic parameters of the probability distribution of rates of return in the portfolio need to be determined. Those parameters are the expected rate of return and the variance (i.e. standard deviation).

The expected rate of return of the portfolio is a weighted mean of the expected returns on securities in the portfolio, where the weights are the percentages of the money invested in each individual security:

$$(2.4) \quad \overline{R}_p = \sum_{j=1}^{n} \overline{R}_j w_j$$

where the $\overline{R}_j$ is the expected rate of return of the *j* security, and w_j is the percentage of money invested in *j* security.

Portfolio risk is not just the weighted mean of the risk of individual securities, because it does not depend only on the risk of securities in the portfolio, but also on the existing relations between these securities. There are two ways to estimate the standard deviations of the portfolio; the first way is (Van Horne and Wachowicz, 2002, p. 55) by using the following formula:

$$(2.5) \quad \sigma_p = \sqrt{\sum_{i=1}^{n} P_i (R_{i(p)} - \overline{R}_p)^2}$$

where $R_{i(p)}$ is the possible rate of return on portfolio, which is estimated as the weighted mean of rates of return on individual securities in different scenarios (weights are percentages of money invested in individual securities), P_i is the belonging probability of the given scenario, and $\overline{R}_p$ is the expected rate of return of the portfolio. The second way for calculating the standard deviation of the portfolio is (Bodie, Kane and Marcus, 1996, p. 213):

$$(2.6) \quad \sigma_p = \sqrt{\sum_{j=1}^{n} \sum_{i=1}^{n} w_j w_i Cov(R_i, R_j)}$$

where $Cov(R_i, R_j)$ is the covariance between the rate of return of the *i* and the *j* security.

The goal of successful diversification is in combining mutually weakly correlated securities, which in turn is measured by the covariance and correlation. Covariance measures the degree to which the two securities go in the same direction. Positive covariance means that return rates are going in the same direction, together. Negative covariance means that return rates are moving inversely and it is the proof of the successful risk diversification according to Markowitz.

$$(2.7) \quad Cov(R_A, R_B) = \sum_{i=1}^{n} P_i (R_{i(A)} - \overline{R}_A)(R_{i(B)} - \overline{R}_B)$$

$$(2.8) \quad Cov(R_A, R_B) = \frac{\sum_{i=1}^{n} (R_{i(A)} - \overline{R}_A)(R_{i(B)} - \overline{R}_B)}{n}$$

$$(2.9) \quad Cov(R_A, R_B) = Cov(R_B, R_A)$$

Even simpler statistical tool for the interpretation is the correlation coefficient (ρ), which takes the value in the interval from –1 (perfect negative correlation) to 1 (perfect positive correlation). Correlation points to the same thing as the covariance does regarding the moving direction of return rates on securities. Correlation coefficient is the quotient of covariance of two securities and its multiplied standard deviations:

$$(2.10) \quad \rho(R_A, R_B) = \frac{Cov(R_A, R_B)}{\sigma_A \sigma_B}$$

Perfect risk diversification according to Markowitz is accomplished if the value of the correlation coefficient is closer to -1.

To take a more precise look at the nature of relationship between two securities, it is possible to examine partial correlations between a pair of securities (securities returns), excluding impact of other securities in the observed set of securities.

3. METHODOLOGY AND DATA

Since we adopted previously described Markowitz' methodology to test the hypothesis of whether diversification is possible in the regional stock exchanges, we have to take a closer look at the correlation coefficient between observed capital markets. Rather than selecting single securities from each stock exchange, six stock market indices have been selected and observed in a 34-month period, from 2006 till 2008. The second half of 2008 was included in the analysis regardless the ongoing global financial and economic crisis. In crises, as well as in recovery periods, we expect the stock markets to move in the same direction, but yet we will see if the trends are perfectly positively correlated.

The study investigates the relationship between the four West Balkan markets, represented with six most important stock indices. From SASE, we included two indices following capital market in Federation of BiH: BIFX (following 11 investment funds) and SASX-10 (which includes 10 companies with highest market capitalization).[2] BLSE is represented with BIRS (wide index including 20 companies) and FIRS (following 13 investment funds). CROBEX (wide index including up to 30 companies) is representing ZSE, while BELEX15 (following 15 most liquid stocks) is representing BSE.

Although the analyzed capital markets are highly segmented, even in the same country (BiH itself has two stock exchanges, different regulation etc.), there are no limitations on capital flow between the countries[3] due to financial deregulation, low transaction costs and information availability. Those capital markets are available to international investors like any capital market in the world. This region has attracted attention of many international funds and investors. Some researches have shown that coefficient of relative risk aversion on BiH's capital market is much higher, ranging from 4 to 10 (Zaimović, Babić-Hodović and Arnaut-Berilo, 2006), compared to 2 to 4 on developed capital markets (Bodie, Kane and Marcus, 1996). This implies high risk premium on BiH's capital market. This was recognized as an investment opportunity by the international investors and fund managers, including those from Slovenia and Croatia.

The data sets range from 2nd January 2006 till 19th November 2008, in total 744 observations. We observed indices in the region on a daily basis. The daily stock price indices were sourced from official websites of the four stock exchanges. The missing data were substituted by the latest data. That day return was signified as zero. The daily indices returns do not include dividend yield on securities. The daily return is calculated as percentage change of daily index value:

[2] The third index (SASX-30) was introduced recently (March 2009).

[3] Capital flow limitations sometimes exist if an individual investor wants to transfer money abroad (case of BiH). But this obstacle can be easily prevailed by custody banking. Such limitations are not present for companies and institutional investors.

$$(3.1) \quad R_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

As a first step in the analysis of selected indices movements, we present the basic descriptive statistics of the indices returns (table 1). Only two indices have shown positive daily average return (SASX-10 and CROBEX). However, their returns – although positive – are very close to zero. Standard deviation of all indices returns is high compared to low and negative average returns. SASX-10 has also shown the highest standard deviation of returns.

Table 1

Descriptive statistics of indices returns[4]

Indices returns	Minimum	Maximum	Mean	St. deviation
BIFX	-8,41%	8,03%	-0,0552%	1,46%
SASX-10	-8,46%	9,15%	0,0007%	1,88%
BIRS	-4,89%	7,59%	-0,0168%	1,31%
FIRS	-8,03%	8,27%	-0,0004%	1,74%
CROBEX	-10,20%	15,93%	0,0006%	1,63%
BELEX15	-10,29%	12,93%	-0,0608%	1,76%

Source: Authors' calculations

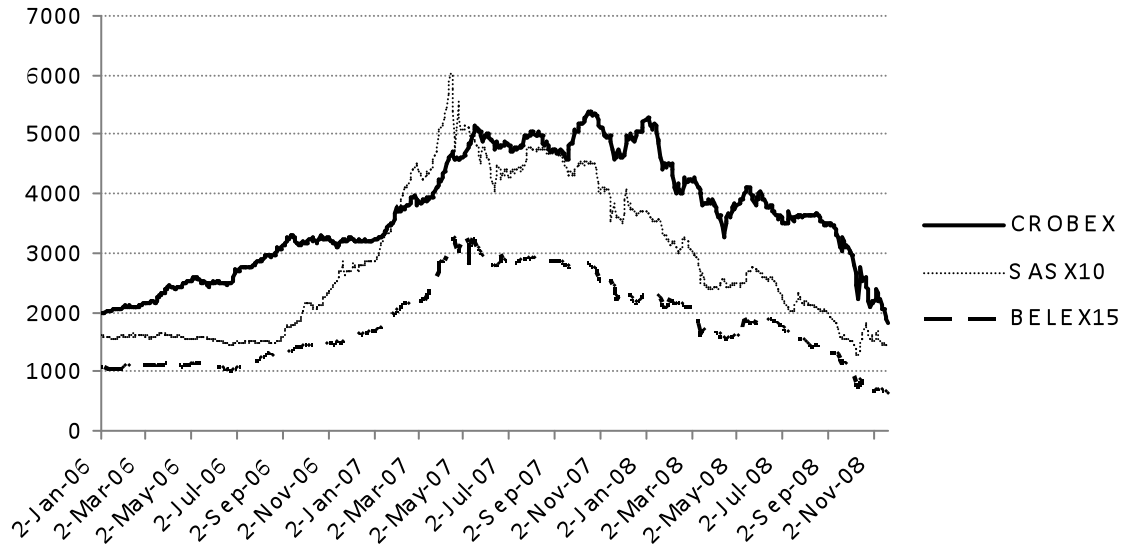
Figures 1 and 2 depict the movements of different stock indices from January 2006 to November 2008. The maximum index value demonstrates FIRS (12,618 on 17th April 2007), followed by BIFX (9,853 on 17th April 2007) and SASX-10 (6,040 on 13th April 2007). All observed BiH's indices had their maximum value in April 2007, when the bullish trend on this market ended. BELEX15 registered maximum value in May 2007 (3,304), while CROBEX had its own maximum in October 2007 (5,392). Shortly after the maximum picks, bearish market started and lasted till the end of observed period, and longer,[5] with short recovery periods.

[4] The results are generated by SPSS 17.0, ©SPSS Inc., 2008.

[5] The stock prices and indices values continued to fall till spring 2009.

Figure 1

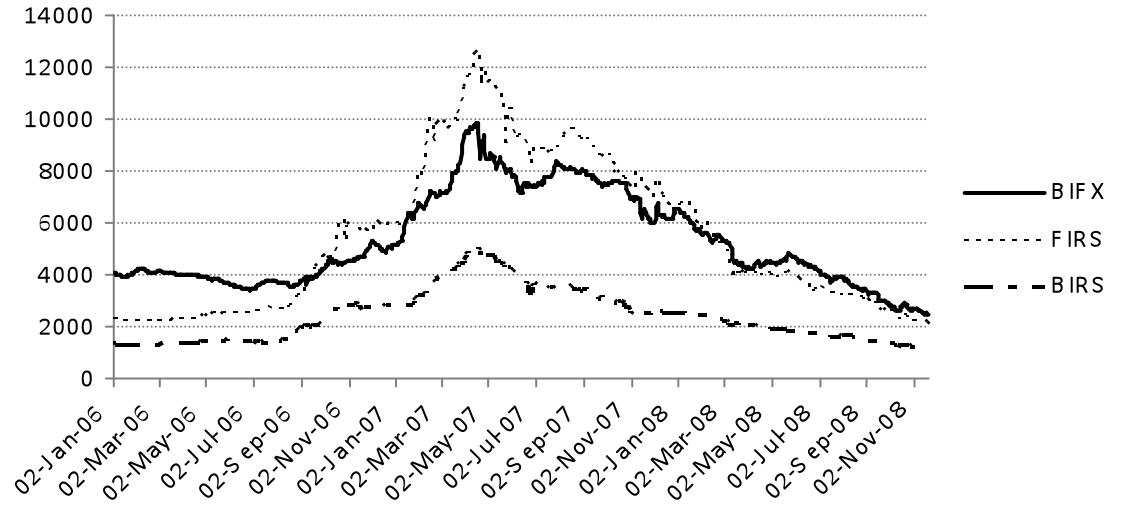
Daily indices movement of CROBEX, SASX-10 and BELEX15[6]



Source: Authors' work

Figure 2

Daily indices movement of BIFX, FIRS and BIRS



Source: Authors' work

Bearish trend that started on BiH's capital market in April 2007 spreaded out on the neighboring capital markets. It has been deepened by ongoing global crises. The ending values of all six indices are lower than the starting values of January 2006, which implies that the stock prices in indices were in November 2008 similar to prices before January 2006. In November 2008, markets in general fell to the prices of 2005 and 2004.

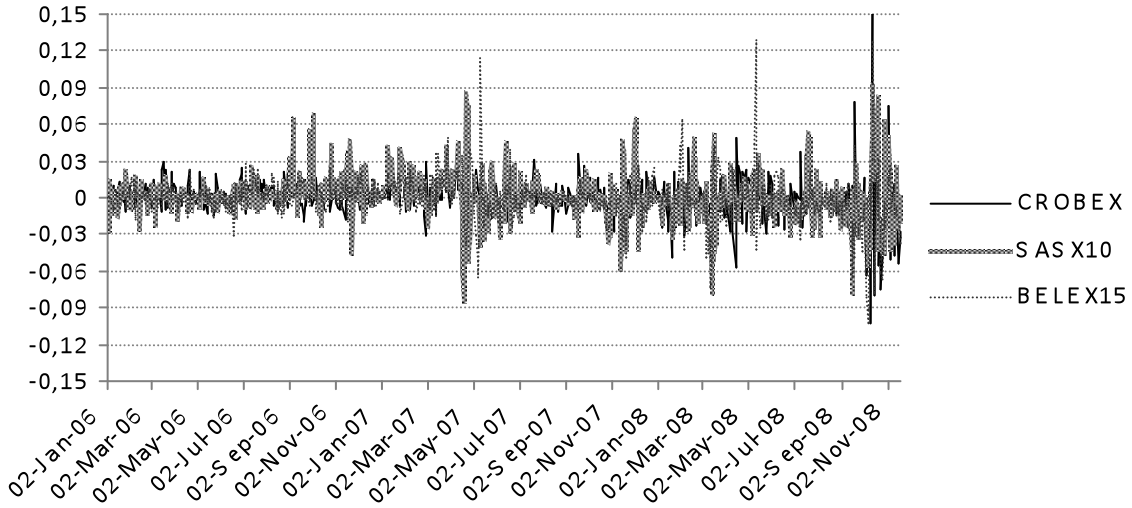
The following figures (3 and 4) show the daily returns oscillations. CROBEX and BELEX15 have shown higher amplitudes in daily returns movements, especially in October 2008, while other four indices returns move in range of +/-10%, daily. SAXS10 also had the highest daily positive change in October 2008. In figures 1 and 2 we can observe that

[6] Figures 1, 2, 3 and 4 are generated by MS Excel. Data obtained by Zagreb Stock Exchange, Sarajevo Stock Exchange, Banja Luka Stock Exchange and Belgrade Stock Exchange.

indices' returns are stationary, while indices' values were not mean reverting (figures 1 and 2).

Figure 3

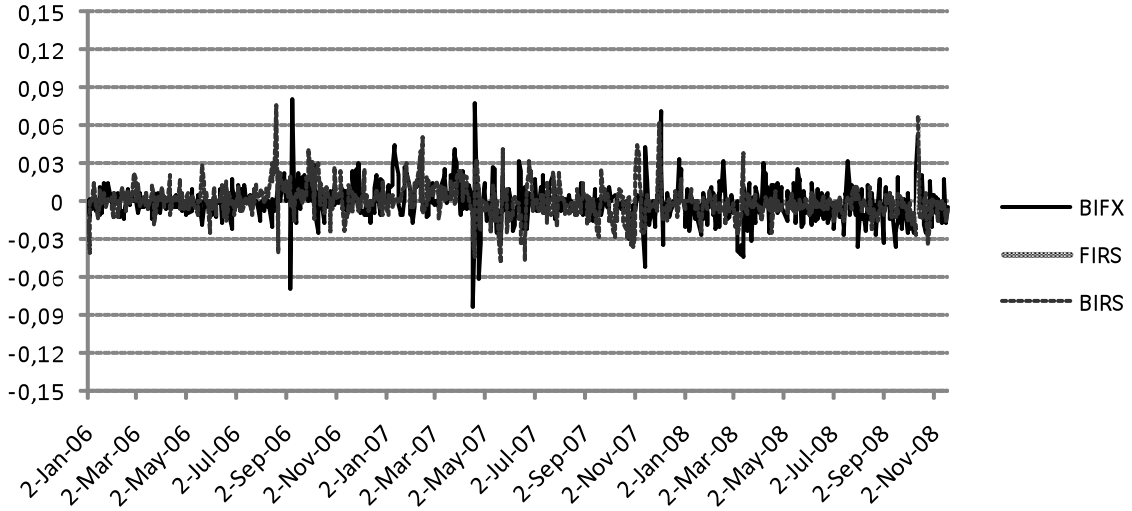
Daily indices return movement of CROBEX, SASX-10 and BELEX15



Source: Compiled and processed by the authors

Figure 4

Daily indices return movement of BIFX, FIRS and BIRS



Source: Compiled and processed by the authors

4. RESULTS

Correlation analysis was applied on: (1) indices values, and (2) indices daily returns. Indices daily returns were also analyzed by the partial correlation procedure. Partial correlation analysis helps find correlation between a pair of indices returns after removing the effects of other indices returns. This analysis aims to reveal hidden correlations, correlation masked by the effect of other included variables. All calculated coefficients were tested on their statistical significance.

In table 2 we show the correlation matrix of indices values. As shown on figures 1 and 2, the indices movements have the same direction. We measure the intensity of the connectivity between analyzed indices.

Table 2

Correlation matrix of indices[7]

		BIFX	SASX-10	BIRS	FIRS	CROBEX	BELEX15
BIFX	Pearson Correlation	1	0,978(**)	0,930(**)	0,965(**)	0,807(**)	0,953(**)
	Sig. (2-tailed)		0,000	0,000	0,000	0,000	0,000
SASX-10	Pearson Correlation	0,978(**)	1	0,928(**)	0,973(**)	0,871(**)	0,968(**)
	Sig. (2-tailed)	0,000		0,000	0,000	0,000	0,000
BIRS	Pearson Correlation	0,930(**)	0,928(**)	1	0,979(**)	0,724(**)	0,878(**)
	Sig. (2-tailed)	0,000	0,000		0,000	0,000	0,000
FIRS	Pearson Correlation	0,965(**)	0,973(**)	0,979(**)	1	0,803(**)	0,928(**)
	Sig. (2-tailed)	0,000	0,000	0,000		0,000	0,000
CROBEX	Pearson Correlation	0,807(**)	0,871(**)	0,724(**)	0,803(**)	1	0,922(**)
	Sig. (2-tailed)	0,000	0,000	0,000	0,000		0,000
BELEX15	Pearson Correlation	0,953(**)	0,968(**)	0,878(**)	0,928(**)	0,922(**)	1
	Sig. (2-tailed)	0,000	0,000	0,000	0,000	0,000	

** Correlation is significant at the 0,01 level (2-tailed).
Source: Authors' calculations

All correlation coefficients between pairs of analyzed indices are high, positive and statistically significant on 1% level of risk. Their values are in the 0,724 – 0,979 range, which indicates a strong and direct relationship between all indices pairs. CROBEX has the lowest correlation coefficient to other indices, ranging from 0,724 to 0,922. Yet, it does not mean that the indices returns are also so highly positively correlated. Otherwise, there would be a small possibility of risk diversification due to high positive co-movements.

Correlation coefficients between a pair of indices returns (table 3) are obviously smaller compared to correlation coefficients between indices, and they are all statistically significant. Two lowest correlation coefficients between indices returns are 0,096 (between CROBEX and BIFX returns) and 0,128 (between CROBEX and FIRS returns). There is a very weak to weak relationship between indices returns from different stock exchanges ranging from 0,096 (between CROBEX and BIFX returns) to 0,298 (between BIFX and FIRS).

Two highest correlation coefficients are 0,593 (between SASX and BIFX returns) and 0,548 (between BIRS and FIRS returns). The results are not surprising, since SASX and BIFX are indices from the same stock exchange, as well as BIRS and FIRS. It is interesting to point out that these stock indices represent different segments of these markets; companies and investment fund segment on every stock exchange. Yet there is a moderate positive correlation between these two segments on each stock exchange.

We can conclude that although the correlations between indices returns are positive (from weak to moderate positive correlation), there are significant diversification opportunities on those markets, since correlation is much lower than 1. There was no evidence of negative correlation between indices returns nor indices value, which proves the assumption that those markets move together.

[7] The results in tables 2, 3 and 4 are generated by SPSS 17.0, ©SPSS Inc., 2008.

Table 3

Correlation matrix of indices returns

		BIFX	SASX-10	BIRS	FIRS	CROBEX	BELEX15
BIFX	Pearson Correlation	1	0,593(**)	0,239(**)	0,298(**)	0,159(**)	0,223(**)
	Sig. (2-tailed)		0,000	0,000	0,000	0,000	0,000
SASX-10	Pearson Correlation	0,593(**)	1	0,279(**)	0,282(**)	0,253(**)	0,261(**)
	Sig. (2-tailed)	0,000		0,000	0,000	0,000	0,000
BIRS	Pearson Correlation	0,239(**)	0,279(**)	1	0,548(**)	0,096(**)	0,155(**)
	Sig. (2-tailed)	0,000	0,000		0,000	0,008	0,000
FIRS	Pearson Correlation	0,298(**)	0,282(**)	0,548(**)	1	0,128(**)	0,215(**)
	Sig. (2-tailed)	0,000	0,000	0,000		0,000	0,000
CROBEX	Pearson Correlation	0,159(**)	0,253(**)	0,096(**)	0,128(**)	1	0,271(**)
	Sig. (2-tailed)	0,000	0,000	0,008	0,000		0,000
BELEX15	Pearson Correlation	0,223(**)	0,261(**)	0,155(**)	0,215(**)	0,271(**)	1
	Sig. (2-tailed)	0,000	0,000	0,000	0,000	0,000	

** Correlation is significant at the 0,01 level (2-tailed).
Source: Authors' calculations

Considering the strong and direct relationship between the analyzed indices and low to moderate positive correlation between indices return, it is interesting to investigate the relationship between a pair of indices returns excluding the indirect influence of other indices returns. To eliminate this indirect impact, partial correlation coefficients were calculated between pairs of indices returns (table 4). In most cases, partial correlation coefficients between indices returns are significantly smaller than the corresponding correlation coefficients. Moreover, most of them are more than twice smaller than the corresponding correlation coefficients.

Table 4

Partial correlation matrix of indices returns

		BIFX	SASX	BIRS	FIRS	CROBEX	BELEX15
BIFX	Partial Correlation	1	0,530(**)	0,009	0,133(**)	-0,013	0,065
	Sig. (2-tailed)		0,000	0,802	0,000	0,725	0,077
SASX-10	Partial Correlation	0,530(**)	1	0,120(**)	0,032	0,162(**)	0,103(**)
	Sig. (2-tailed)	0,000		0,001	0,388	0,000	0,005
BIRS	Partial Correlation	0,009	0,120(**)	1	0,498(**)	-0,007	0,013
	Sig. (2-tailed)	0,802	0,001		0,000	0,857	0,721
FIRS	Partial Correlation	0,133(**)	0,032	0,498(**)	1	0,030	0,107(**)
	Sig. (2-tailed)	0,000	0,388	0,000		0,416	0,004
CROBEX	Partial Correlation	-0,013	0,162(**)	-0,007	0,030	1	0,214(**)
	Sig. (2-tailed)	0,725	0,000	0,857	0,416		0,000
BELEX15	Partial Correlation	0,065	0,103(**)	0,013	0,107(**)	0,214(**)	1
	Sig. (2-tailed)	0,077	0,005	0,721	0,004	0,000	

** Correlation is significant at the 0,01 level (2-tailed).
Source: Authors' calculations

Seven partial correlations are not statistically significant, so we cannot reject the null hypothesis that these partial correlations are different from null. The following pairs of indices returns have no direct impact on each other: BIFX and BIRS, BIFX and CROBEX,

BIFX and BELEX15, SASX and FIRS, BIRS and CROBEX, BIRS and BELEX15, FIRS and CROBEX. Their co-movement is due to impact of other indices returns co-movements.

Minor low direct relationship exists between returns on BIFX and FIRS (0,133), SASX-10 and BIRS (0,120), SASX-10 and CROBEX (0,162), SASX-10 and BELEX15 (0,103), FIRS and BELEX15 (0,107), CROBEX and BELEX15 (0,214). All of them are statistically significant on the 1% level of risk. We can conclude that positive correlation (although low) between these pairs of indices returns is partly due to their own connectivity and partly to the impact of other indices returns co-movements.

The moderate partial correlation between returns on BIFX and SASX (0,530) and between BIRS and FIRS (0,498) implies that other analyzed indices returns have not significant influence on their relationship. Their moderate co-movements are due to their own connectivity.

Aiming to demonstrate diversification effects on regional stock exchanges, we have to create stock portfolios. Assume the existence of six index funds which are tracking analyzed indices and replicating the movements of these indices. For a portfolio of these six funds stocks, the portfolio risk would be influenced by stocks' (i.e. indices) own variances as well as by covariance between stock returns pairs. The portfolio variance is the sum of the variance-covariance matrix, as shown in table 5, where all stocks are equally weighted. As the number of stocks increases, the covariance members are dominating over the variance members in this matrix. In a portfolio of 6 stocks, there are 6 variance members and 30 covariance members.

Table 5

Variance-covariance matrix[8]

5,941E-06	4,533E-06	1,271E-06	2,109E-06	1,051E-06	1,597E-06
4,533E-06	9,826E-06	1,907E-06	2,560E-06	2,151E-06	2,399E-06
1,271E-06	1,907E-06	4,769E-06	3,472E-06	5,720E-07	9,932E-07
2,109E-06	2,560E-06	3,472E-06	8,411E-06	1,011E-06	1,694E-06
1,051E-06	2,151E-06	5,720E-07	1,011E-06	7,369E-06	2,162E-06
1,597E-06	2,399E-06	9,932E-07	1,694E-06	2,162E-06	8,621E-06

Source: Authors' calculation

We will assume that the indices mean is their expected return. We show in table 6 that the coefficient of variation (CV) of indices with a positive mean is extremely high; $CV_{SASX-10}$=2,691 and CV_{CROBEX}=2,846. CV of other indices returns is not meaningful since their mean is negative. So, the created equally weighted portfolio of all six indices also has a negative mean of -0,022% and standard deviation of 1,019%. The created portfolio has the lowest standard deviation of all the observed indices; the diminishing standard deviation is a proof of risk diversification in these four markets.

[8] The results in table 5 and 6 are calculated using MS Excel.

Table 6

Descriptive statistics of indices returns and portfolios returns

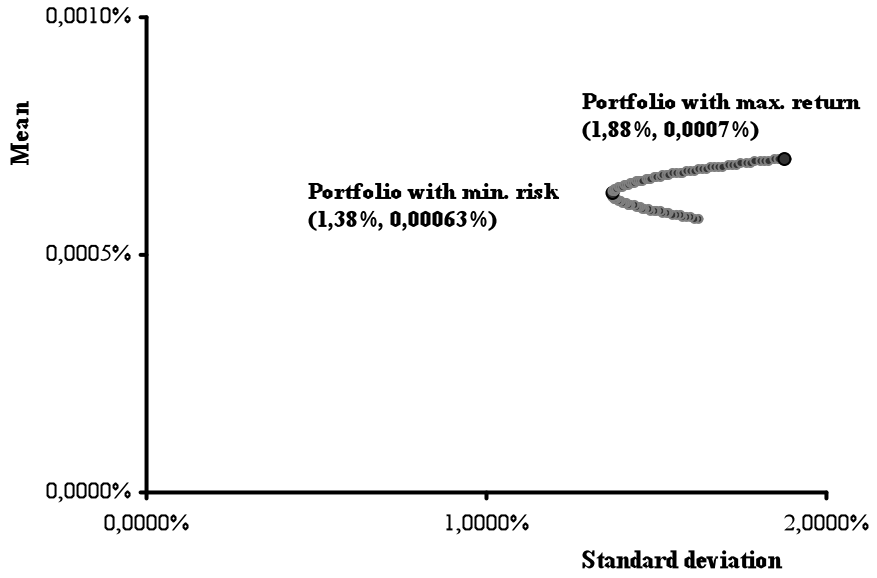
Indices returns	Mean	Variance	St. deviation	Coefficient of variation
BIFX	-0,0005517	0,0002139	0,0146251	-
SASX	0,0000070	0,0003538	0,0188083	2,691
BIRS	-0,0001682	0,0001717	0,0131021	-
FIRS	-0,0000045	0,0003028	0,0174012	-
CROBEX	0,0000057	0,0002653	0,0162878	2,846
BELEX15	-0,0006077	0,0003104	0,0176174	-
Portfolio of six indices	-0,0002199	0,0001039	0,0101932	-
Portfolio of SASX-10 and CROBEX	0,0000064	0,0001935	0,0139099	2,188

Source: Authors' calculation

To demonstrate diversification effect on regional stock exchanges we will create portfolio of two indices, those with a positive mean. Equally weighted portfolio of SASX-10 and CROBEX indices/fund stocks has lower risk than any single index, i.e., its standard deviation is 1,39%. Portfolio return is 0,00064%. The benefits of diversification are more visible through coefficient of variation of 2,188, which implies that this portfolio has the lowest standard deviation over mean, i.e., this portfolio has the best risk/return relationship of all analyzed indices. This diversification effect is due to a relatively low correlation coefficient between SASX-10 and CROBEX returns of 0,253.

Figure 5

All possible portfolios of SASX-10 and CROBEX indices[9]



Source: Compiled and processed by the authors

The diversification effect is better visible in figure 5. Diversification is the curvature of the line of all possible portfolios between the two indices regarding the straight line that connects the two ending portfolios. We can see that the minimum risk portfolio is the left portfolio with standard deviation of 1,38%, where expected return is 0,00063%. This

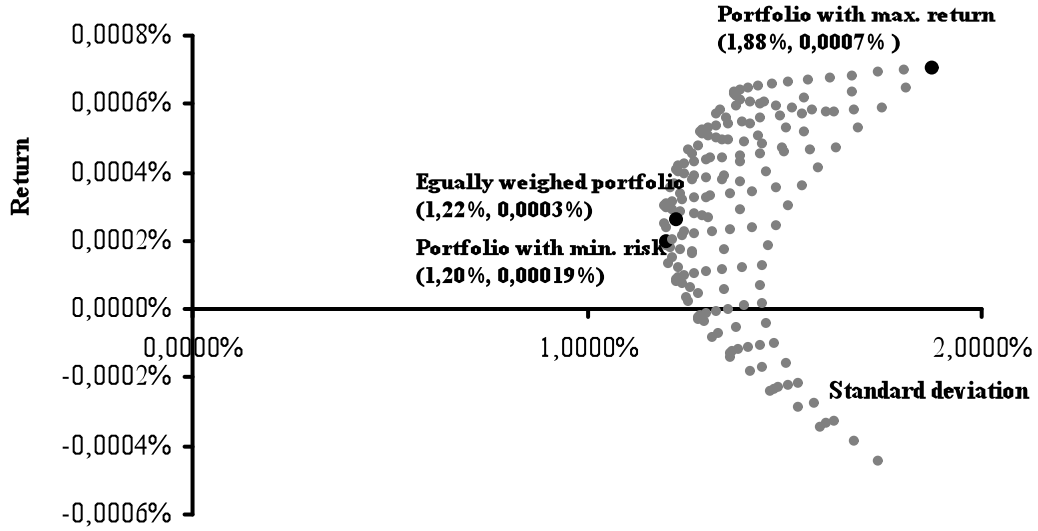
[9] This possible portfolios set is result of simulation method using MS Excel.

portfolio consists of 40,47% of SASX-10 and 59,53% of CROBEX. Equally weighted portfolio has standard deviation of 1,39% and expected return of 0,00064%. It means that this portfolio is very close to minimum standard deviation portfolio and it is lying on efficient frontier.

Although standard deviation is decreasing by adding one more index in the previous portfolio (now consisting of SASX-10, CROBEX and FIRS), minimal $\sigma_p = 1{,}20\%$, the coefficient of variation is increasing, CV of the least risky portfolio is 6,341.[10] The minimum standard deviation portfolio has the following weights: 20% SASX-10, 40% (CROBEX) and 40% (FIRS). The significant increase of CV is due to the negative mean of the added index returns. However, the diversification effect is being proved by sliding the possible portfolio set to the left, regardless of the negative mean of added index returns, which is the result of low correlation between the selected index returns, 0,282 (SASX-10 and FIRS), 0,128 (CROBEX and FIRS) and 0,253 (SASX-10 and CROBEX). Yet, a certain number of portfolios are located in the fourth quadrant, due to a negative mean of the third added index (FIRS) and these portfolios are ones that no one would like to have.

Figure 6

All possible portfolios of SASX-10, CROBEX and FIRS[11]



Source: Compiled and processed by the authors

It is crucial to remark that the equally weighted portfolio of three fund stocks, formed like three stock indices in the region, is very close to the efficient frontier. This portfolio has standard deviation of 1,22% and a mean of 0,0003%. Assuming the existence of these index funds stocks, we observe following:

- Equally weighed portfolio of fund stocks in the region has a very good standard deviation – mean trade off, compared to other possible portfolios of these three fund stocks, almost lying on efficient frontier.
- This is argument for passive portfolio management, since we simplify portfolio optimization process by avoiding calculating the efficient portfolios. It reduces portfolio management costs.

[10] FIRS is chosen as the third index in the portfolio because of the minimal negative return.

[11] This possible portfolios set is a result of simulation method in MS Excel. The graph shows more than 200 possible portfolios of these three indices/funds stocks. The number of all possible portfolios between two, three or more stocks is unlimited. In this simulation, short sells are not considered.

- We can suggest that portfolios of more index funds stock (four, five and more) would make this standard deviation – mean trade off of equally weighed portfolio even more efficient, actually lying on the efficient frontier.
  Creation of such funds would improve portfolio management in the region.

5. CONCLUSION

The analysis of indices values has shown that all six indices are highly positively correlated. The correlation coefficients between pairs of indices ranged from 0,724 (between CROBEX and BIRS) to 0,979 (between BIRS and FIRS). All correlation coefficients were statistically significant at 99%.

The correlation analysis of indices returns gave interesting results. Correlation coefficients between indices returns are low and moderate, ranging from 0,096 (between CROBEX and BIRS) to 0,593 (between SASX-10 and BIFX), and all of them are statistically significant at 99%. We conclude that there is significant diversification effect if investing in portfolios formed like stock indices in the region, due to correlation coefficients different than 1.

Analysis of partial correlation coefficient provided a more detailed explanation of co-movements between indices returns. Partial correlation coefficients between seven different pairs of indices returns (excluding influence of other four indices) are not statistically significant, and we cannot reject the null hypothesis that the partial correlation between these pairs is different than null. The co-movements of these pairs of indices returns are explainable with other indices returns co-movements.

Indices returns from BLSE and SASE have shown a moderate partial correlation (0,498 and 0,530, respectively), significant at 99%. These values slightly differ from the simple correlation coefficient of 0,548 and 0,593, which brings us to the conclusion that there is no significant influence of other indices on co-movements of these pairs of indices returns. All other partial correlation coefficients are low, ranging from 0,103 to 0,214, and all of them are statistically significant at 99%.

Correlation coefficients between indices returns are much lower than the correlation analysis of indices values would indicate. It means that even though the indices tend to move in tandem, their percentage changes are not highly positively correlated. It proves possible to diversify risk by investing in regional stock exchanges.

To show diversification, we assume the existence of index funds replicating stock indices analyzed in this paper. Diversification effect on the regional stock markets was shown on the example of two and three index fund stocks portfolios, formed like indices SASX-10, CROBEX and FIRS. Standard deviation is diminishing by adding one more index fund stock in the portfolio, which is a proof of diversification. Diversification is also visible on graphical demonstration. In most of the period, the markets were bearish, resulting in a negative mean in four of six cases. The low and moderate correlation coefficients between indices pairs indicate diversification possibilities on all the analyzed markets. We could have obtained much "nicer" results if we had adjusted the period, excluding the second half of 2008. All of the indices would have a positive mean, and diversification effects would be more visible.

One of the most important results of this research is that equally weighted portfolio of three index fund stocks would have very good standard deviation – mean trade off, lying almost on efficient portfolios. This encourages creation of such index funds, whereby the portfolio management in the region would be improved. This also speaks for passive portfolio management. It also implies that such portfolio could be used as a proxy for market portfolio in tests of Sharpe's CAPM. In CAPM tests market portfolio efficiency is required.

Since the observed markets tend to move together, it will be interesting to track the co-movements of analyzed markets in the recovery period, after the ongoing global financial and economic crisis.

REFERENCES

Arshanapalli, B., Doukas, J. (1993) International Stock Market Linkages: Evidence of Pre- and Post-October 1987 Period**,** Pacific-Basin Finance Journal, No. 3

Bekaert, G., Harver, C. R. (1995) Time-varying world market integration, The Journal of Finance, Vol. 50, p. 403-444

Blake, D. (2003) Financial Market Analysis, John Wiley & Sons LTD

Bodie, Z., Kane, A., Marcus, A. J. (1996) Investments, Irwin McGraw-Hill

Bodie, Z., Kane, A., Marcus, A. J. (2006) Počela ulaganja, MATE

Dickinson, D. (2000) Stock Market Integration and Macroeconomic Fundamentals: An Empirical Analysis, Applied Financial Economics, Vol. 10, p. 261-276

Dumas, B., Solnik, B. (1995) The World Price of Foreign Exchange Risk, Journal of Finance, Vol. 50 (2), p. 445-479

Fratzscher, M. (2001) Financial Market Integration in Europe: on the Effects of EMU on Stock Markets", ECB Working Paper No. 48

In, F., Kim, S., Yoon, J. H. (2002) International Stock Market Linkages: Evidence from the Asian Financial Crisis, Journal of Emerging Market Finance, SAGE, No. 1

Kmenta, J. (1997) Počela ekonometrije, MATE

Korajezyk, R. (1995) A Measure of Stock Market Integration for Developed and Emerging Markets, Policy Research Working Paper 1482, World Bank

Markowitz, H. (1952) Portfolio Selection, Journal of Finance 7, No. 1

Markowitz, H. M. (1991) Portfolio Selection, Blackwell Publishing

Masih, A. M. M., Masih, R. (1997) A Comparative Analysis of the Propagation of Stock Market Fluctuations in Alternative Models of Dynamic Causal Linkages, Applied Financial Economics, No. 7 (1)

Orsag, S. (2003) Vrijednosni papiri, Revicon

Sharpe, W. F. (1964) Capital Asset Prices: A Theory Of Market Equilibrium Under Conditions Of Risk, The Journal of Finance, Vol. XIX, No. 3, p. 425-442

Srivastava, A. (2007) Cointegration of Asian Markets with US Markets: International Diversification Perspectives, Global Business Review, SAGE, No. 8

Van Horne, J., Wachowich, J. M. Jr. (2002) Osnove financijskog menedžmenta, MATE

Vizek, M., Dadić, T. (2006) Integration of Croatian, CEE and EU Equity Markets: Cointegration Approach, Ekonomski pregled, 57 (9-10), p. 631-646

Zaimović, A., Babić-Hodović, V., Arnaut-Berilo, A. (2006) Investors' Attitude toward Risk in Bosnia and Herzegovina", in *Third International Conference - An Enterprise Odyssey: Integration or Disintegration*, Proceedings, CD of full papers, Faculty of Economics Zagreb, Zagreb-Croatia, 15th - 17th June 2006, p. 861-876.

Zaimović, A., Arnaut, A. (2003) The Portfolio Analysis of Securities on Sarajevo Stock Exchange: The Application of Linear Programming on Portfolio Management, Proceedings from the Second International Conference of the Faculty of Economics Sarajevo (ICES) 2003: From Transition to Development Globalization and Political Economy of Development in Transition Economies, Faculty of Economics and Business, Sarajevo, Bosnia and Herzegovina, 9th -11th October 2003, ISBN 9958-605-58-9, p. 1007-1050

Internet pages:

(Sarajevo Stock Exchange, http://www.sase.ba, January 2009)

(Banja Luka Stock Exchange, http://www.blberza.com, January 2009)

(Zagreb Stock Exchange, http://zse.hr, January 2009)

(Belgrade Stock Exchange, http://www.belex.rs, January 2009)

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MOGUĆNOSTI DIVERZIFIKACIJE RIZIKA NA REGIONALNIM BURZAMA

SAŽETAK

Ovaj rad istražuje mogućnosti diverzifikacije na četiri tržišta kapitala Zapadnog Balkana: Sarajevske, Banjalučke, Zagrebačke i Beogradske burze. Iako su posmatrana tržišta visoko segmentirana sa različitom regulativom, kretanje kapitala na ovim tržištima je bez ograničenja. Analizirajući šest najvažnijih dioničkih indeksa u periodu od 34 mjeseca, od 2006. do 2008., našli smo nisku do umjerenu pozitivnu statistički signifikantnu korelaciju između parova prinosa na indekse. Mada je analizirani period obuhvatao drugu polovinu 2008. godine, kada je tekuća financijska i ekonomska kriza postala globalna, rezultati studije ohrabljuju. Koristeći Markowitzev metod portfolio selekcije dokazan je efekat diverzifikacije na analiziranim tržištima.

JEL Classification: G11, G32

Keywords: *diverzifikacija rizika, dionički indeksi, tržišta kapitala Zapadnog Balkana, Markowitzev model*

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THE LAND PLOT –THE INTRODUCTION OF PLANNING SCRIPT

ABSTRACT

The purpose of this paper is to bring to life universal spatial planning rules whose marks are symbols reminiscent of letters for writing words, and are in practice pictures of drawings. The goal of the research is to determine general terms for the development of a hierarchy of use with four levels of land plots. The research methodology includes an analysis of the way spatial planning takes place at present in theory and in practice as well as experience in preparing and implementing spatial planning plans. The general terms in order from superior to subordinate units of use are: Planning area, Planning zone, Planning block and Planning parcel.

Keywords: *Property, spatial planning, purpose, hierarchy*

I. INTRODUCTION

In order for construction on land to take place in an orderly fashion, a universal set of rules for spatial planning must exist just as a system of writing exists for everyday human communication. Without letters writing cannot exist, and so without land plots spatial planning cannot exist. An important role in planning is played by the "rules" for the preparation of spatial plans. The base for the preparation of these rules is The Act. As such in its regulations the newest Spatial Planning and Construction Act (The Act, 2007, num.76, article 80; 2009, num. 38) states important rules for planning space, but also includes projects as the starting point for planning.

Before a plan is prepared, it is possible to conduct a bid for the preparation of "professional solutions" (not clearly defined by law, a practical-urban-architectural solution or preliminary project without a detailed design plan). This encourages euphoria: architectural creativity, expert panels, awards and recognition for professional solutions which will be built into the spatial plan. As a rule this professional solution is a "combination of aesthetics and overload." The combination of aesthetics is the preliminary project within design standards, new forms of volume, material and internal functional solutions with rich content that are visually attractive. As a rule, the combination of overload is the maximising of construction, sizes, capacities and profits which in a large measure surpass the framework

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of spatial planning standards. Moreover, spatial planning lacks a hierarchy of purposes so that at the level of the Republic of Croatia elements of planning in hospitality are mistakenly placed in such a way that the smallest planning unit, the construction parcel, is made equivalent to a zone. According to current professional knowledge, as a rule the units of organisation in descending order are: building area = two or more zones; one zone = two or more blocks; one block (group) = two or more construction parcels. On the internet one can find that the detailed spatial plan determines the prerequisites for construction on one construction parcel with an area of 36 ha, which according to the plan belongs to a zone or purpose area at the general urban plan level. The said parcel is home to a group of ten-odd buildings with the following purposes: villa, hotel, street and more![1] This contradicts a number of rules, starting from the way the plan was developed, and especially contradicts the mandatory spatial indicators (Regulation, 106/98, 39/04, 45/04, 163/04), as well as the scientific knowledge of the coefficient for construction and exploitation. The latter define the relationship between the numeric measurements of an individual construction and its associated plot of land (Marinović-Uzelac, 1989,161-164; Albers, G et al. 1983, 171). The subjects of this research are planning elements while the objects of study are land plots in their function as rules for spatial planning. Analytical and empirical research methods were used. Important works from relevant literature, regulation provisions and the application of current experience in preparing and enforcing spatial plans have been analysed. The expected scientific contribution is the formation of the rules for the hierarchy of purposes in four levels. The title feature of planning symbols will be covered in an analysis of planning features, construction rules and elements of planning.

2. CHARACTERISTICS OF PLANNING

Important points in planning have their foundation in scaling, design, regulations, definitions and the application of functions and elements. Relevant literature contains rules for scaling land areas in settlements and individual types of buildings. As such, we have a way of scaling minimum and maximum land sizes through tables which include calculations for the area of residential settlements. “LUI” (land use intensity) tables have been developed as have numerical measures of various spatial rations. These ratios describe the total storey area and land area (FAR), and there are also rations for open spaces (OSR), living spaces (LSR) and recreational space (RSR) as well as ratios for automobiles (OCR and TCR). Additionally, all the applications of types and construction of residential buildings and the associated size of the residential unit are in the scope of an “acre” (1 acre = 4046.9 m^2) (De Chiara, Panera and Zelenik, 1995, 30-54). Tables for the scaling of construction and spatial planning according to residential capacity have been determined with a scale from 10 to 500 inhabitants / ha and include divisions for public use: institutions, parking lots, green areas, general interest, schools and roads and other uses: construction areas, density markers and others (Colombo, Rossetti, and Pagano, M. 1996, 1186-1193). The featured literature analyses partial spatial solutions which are very important for planning settlements and are very detailed and practical in their application because they contain certain spatial standards. In particular one can find the measure for designing as the size of the planned area. Designing is also the imaginative creative work of the architect (Puntera, J. Carmona, M. 1997, 1-366).

“Over a period of many years, from the 1960s, legal regulations which regulate the problems of spatial planning were changed very often. These frequent changes in legal regulations largely did not tend towards a simpler definition of the problem but quite the

opposite. In the Republic of Croatia the vocabulary of plans which regulate spatial planning have multiplied and as such have caused confusion in their practical application" (Poropat, Brščić and Velčić, 2006, 139-152).

From a scientific point of view, "Planning is a process of decision making in organising space based on professional knowledge. Creative abilities and collected data on the space are used to achieve optimal conditions of preservation and usage" (Pegan, 1996, 95-108). This is a good formulation about planning whose words are conceptually general and do not include land plots. According to Yates, Garner (1971), planning is the overlapping of scientific urban disciplines: urban sociology, urban economics, urban politics and urban geography (Vresk, 2002, 1-3).

There are many definitions for planning. One of the earliest can be found in the European Charter on Regional / Spatial Planning (often called the "'Torremolinos Charter"), which was adopted by the European Conference of Ministers Responsible for Spatial Planning (CEMAT). "Regional / spatial planning is a geographic expression of the economic, social, cultural and ecological politics of a society. It is simultaneously a scientific discipline and an administrative technique and was politically designed as an interdisciplinary and global approach directed towards balanced regional development and physical spatial organisation according to a comprehensive strategy."[2]

According to Partzsch (1970), a group of economic activities are city functions and their planning can objectively provide the basic categories of needs or life functions for human existence: housing, work, provisions, education, rest, transport and communications (Vresk, 2002, 36-37). The stated functions are regulated by spatial plans and the majority of activities in a person's life affect the arrangement and organisation of space at the element level based on personal and social interests.

In this work the elements of planning surfaces or areas are the units of purpose and they change accordingly through regulations that do not include scientifically based features and elements of land plots. This creates an even larger government administration apparatus, confusion and problems in the economy because the rules of hierarchy in the application of units of purpose are missing and as a result possible financial, psychological, social and other concessions are present. The current state of affairs are a consequence of this and are being interpreted by the media, radio, television and others as a recession.

The said state causes cumbersome administration, questionable employment and earnings, debt, profiteering, imbalanced spatial development and more. For this reason it was necessary to develop a hierarchy of purpose or plots which at first symbolise a system of planning script in order to create a basis for universal planning. General theoretical planning features have been determined which lack elements or units for the conditional shaping of surfaces or space as the practical means or symbols of plots for the development of plans. Precisely this theoretical knowledge gives us enough motivation to enlighten the starting point for concepts on the practical side of planning. For this reason we ask ourselves the question, what is planning based on, on what organisation and what matrix of concepts? In this work planning includes a matrix of concepts for the main organisation of plots into a hierarchy of use as well as the associated general terms as a basis for the development of planning script regardless of the identity of the terms of use, numerical measures and the terms for the associated infrastructure routes and links included in spatial plans.

3. CONSTRUCTION REGULATIONS

Different regulations for construction exist in the world, but few of them deal with the rules for planning symbols for the development of spatial plans. The regulations for the

preparation of spatial plans relevant to this work shall be discussed as they are used in two different countries: Croatia and Italy.

3.1. **Regulations in Croatia**

In Croatia, the above-mentioned Regulations (1998 and 2004) determine the content, measures for cartographic views of spatial plans, necessary numerical and graphic spatial indicators with planning features and survey standards which are used in the preparation of spatial plans. The content of spatial plans is specifically assigned as are the associated measurement ratios for cartographic views. The content gives a list of titles or chapters to be analysed in the written part, while the visual part is defined by a list of cartographic plan views. In the written part of the Regulations, the mandatory spatial indicators are measures of housing density (population density), how to use and organise spaces (construction coefficients, utilization coefficients and development density). The graphic part of the Regulations includes the number of chapters with survey standards, graphic indicators and purpose.

The chapters are: borders and the central settlement system and development centres, the use and purpose of area / space (spaces / area for development and organisation, traffic, post and telecommunications), infrastructure systems and networks (power system, water management system and waste treatment, storage and disposal), the conditions for spatial use and protection (conditions for use, areas where special organisational and protection measures are in place, forms of use, the manner of construction and construction conditions). The study standards section is a description of the sizes of the contours, lines, points, colours and proportions of planning characters and especially the manner in which the study is bound, the number of original copies and signatures, the acceptance decision and the manner in which the plan is to be stored. Graphic indicators are planning characters. These are little pictures (planning characters) for infrastructure which form a belt of land for roadways (roads, streets, etc.) and rails (railways, trams etc.) as well as line routes (electricity, water supply, drainage etc.) and little pictures for the surfaces of areas / spaces. Planning characters are further described by planning markers which differentiate: purpose, settlements, infrastructure, etc.

Purpose is a type of classification which includes the same terms for spatial indicators arising from four types of plans (PPŽ, PPGZ, PPPP, PPUO/G)[3] which identify areas outside of settlements or units of use which correspond to the terms of the area.

Commercial uses: manufacturing areas for exploiting mineral resources (exploitation field); farm areas; business use; hospitality-tourism use; sport-recreational use; agricultural land exclusively for basic use; especially valuable land; valuable fertile land, other fertile land; forest exclusively for basic use; economic, protected forest, forest with special use; other agricultural land, forests and forest land; water surfaces; special purpose; infrastructure surface areas and cemeteries.

They particularly provide spatial indicators (with the same terms) for the development and arrangement of settlements for the analysis of three types of plans (GUP, UPU, DPU)[4]. Only the main terms without symbols are emphasised:

Commercial use: residential use, mixed use; mostly residential; mostly commercial; economic: manufacturing, business, hospitality-tourism, tourism-harbour with special use, sport-recreational use, public green areas, protected green areas, special use, infrastructure surface areas and cemeteries.

3.2. **Regulations in Italy**

In Italy rules have been determined for the processing spatial plans using symbols and are documented in the book Urban Planning Manual – Manuale di urbanistica. Conventional symbols for the production of urban plans in Italy include three chapters of symbols. These symbols are tables for planning territories, municipalities and building restoration. Planning territories are zoning (12 characters) and driving (9 characters). Municipal planning includes the following tables: state-level relief (50 characters), territorial zoning (15 characters), driving and road profiles (25 characters), general interest provisions (30 characters), transport facilities (15 characters), urban, technological and differentiation services (9 characters), foundation of urban composites (characters), educational institutions (21 characters); sports institutions (25 characters), cultural and leisure institutions (13 characters), conventional symbols for building restoration (59 characters). The terms for individual zones and areas are in the following sub-sections: Zones and building areas.

We previously introduced the reader to the way in which settlements and associated buildings are scaled as determined by the special tables. At the same time there are methods for planning construction which include survey questionnaires and graphic representations of conventional symbols. Survey questionnaires are marked by "Q" from (Q/1-Q/9 to Q/17-Q/31) and the associated table marks (Q/10-Q/16). The "Q" modalities include information on the requests for construction permissions, information from the content of construction permits and relevant indicators (parameters) for the scaling of individual buildings based on m^2 and m^3. Then, statistical data on the population, institutions (schools) through statistics and a good structure of students as well as preschool institutions (kindergartens, day cares etc.); the verification of standards for housing occupancy, manufacturing, public purposes and the number of users; an analysis of the demographic information for public buildings and utility organisation; a view of the size of the occupancy at the zone level; a view of accidents; the structure of the size of school institutions; information for the analysis of historical centres; information for building reconstruction as well as a for renewal or revitalisation plan (Colombo, Pagano and Rossetti, 1996, 1165-1294).

3.3. Problems – A Comparison

In Croatia, the chapter titles are general and methodology is lacking. In addition there is no visible hierarchy in the structure of units for the development of purposes and their identities (name, size, capacity, location, etc). The same can be said of the associated cartographic views.

The following chapters have been determined: The use and purpose of spaces/surfaces and the development and organisation of space in such a way that the same use can be pulled through seven levels of spatial plans. As an example "hospitality-tourism use" (T1, T2 and T3) is the same unit of use for seven types of spatial plans (PPŽ, PPGZ, PPPO, PPUO/G, GUP, UPU, DPU). They are missing hierarchy, complete use types, sizes and plot capacity.

In Italy, the above-mentioned conventional symbols for the preparation of spatial plans (urban plans) are rules which symbolically cover various surface and space uses. These terms of use are globally very general, while in detailed uses, especially public construction, they are very precise. Special "spatial" standards for scaling the settlement are added to them. The latter are tables with building conditions in relation to the population density per hectare of settlement. Urban planning standards determine the use of 100 m^3 of buildings per

inhabitant with a certain percentage of communal areas (streets, parks and others) ensured, while the details are elaborated in spatial planning documents. A hierarchy of use and systemization of related terms is lacking as are features and elements of symbols for the equivalent measure of planning for other areas outside of the settlement.
The rules have a common basis as they contain "signs" for the preparation of zoning plans.

These signs are different terms, amounts and appearances. They are reminiscent of letters before the development of the alphabetic writing system. Above this, the differences are spatial standards, methods for planning settlements and individual planning features in favour of the rules in Italy. Mandatory spatial indicators are attached to the Croatian rules. The said rules have not recognised the plot as the symbol of planning nor have they recognised the hierarchy of units of use.

4. ELEMENTS OF PLANNING

Spatial plans include written and graphic parts of which the former develops elements within the scope of land. The graphic part can have a separate cadastre base of which the most precise contains the land and buildings as elements in the scope of cadastre parcels (plots). Using the said basis, surfaces or spaces are formed by planning as elements for organising belt roadways as well as surfaces for construction or organising agricultural and other land. By analysing spatial plans[5], surfaces and belts with various appearances have been defined, reminiscent of plots and their modalities as means or symbols for forming surfaces and especially for forming space.

Consequently, we can mention a number of relevant scientific works which cover planning elements in literature. For example, the classification of city land in the scope of the metropolis (Owen, McKenzie, Bunce, Stewart, Donovan, Stark and Hewitt, 2006, 311-321).

The transformation of space in the Beijing study (Gu and Shen, 2003, 107-122). In particular the criteria for "zones" in the data base (Lin, 2000, 21-32). A model for the definition of future development zones (Weber, 2003, 49-60) and the classification of functions of urban spaces (Antrop, 2004, 9-26).

New spatial planning regulations in the Republic of Croatia have omitted professional terms and make up new ones without explanations so that for the planning of hospitality-tourism uses, a building parcel is made equivalent to a zone or group of buildings in terms of the spatial whole.[6] This has far-reaching negative consequences for the economy and spatial development because plans are difficult to develop and implement. As a result the current state of professional terms will be conceptually analysed.

4.1. Construction parcels

At the state level in Croatia, the term construction parcel has a wider meaning. In cadastre and urban plans the unit of purpose is marked as a plot or parcel of different terms: *ciepac* (of land), *lapat*, plot, cadastre parcel, construction parcel, parcel, construction plot, site, estate, real estate etc.[7] In shaping land use a process arises that can be observed in different ways from which its purpose in "culture" is set apart so that it contains a whole construction parcel or parts of one. The culture identifies the way the land will be used. According to cadastre terms there is a difference between a land area's culture or the manner in which it is used (house, stable, building, garden, courtyard etc). This means that the term "house" defines the form of use in the size of the area which forms the floor-plan of the house at the land level. A similar identification is made by certain cultures for the remaining cadastre terms. The formation of a parcel or plot is also the identification of a piece of the earth's surface recognisable by its use regardless of the configuration of the land made by the

certain (cadastre) culture. According to Professor V. Anić's definition, *a plot is a piece of land as part of the larger whole where the same agricultural crop is cultivated; a unit of measurement of area which is registered under a certain number in land registry books*. A building parcel is a unit of spatial purpose for an existing or planned building. Adjacent to a building parcel there must also be a "municipal parcel" as a unit of purpose for the organisation of a settlement or a parcel of land for roads, paths parks etc., whose terms of use are being formed because they do not exist in the Act (Poropat, 2000, 291-307). In its basic meaning a building parcel *by definition identifies the size, shape and location of land*, while its role in that land's construction includes a building plot whose unit land use is as space for an existing or planned building and yard. According to Srečko Pegan, a professor at the Faculty of Architecture at the University of Zagreb, a building (construction) plot (parcel) is an organised part of construction land which has designated roadway access and is located within the building zone of a certain urban or spatial plan.[8] Emphasis is put on the part of the glossary that defines the meaning of a building plot. In the rest of the text (footnotes), the conceptual meaning grows to two construction plots of which one is for construction while the other is for land planning. The latter conceptually corresponds to the term municipal (communal) plot. Current Croatian legislation does not define the conditions for planning municipal (communal) plots and the subjects the term to replace a building parcel (roadway, public transportation surface, street, road etc). Objectively, if we want organisation and rules for sustainable spatial balance we must create a legal framework with the conditions and permits for municipal (communal) plots, especially for roadways and building plots.

A construction parcel defines the conditions for construction or what is being built, while outside the building and inside and outside the construction areas there are other terms for plots which regulate arrangement, cultivation, protection and more. These are agricultural parcels, forest parcels, water parcels and others which do not have building parcel status but are organised or regulated agricultural and other land. As such a building parcel does not have the features for other types of parcel use, causing conceptual confusion. How to adopt a term for a building parcel which organises agricultural and other non-building land? Impossible! Quite simply, agricultural land does not have construction but is cultivated or arranged and the stated terms do not tell the reader that building land is being discussed. The spreading of building parcels into agricultural and other areas is significant, large and the question remains, for how long? Scientifically, a building parcel is the "smallest unit of urban planning" (Poropat, 2003). In the plan it includes one or more cadastre parcels and the associated combinations of parts and wholes. The implementation of the plan (subdivision of land plots) contains one whole from one new cadastre parcel, equivalent to the size and shape of a building parcel. The measuring (surveying) of the building parcel in the field is the subdivision of the land's plots (Poropat, Serge, Ružić, 2008, 501-514). In spatial planning the building parcel must be replaced with a term that conceptually includes all types of planning parcels. What is this term? If an adjective is added to parcel which points to its creator or what creates its new form and makes it sustainable, then we can state that this is the right term. In spatial planning the person who creates parcels is the spatial planner (Marinović, 2001, 21-26). One of the possible terms which can conceptually replace all types of parcels in spatial planning is the planning parcel.

4.2. Block

Areas of land in parts of a settlement intended for a group of buildings (existing or planned) framed by roadway areas form building blocks. Blocks can be buildings, grounds or partially constructed areas and their shape can be regular or irregular (Mirković, 1978, 233-248 and 1968, 123-160). According to Branislav Mirković, professor at the Faculty of

Architecture in Belgrade, block construction is element of planning which has been meticulously processed both textually and graphically. The term 'block' has very different meanings. Some of these meanings can be objects (movable property): ticket sale blocks, a drawing or writing block etc., while other meanings can be immovable property (real estate): a block of land, a block of buildings, a block of construction, a system of blocks (Müller, Vogel, 1999, 524-525). Of note is the analysis of blocks conducted from the aspect of historical importance by Dr. Milan Prelog in his book "Poreč grad i spomenici" (*Poreč, town and monuments*). He conducted a detailed analysis of 23 blocks at the level of the old town of Poreč. Other than this, in relevant literature we can find other terms: residential group (Uzelac, 1989, 213); "a rectangular network of streets which divide the city area into equal building blocks (*insula - islands*). Each insula (island) is divided into plots of varying sizes from 380 to 1520 m^2" (Müller, Vogel, 1999, 167-169); fragments of settlements, urban fields (urbanizam.net, 2004, 98, 180); tourist complexes (resorts), /(Karlovac, 2008, 27)/; units of space (The Regulation, 2004, 128); wholes (Prinz, 2006, 50).

By taking into account the data processing time and the degree of urban development at the time, new facts come about and the need arises to adapt block planning. These facts are in seeking new general terms which can conceptually replace residential and other construction blocks and arrangement of a group of plots and in this way remove the uncertainty in the identification of a block. In this work the general term is reminiscent of plot or unit of use to include land within which it is possible to conditionally analyse a larger number of shapes and the associated sizes, amounts, types of use and space capacity. Professionally, the creativity of shapes and building conditions for blocks are the domain of the planner and in this aspect the general term is planning block. This implies that units of use are also determined outside of settlements on land that is not zoned for building.
The planning block is a conditional unit of use that includes land in a group of buildings or group of building parcels which are framed by existing or planned traffic areas.

4.3. Zone

As a rule different terms (spatial characters) are used in planning the wider area, of which the zone[9] is stressed, in Croatia as in other countries. Zoning (English), zonage du sol (French), zonizzazione - secondo la destinazione d'uso (Italian), zone-indeling van een gebied naar grondgebruik (Dutch), aufgliederung – aufteilung in nutzungszonen (German), zonering (Sweedish): (Logie, 1986, 100-101). A significant contribution to zoning theory was conducted in the book "Teorija namjene površina u urbanizmu" (*The theory of the use of areas in urban planning*, Marinović-Uzelac, 1989, 13-138). Zone (the Greek for *belt*) can be interpreted differently! "In spatial and urban planning in the Croatian language this concept is used for surfaces. A zone can be part of a space (city or regional space) with a certain use – determined homogeneous features by which it is different from other spaces – limited and with boundaries in drawings. A zone has a certain function, location and size which can be drawn on a map. A zone is an area with various users who represent one homogeneous group of functions." (Marinović-Uzelac, 1989, Pegan, 2007, 173).

This is a zone of common features as compared to the use of areas which are encompassed by a number of building parcels which form a spatial-functional whole (Regulations, 1998-2004). Furthermore, a zone in the function of area contains a number of building parcels, a number of units with the same use or units of use, and in places mixed use etc. Above this a zone is equated to a larger field area as "a spatial whole for hospitality-tourism use," (The Regulation, 2004), residential complex (Mirković, 1B, 1968, 130) and/or a large plot (Marinović - Uzelac, 1989, 94,103).

In Italy a number of classification zones have been defined: historical centre zones, intensive residential zones, semi-intensive residential zones, semi-extensive residential zones, extensive residential zones, sparse residential zones, zones for institutions of public interest, industrial and commercial zones, mixed use residential and small-business zones, public green zones, private green zones, protected zones, rural zones as well as cemetery borders, and borders of renewal zones (Colombo, Pagano and Rossetti, 1996, 1223-1224). The stated classification zones identify the parts of cities. Taking this into consideration, if the concept of a zone is descriptively explained by joining it with an adjective, then its activities are precisely defined.[10] Its application in spatial planning in the Republic of Croatia is not conceptually legislated or adequately explained so that as such the profession replaces it with other terms (planning whole, district, quarter, area etc). This work specifies a zone so that its meaning unequivocally defines it as the work of the planner, and determines the resulting term planning zone. The latter term also covers land areas which do not have building zone status of. These zones are vineyards orchards etc.

A planning zone is one or more complexes and a number of planning blocks in the framework of conditional plots for specified uses.

4.4. Building area

In spatial plans building areas are equated with the following terms: area, district, zoning, parts of the territory of local government. In the hierarchy of land plots, the widest unit is the "area" and it encompasses three lower levels of units of use. In this work the scope of an area conceptually refers to a building area or scope of existing and planned settlements in terms of cities as well as other non-city areas of special characteristics that need to be legislated. Non-city areas of settlements are parts of the areas (municipal centres, countryside, estates etc.) in the identity of the zone, block and individual buildings. According to the Spatial Planning Act, "building areas for settlements as determined by the spatial plan for a large city, city and municipality are the constructed and arranged part of the settlement and the non-constructed part of the area of this settlement planned for the its development and widening."[11] *Rajon* (region) or district is the synonym for a building area of a city which was used in 1958 for "constructed and non-constructed land located in more narrow building districts of cities and settlements with city-like characteristics" (Nationalisation of hired buildings and building land Act, 1958, num. 52, artcle 34). The area as a unit of use in spatial planning can be recognised in terms of zoning or the "act of dividing territory" (Marinović-Uzelac, 1989, 16). The Italian Urban Planning Guide defines zones for planning territory or their classification. These are: special destination zones, urban development or establishment zones, inconvenient, harmful, dangerous and special industrial zones, mining fields, potential industrial and residential areas, general interest parks, important landscape type zones, important and significant landscape zones, protection or respectful zones without legal buildings, zones for institutions and services in the general interest and special zones (Colombo, G. Pagano, F., Rossetti, M., 1996, 1218-1219).

Each of the above-noted zones has a certain character. The features of the area and hierarchy of sizes are missing.

Spatial planning territories (in the scope of local, regional and state government) and parts of territories must be distinguished. Parts of territories at the organisational of units of local government are subordinate to terms of use of which the highest level is the planning area. Further divisions of territory at higher levels of use overlap, are imprecise and create confusion in the preparation of spatial plans so that it is necessary to replace allocation terms with others that identify the issue of "territorialisation". Furthermore, terms for "defining

areas" or the whole classification of entire planning areas are lacking. Since the term area has many meanings it is necessary to more precisely define it. This can be done by adding an adjective to the term "area" which will lead us to the author who conditionally shaped the said term, and that is the phrase planning. Use has been precisely determined if we determine the term planning area.

A planning area is a unit of two or more planning zones at the highest level of planning within the framework of a conditional plot with a specific use.

CONCLUSIONS

The plot as a symbol for the establishment of a planning script at the state level in Croatia and in the wider area is barely noticeable. Spatial planning is most basically missing a hierarchy and identity of the terms of use. As there is no writing without letters, so there is no spatial planning without land plots. An important role in planning is played by the rules for the development of spatial plans.

Current spatial planning practice at the element-level uses the rules of professional terms: building plot, block, zone and building area. New spatial planning regulations in the Republic of Croatia leave out part of the terminology and introduce new terminology not based in science so that for the planning of a hospitality-tourism area, a building parcel is made equivalent to a zone or group of buildings in terms of a spatial whole. The noted planning with the mediation of the administrative government in a large part is forced and imposes its own solutions – projects.

This has far-reaching negative consequences for the economy and spatial development because it imposes solutions in planning which constrict existing planning rules and as a result plan implementation and work with them is made difficult.

At the state-level in Croatia and Italy rules for preparing spatial plans have been defined. These rules include terms and graphic marks for planning surface / areas which vary considerably from country to country. The said rules do not recognise the plot as a symbol for planning nor a hierarchy of units of use.

By analysing spatial plans we have determined surfaces and belts reminiscent of land plots. Surface plots are intended for the construction of buildings and especially for the organisation of agricultural and other land. Belt plots are intended for the construction and organisation of roadways and railways (tracks) and for the protection of natural areas (maritime and water demesne, springs, eruptions etc).

At the planning element level general terms in the hierarchy of units of use have been defined. The general terms from superior to subordinate unit of use are: Planning area, Planning zone, Planning block and Planning parcel.

Planning area is conditionally a superior unit of use and includes land with two and more planning zones. It is necessary to scientifically determine the criteria for determining planning areas.

Planning zone is conditionally a superior unit of use and includes land with two or more complexes or planning blocks.

Planning block is conditionally a superior unit of use and includes land with a group of buildings or group of building parcels which are framed by existing or planned roadway areas.

The term which conceptually replaces all types of parcels in spatial planning is Planning parcel.

A planning parcel

- is the smallest unit of use and is conditionally subordinate to all other units of use,
- identifies the size, shape and location of land,
- is divided into building, agricultural, forest, water and other land,
- includes measures for individual construction and organisation and other measures for the use of classified land and water areas.

REFERENCES

Albers, G. Haubner, K. Lang, H, Marx, D. Scholich, D. and Spiegel, E. (1983), *Grundriss der Stadtplanung*, Akademie für Raumforschung und Landesplanung, Curt R. Vincentz Verlang, Hannover, p.171.

Antrop, M. (2004), Landscape change and the urbanization process in Europe, *Landscape and Urban Planning*, Volume 67, Issues 1-4, 15 March, pp.9-26.

Colombo, G. Pagano, F. Rossetti, M. (1996.), *Manuale di Urbanistica*, Il sole 24 Ore Pirola S.p.A Milano, pp.1186-1193.

De Chiara, J. Crosbie, J.M. (2001), *Time-Saver Standards for Building Types (fourth edition) McGraw-hill*, New York, Chicago, San Francisco, Lisbon, London, Madrid, Mexico City, Milan, New Delhi, San Juan, Seoul, Singapore, Sydney, Toronto, pp.147-993.

De Chiara, J. Panero, J. Zelenik, M.(1995), *Time – saver standards for Housing and residential development, (second edition) Mc GRAW-HILL, inc*. New York, San Francisco, Washington, D.C. Auckland, Bogotá, Caracas, Lisbon, London, Madrid, Mexico City, Milan, Montreal, New Delhi, San Juan, Singapore, Sydney, Tokyo, Toronto, pp.30-54.

Gu, C. Shen, J. (2003), Transformation of urban socio-spatial structure in socialist market economies: the case of Beijing, *Habitat International*, Volume 27, Issues 1, March, pp.107-122.

Jakopec, V. (1997), Neki temeljni termini iz katastra zemljišta, *Zbornik radova 1. hrvatskog kongresa o katastru*, Zagreb, pp.313.-320.

Karlovac, M. (2008): *Teorija planiranja održivog turističkog proizvoda*, Školska knjiga, Zagreb.

Lin, F.T. (2000), GIS-based information flow in a land-use zoning review process, *Landscape and Urban Planning*, Volume 52, Issue 1, 5 November, pp.21-32.

Marinović-Uzelac, A. (1989). *Teorija namjene površina u urbanizmu*, Tehnička knjiga Zagreb, p.213.

Mirković, B. (1968), *Osnovi urbanizma, 1B*, Građevinska knjiga Beograd, pp.123-160.

Mirković, B. (1978), *Osnovi urbanizma, 1A*, III, Građevinska knjiga Beograd, pp.233-248.

Müller, W., Vogel, G. (1999), *Atlas Arhitekture 1*, I.G.H, pp.167-169.

Müller,W., Vogel, G. (1999), *Atlas Arhitekture 2*, I.G.H, pp.524.-525.

Owen, S.M. MacKenzie, A.R. Bunce, R.G.H. Stewart, H.E. Donovan, R.G. Stark, G. and Hewitt, C.N. (2006), Urban land classification and its uncertainties using principal component and cluster analyses: A case study for the UK West Midlands, *Landscape and Urban Planning*, Volume 78, Issues 4, 28 November, pp.311-321.

Pegan, S. (1996), Pristup izradi urbanističkog plana. // *Prostor : znanstveni časopis za arhitekturu i urbanizam*. 4 (1996), 1(11), pp. 95-108.

Pegan, S.(2007), *Urbanizam uvod u detaljno urbanističko planiranje*, Acta Arhitectonika, udžbenici i priručnici 5, Sveučilište u Zagrebu, Arhitektonski fakultet, p.173.

Poropat, A. (2000), Prilog pojmovnom i metodološkom pristupu mjerama kućišta - rezultati istraživanja // *Energy and the environment 2000 Energija i okoliš* / Opatija : Hrvatsko udruženje za sunčevu energiju, Rijeka, pp.291-307.

Poropat, A. (2002), Prostorni činitelji izgrađivanja parcele obiteljskih građevina na primjeru zapadne obale Istre. *Disertacija*, Sveučilište u Zagrebu, Arhitektonski fakultet

Poropat, A. (2003), Prostorni činitelji izgrađivanja parcele obiteljskih građevina na primjeru zapadne obale Istre. // *Prostor, Znanstveni časopis za arhitekturu i urbanizam.* 11[2003] (2003), 2[26], pp. 227-227.

Poropat, A. Brščić, K.. Velčić, E.. (2006), The Hierarchy of Plans of Physical Planning in the Republic of Croatia and EU // *International Congress, Energy and the Environment 2006* / Franković, Bernard (ur.).Rijeka, pp.139-152.

Poropat, A. Šergo, Z. Ružić, P.(2008), Provedba parcelacije zemljišta na primjeru detaljnih planova uređenja (1973.-2003.) // *Zbornik radova XXI. znanstvenog skupa o energiji i zaštiti okoliša : Međunarodni kongres Energija i Okoliš 2008* / Franković, Bernard (ur.). Hrvatski savez za sunčevu energiju, Rijeka, pp.501-514.

Prelog, M. (1957), Poreč grad i spomenici, Kolaričev narodni uni verzitet, Beograd, pp.191-200.

Prinz, D. (2006), *Urbanizam, Svezak 1. – Urbanističko planiranje*, Golden marketing – Tehnička knjiga, Zagreb, pp.30, 99-104).

Punter, J. Carmona, M. (1997), *The Design Dimension of Planning, Theory, content and best practice for design policies*, E& FN SPON, London, Weinhem, New York, Tokyo, Melbourne, Madras.

Vresk, M. (2002), *Grad i urbanizacija, osnove urbane geografije, peto dopunjeno izdanje*, Školska knjiga, Zagreb, pp.1-3, 36-37, 43.

Weber, C. (2003), Interaction model application for urban planning, *Landscape and Urban Planning*, Volume 63, Issue 1, 10 March, pp.49-60.

Yates M.H., Garner B.J. (1971), *The North American City*.

*** (1998), Pravilnik o sadržaju, mjerilima kartografskih prikaza, obveznim prostornim pokazateljima i standardu elaborata prostornih planova, N.N. 106/98, 39/04, 45/04, 163/04

***(2004), Uredba o uređenju i zaštiti zaštićenog obalnog područja mora, *N.N.*. 128.

*** (2004), *Urbanizam.net*, UPI-2M PLUS, Zagreb, p.98, 180.

*** (1996-2009), Zakon o vlasništvu i drugim stvarnim pravima, *N.N.* 91/96, 73/00, 114/01, 79/06, 141/06, 146/08, 38/09.

***(1958), Zakon o nacionalizaciji najamnih zgrada i građevinskog zemljišta, *Službeni list FNRJ*, 52.

*** (2007), Zakon o prostornom uređenju i gradnji, N.N. 76/2007; 39/2009.

PARCELA – UVOD U PLANERSKO PISMO

SAŽETAK

Svrha ovog rada je oživotvoriti univerzalna pravila planiranja prostora čije su oznake simboli koji podsjećaju na slova za pisanje teksta, a praktično su slika crteža. Cilj istraživanja je utvrditi opće termine za razradu hijerarhije namjene na četiri razine parcela. Metodologija istraživanja obuhvaća analizu dosadašnjeg načina planiranja prostora u teoriji i praksi, te iskustvo u izradi i provedbi planova prostornog uređenja.

Opći termini od nadređene do podređene jedinice namjene su: Planersko područje, Planerska zona, Planerski blok i Planerska čestica.

***Ključne riječi**: Parcela, planiranje prostora, namjena, hijerarhija.*

Endnotes

1 See "Dragonera":http://www.vodnjan.hr/web/dwn/sluzbene_novine/Sluzbene_novine_03-2006.pdf

2 See also, http://hr.wikipedia.org/wiki/Prostorno_planiranje

[3] Translator's note: acronyms for various planning documents are stated in the text as in the original Croatian. The English translations are as follows: PPŽ= Spatial Plan of the County, PPGZ = Spatial Plan of the City of Zagreb, PPPP= Spatial Plan for Areas with Particular Features, PPUO/G = Spatial Plan of the Municipality and Town, GUP = General City-Urban Scheme, UPU = Urbanistic Physical Plan, DPU = Detailed Urban Plan.

[4] Translator's note: please see the previous footnote for an explanation of these Croatian acronyms.

5 The author of this paper developed a number of regional plans and implemented their provisions. More or less all the spatial plans are based on the shaping of areas or spaces. See the content of graphic views from the list of spatial planning decisions at the city and settlement level by the Government of the Region of Istria :http://www.istra-istria.hr/fileadmin/dokumenti/prostorni_plan/ProstDokNaSnazi.pdf

6 The spatial area is conceptually questionable: where and when will it be applied, it can be interpreted in different ways. the ideal spatial whole is the Earth. The main spatial wholes in coastal areas are: *the narrow costal belt, the sea area, coast, islands* (The Program, 1999, points 6-10), a spatial whole up to 15 ha, hospitality-tourism use (The Regulation, 2004, article 12; glossary: The Act, 2007, article 2, section 2) and others.

7 Terms for plots and parcels were analysed by V. Jakopec, (processed) in the following manner: *A cadastre parcel is called a ciepac and lapat (Šulek, 1990. Hungarian-Croatian and Croatian-Hungarian dictionary (Janiszewski, 1912))*. 'Lapat' means piece, tatter (the Legal-historical Dictionary – Mažuranić, 1975). *The terms lapat and ciepac can be considered obsolete because they are no longer used (Dictionary of the Croatian Language, Anić 1994)*; *die Parzelle* is a German word which means *parcel and plot* (The Club of Engineers and Architects, 1881); plot (the Survey and Cadastre of Land Act, Parliament of the Socialist Republic of Croatia (SRC), 1968); the Survey and Cadastre of Land Act (Parliament of the SRC, 1974). Geodetic textbooks currently in use use the following terms: land parcel (Macarol, 1978); parcel, plot (Medić 1978); the Technical Encyclopaedia uses: unit of land, parcel of land (Tomić, 1979). We can also mention that the word 'parcela' (plot) comes from the French word 'parcellle', which in turn comes from the Latin word 'particula' which in translation means 'čestica' (parcel) (Svezak 5, JLZ, 1966-1969). In England the words parcel, land parcel, lot and plot are used. In Germany the words das Flurstuck, die Parzelle and das Katastergrundstuck are used (IFAG, 1995): Jakopec, 1997: 313-320. Building plot (The Spatial Planning Act 1973-1998), and most recently building parcel.
TRANSLATOR'S NOTE: for the purposes of this translation, the Croatian 'parcela' has been translated as 'plot' or 'land plot,' 'čestica' has been translated as 'parcel 'and 'građevna čestica' as 'building parcel'.

8 The rest of the definition reads: A building plot for the construction of buildings must have pedestrian access from a public roadway, a width of at least 3 m and must allow construction with its area and shape in accordance with the conditions set out by the spatial plan and rules of the profession. A proper building plot must have appropriate connections to municipal (communal) and power infrastructure. Only exceptionally can an existing building plot in a very valuable and protected historical area also have a narrow path, that is only pedestrian access (Pegan, 2007, 160).

9 Conceptually a zone has a wider meaning: "In geography, an area on Earth or in a heavenly sphere between two parallels. In botany, a vegetation belt on the Earth's surface. In zoology a belt of fauna on the Earth's surface and in the sea (e.g. subtropical zone). In climatology a warm belt on the Earth (hot, temperate and cold belts). Parmenid was the first to divide the Earth into 5 heat zones in the 5th century," Opća enciklopedija, knjiga, 709).

10 See a list of activities - Vresk, 2002,43; surface structure Marinović-Uzelac, 1989, 172-222.

11 In the further text of the Act, building areas contain the following concepts:
A separate building area outside the settlement as determined by the spatial plan of a large city, city and municipality is a constructed and/or non-constructed spatial whole outside the building area of the settlement exclusively for economic use without residences (manufacturing, tourism-hospitality, sport) and cemeteries,
The constructed part of a building area are constructed and prepared building parcels and other areas intended for various purposes as well as non-constructed and unprepared parcels of land with an area of up to 5000 m which form a spatial whole with the constructed part of the building area.
The non-constructed part of a building area is one or more immediately linked non-constructed and unprepared parcels of land with a total area greater than 5000 m^2.

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PRIVATIZATION IN A POST-COMMUNIST ECONOMY: IT SEEMS THERE ARE NO MACROECONOMIC EFFECTS

ABSTRACT

State-owned enterprises and privatization has long been a major economic topic. After large privatizations in Great Britain, France etc., the privatization became an interesting topic again when now transition economies changed its economic system. The purpose of this article is to present the analysis that took into consideration the privatization in Slovenia and and its potential influence on some macroeconomic variables. We found that in Slovenia privatization so far influenced only on lowering public debt, while other influences could not be proven.

Key Words: *state-owned enterprises, macroeconomic effects of privatization, Slovenia*

I. INTRODUCTION

State-owned enterprises are not something new in economic theory and practice. As mentioned by Sobel (1999) already in ancient Middle East there have been state-owned enterprises in production facilities, whereas private ownership was primarily the domain of commerce and banks. Also in Greece, the state owned agricultural land, forests and mines. In Rome, on the other hand, the private ownership was more emphasized. Rondinelli and Iacono (1996) argue that the industrial revolution boosted the influence of private ownership, especially in western industrial countries – of course, large differences have been noted between different countries. Until large privatization programs in the second half of 20th century, modern economies had a large share of state-owned enterprises. In Great Britain – for example – the state founded or nationalized more than 50 big and important enterprises in steel industry, mines, railways, etc. But then suddenly large privatization waves came. The basic question is, what is the reason behind. Megginson

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and Netter (2001) mention some reasons and aspects: fiscal and economic efficiency, lower influence of government on the economy, competitiveness, etc.

It is not the purpose of proposed paper to discuss pluses and drawbacks of state-owned enterprises or aspects of nationalization and privatization. The main objective of the presented paper is to present the findings of empirical analysis that shed light on Slovenian case of so called second privatization wave, which followed voucher privatization in the beginning of 1990s immediately after the transition to market economy. We continue previous research that shed light on the same aspect, but included shorter observation period (see Dolenc 2006 and 2007a). We further focus on the eventual shift in privatization trends that might happen after political shift (from left to right political option) in 2004.

In our macroeconomic empirical analysis we studied the effect (net) privatization proceeds on several macroeconomic variables, such as public finances' deficit, public debt, unemployment, economic growth, private consumption and investments. Our finding interestingly show that contrary to major empirical studies the macroeconomic effect of the privatization in Slovenia has not (yet) been recognized or emphasized. The study continued previous studies in this field in Slovenia (see Dolenc 2006 and 2007a).

The paper is organized as follows. Section 2 presents theoretical background for the macroeconomic effect of privatization, Section 3 explains the academic rationale for the article, Section 4 explains data and methodology, Section 5 offers results of empirical analysis and discusses these results. We conclude in Section 6.

II. THEORETICAL BACKGROUND – EXPECTED MACROECONOMIC EFFECT OF PRIVATIZATION

The basic assumption in privatization analysis is that privatization tends to enhance the efficiency of the economy as a whole. Several studies (see Katsoulakos and Likoyanni 2002 for review of these studies) show that public companies lack of efficiency, especially compared to private companies. Privatization tend to have not only microeconomic effect, which has been clearly shown in many studies (see for example Boardamn and Vining (1989), Vickers and Yarrow (1991), Laffont and Tirole (1993), Shleifer (1998), Havrylyshyn and McGettigan (2000), Nellis (1999), Sheshinski and Lopez-Calva (1999), Shirley and Walsh (2001), Djankov and Murrell (2000a and 2000b), and others), but also – as mentioned – it tend to

enhance the efficiency of the economy as a whole, and have a positive financial effect on public finances.

While there are numerous studies that test microeconomic effects of privatization, there are not many of them that are focused on macroeconomic aspect. Mackanzie (1998) shows that privatization has short-term and long-term effects on boosting the level and growth rate of output – on one condition: if proceeds of privatized companies are not used for additional government spending. Similar was shown by Barnett (2000), where 18 economies were taken into the analysis. He has found that a privatization at the level of 1% of economy's output increases the growth rate of output for 0,5 and 0,4 percentage points in current year (year of privatization) and in the year after, respectively. Besides that – he notes – privatization significantly lowers unemployment; the effect is a quarter of a percentage point in the year of privatization. Very similar are results of the study by Davis, Ossowski, Richardson and Barnett (2000) – they try to a) answer the question whether privatization proceeds are mostly used for financing public deficit or for servicing the public debt; and b) are privatization proceeds correlated to economic performance of the economy and its public finances.

Aziz and Wescott (1997) argue that significant factors affecting favorable economic growth are in fact deregulation and privatization (beside price and market liberalization, and legal environment). Further, in his analysis Sala-I-Martin (1997) finds that economic growth tends to be significantly higher in economies with higher share of private ownership (in GDP). Again, Similar are results of the study by Davis e.a. (1995), where they find a strong correlation between privatization and economic growth (especially in non-transition countries).

Davis e.a. (1995) and Barnett (2000) note also that privatization has a positive effect on public finances. They argue that privatization proceeds can be considered as saved, regardless the nature of its spending: either to cover budget deficit or to lower public debt. The analysis of Davis e.a. (1995) shows that analyzed economies usually use privatization proceeds for servicing public debt or lower current public borrowing, rather then for raising the current public spending. Additionally Galal (1994) proves a long-term positive influence on privatization on tax incomes.

Analyzed from microeconomic perspective public companies (compared to private ones) tend to have higher number of employees, and higher wages and benefits (ceteris paribus), which is mostly due to so-called s*oft budget restraint* (Megginson e.a. 1994). From the macroeconomic perspective, however, Boubakri and Cosset (1998) and Davis e.a. (1995) find that privatization does not cause unemployment. On the contrary, they even

prove that economies tend to lower unemployment rates after privatization waves. However, they also note that such effect cannot be attributed only to privatization because economies with high privatization push usually change other economic parameters and policies as well (e.g. policies focused on economic growth and unemployment).

And lastly, privatization tends to boost the efficiency of capital market in the economy (Yeaple and Moskovitz 1995), even though researchers have hard time proving this effect. Leeds (1991) argues privatization arouse new investors, who start to "play" on the stock exchange – such effect has especially a voucher privatization (similar to Slovenian first wave of privatization). Cook and Colin (1988) further show that in developing countries privatization significantly boosts capitalization of the stock exchange and its liquidity, whereas Leeds (1991) finds that in selected developing and transition countries stock market prices grew up for 15% on average.

III. ACADEMIC RATIONALE FOR THE ARTICLE

Studies on privatization and its micro- and macro-effect have been very popular in the 80s of the past century, when most of European economies pushed at least several large privatizations. Especially in France and UK, privatization was up-to-date in that period and also academic studies have been largely focused on it effects (especially from microeconomic perspective). In present times privatization is topical issue in transition countries, especially so-called post-communist countries, also Slovenia. No prior research has been done with similar attention to Slovenian case of the 2^{nd} wave of privatization. The present study – even though there are some drawbacks of the analysis as such, which is explained later on – tries to fill this gap and tries to discover new facts on the effects of the privatization in one of the post-communist countries. In fact, the analysis continues previous research that shed light on the same aspect, but included shorter observation period (see Dolenc 2006 and 2007a) and thus try to follow the dynamics of the presented phenomena.

IV. DATA AND METHODOLOGY

DATA

With respect to the main focus of the analysis we used data on gross and net privatization proceeds as explanatory variable. All data are on-line published by Ministry of finance. As dependent variables we used the similar data as

Barnet (2000), and Katsoulakos and Likoyanni (2002) used in their macroeconomic analyses:

- budget deficit/surplus,
- public debt (value, amortization of debt and net borrowing/lending),
- unemployment rate,
- economic growth,
- consumption and
- gross investments.

The analysis was performed on yearly data for the period from 1992 until 2007.

The selection of explanatory variables in this research was extended (compared to previous research on Slovenia – see Dolenc 2006 and 2007a) to amortization of debt and net borrowing/lending.

METHODOLOGY

Other research (and previous research for Slovenia) use, however, a cointegration test and Eager-Granger statistics, but due to short period of estimation, it seems that cointegration test itself is not suitable. Some drawbacks have been presented by Dolenc (2007a). Therefore in this research a simple regression analysis was used to test the effect of privatization proceeds on selected macroeconomic variables. We took the following form of regression function into consideration:

$$\hat{y}_t = \beta_1 + \beta_2 \cdot x_t + \beta_3 \cdot y_{t-1} + \beta_4 \cdot D + \beta_5 \cdot D \cdot x_t ,$$

where

$\hat{y}_t$ – estimated dependent variable,

x_t – explanatory variable,

D – dummy variable (until year 2004 D=0, later D=1).

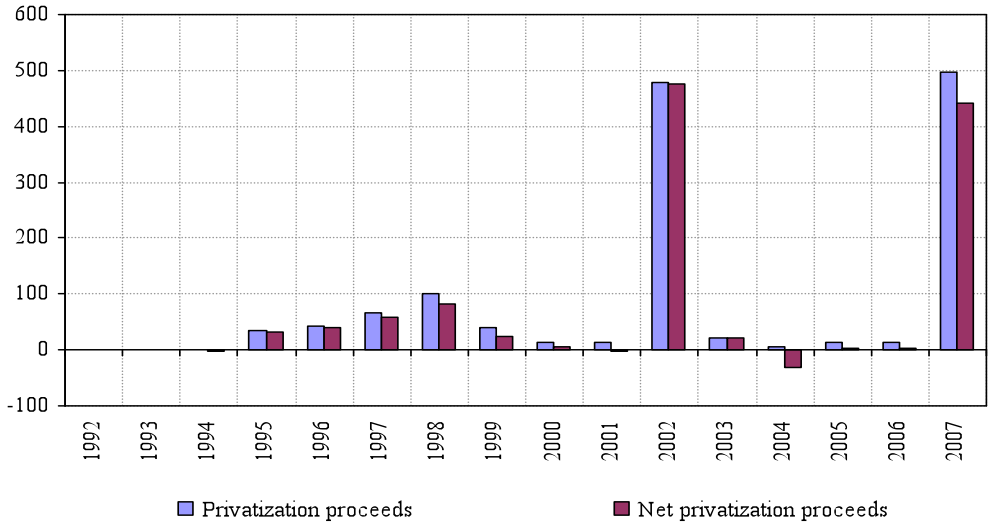
Due to expected autocorrelation we included an autocorrelation parameter (legged dependent variable) into the regression analysis. With dummy variable we test the significance of changed correlation between dependent and explanatory variable after the change in orientation of the government in 2004).

V. RESULTS AND DISCUSSION

In Slovenia only three major privatization transactions were performed so far. The first was the sale 49% in the largest Slovenian bank (Nova Ljubljanska banka) in 2002 (under left-wing government). The right-wing government that came to the power in 2004 after more than a decade of left-wing governments in Slovenia announced that it will withdraw from major shares in companies. However, in the mandate of this government, only two major transactions were performed (the IPO of 2nd largest bank Nova Kreditna banka Maribor, where the government sold a major government share, and reinsurance company Sava RE, where the government was indirectly involved). Other privatization transactions were relatively low as so were also the proceeds from privatization. However, it seems that (excluding year 2002 and 2007), the majority of gross privatization proceeds were realized in 1990's. Figure 1 shows these proceeds in Slovenia.

Figure 1

Privatization proceeds in Slovenia in the period from 1992 until 2007



Source: Ministry of finance

The first pair of analytical test was performed on budget balance data. According to theoretical expectations and previous research in other

countries, we would expect that budget balance is either not correlated to privatization proceeds or that the correlation is positive. Prior research for Slovenia showed that in the period from 1992 until 2005 privatization proceeds increased budget deficit. These results were against expectations and were therefore looked at cautiously. The present analysis shows (see Table 1) that budget balance could somehow be explained by privatization proceeds. We noticed a significant shift in 2005 – in early period the correlation between budget balance and gross/net privatization proceeds was negative, but after 2005 the correlation shifted to positive as expected. Partial results might be misleading, therefore we have to look at other results as well.

Table 1

Regression analysis: net/gross privatization proceeds vs. budget balance

	Model	Regression coefficient	*t* statistics	R^2	*DW* statistics
1)	$BB_t =$				
		-28,909	-0,830	0,84	2,20
	$\beta_1 +$	-0,928	-4,320*		
	$\beta_2 \cdot PP_t$	0,583	4,233*		
		-63,216	-0,795		
	$\beta_3 \cdot BB_{t-1}$	1,590	4,935*		
	$\beta_4 \cdot D_t$				
	$\beta_5 \cdot DPP_t$				
2)	$BB_t =$				
		-38,340	-1,067	0,83	2,24
	$\beta_1 +$	-0,882	-4,005*		
	$\beta_2 \cdot NPP_t$	0,597	4,144*		
		-43,095	-0,529		
	$\beta_3 \cdot BB_{t-1}$	1,608	4,549*		
	$\beta_4 \cdot D_t$				
	$\beta_5 \cdot DNPP_t$				

Where:	BB	– budget balance
	PP	– gross privatization proceeds
	NPP	– net privatization proceeds
	D	– dummy variable (until 2004 D=0, after 2004 D=1)
	DW	– Durbin-Watson statistics
	*	– significant at 1%
	**	– significant at 5%

Further we took into consideration the effect of privatization on public debt. It was expected (according to theoretical explanations, and previous results for other economies and also for Slovenia) that privatization proceeds should lower public debt, induce higher amortization of debt and/or result in higher net lending/lower net borrowing of the public sector. Indeed, as reported by Dolenc (2006 and 2007a), until 2005 the privatization proceeds in Slovenia were strictly used for amortization of debt (debt repayment resulting in lower public debt). This result was accordant with regulation in Slovenia, according to which the privatization proceeds can only be used for debt management purposes and for no other purposes. Our present results show

some deviation from previous results (see Tables 2-4), but one can easily advocate the results. From the analysis one would conclude that public debt was not lowered as a result of privatization. However, this might be due to two factors. First, public debt management was adjusted to level of financial market development in Slovenia and the possibilities of the state treasury to repay the existing public debt (see Dolenc 2007b). Thus the largest proceeds from privatization (from privatization of Nova Ljubljanska banka in 2002) were directed into debt repayment in next couple of years. And second, due to privatization proceeds the current budget borrowing was lower than it would actually be. The first effect could be tested on longer period of observations (say 5 years after privatization). On the other hand, the second effect could be tested promptly taken into consideration the net lending/borrowing of the government. Our results clearly show (see Table 4) that due to the privatization the net borrowing was lower in the period until 2004. In the second period (from 2005 to 2007) it seems that the situation inverted and that the privatization proceeds were not used for lower borrowing any more. Thus, we can again confirm that in the first period (until 2004) the privatization proceeds were used to lower the government borrowing and (taken into consideration previous research form 2006 and 2007) lower the public debt. From 2005 onwards, we cannot conclude and find evidence that the privatization proceeds were used for these two expected purposes. But combining all results from tables 1 and 4, we might conclude that some shift actually happened in 2005 and that the use of privatization proceeds was different before and after 2004. It seems that before 2004 the privatization proceeds were used for lowering the net government borrowing (in parallel with higher budget deficit), and after 2004 the privatization proceeds were used for lowering the budget deficit (in parallel with higher net lending).

Table 2

Regression analysis: net/gross privatization proceeds vs. public debt

Model		Regression coefficient	*t* statistics	R^2	*DW* statistics
1) $PD_t =$					
		-88,496	-,183	0,96	0,89
	$\beta_1 +$	1,217	1,114		
	$\beta_2 \cdot PP_t$	1,063	10,710*		
		-107,266	-0,219		
	$\beta_3 \cdot PD_{t-1}$	-2,319	-1,454		
	$\beta_4 \cdot D_t$				
	$\beta_5 \cdot DPP_t$				

2)	PD_t =				
		-98,785	-,202	0,96	0,88
	β_1 +	1,090	1,018		
	$\beta_2 \cdot NPP_t$	1,069	10,766*		
	$\beta_3 \cdot PD_{t-1}$	-154,729	-0,320		
	$\beta_4 \cdot D_t$	-2,308	-1,373		
	$\beta_5 \cdot DNPP_t$				

Where:	PD	– public debt
	PP	– gross privatization proceeds
	NPP	– net privatization proceeds
	D	– dummy variable (until 2004 D=0, after 2004 D=1)
	DW	– Durbin-Watson statistics
	*	– significant at 1%
	**	– significant at 5%

Table 3

Regression analysis: net/gross privatization proceeds vs. amortization of debt

Model		Regression coefficient	*t* statistics	R^2	*DW* statistics
1)	AD_t =				
	β_1 +	241,439	1,960	0,70	1,88
	$\beta_2 \cdot PP_t$	0,004	0,006		
	$\beta_3 \cdot AD_{t-1}$	0,457	1,667		
	$\beta_4 \cdot D_t$	588,475	1,652		
	$\beta_5 \cdot DPP_t$	-0,784	-0,737		
2)	AD_t =				
	β_1 +	242,403	1,979	0,70	1,88
	$\beta_2 \cdot NPP_t$	-0,037	-0,054		
	$\beta_3 \cdot AD_{t-1}$	0,462	1,704		
	$\beta_4 \cdot D_t$	574,519	1,655		
	$\beta_5 \cdot DNPP_t$	-0,819	-0,741		

Where:	AD	– amortization of debt
	PP	– gross privatization proceeds
	NPP	– net privatization proceeds
	D	– dummy variable (until 2004 D=0, after 2004 D=1)
	DW	– Durbin-Watson statistics
	*	– significant at 1%
	**	– significant at 5%

Table 4

Regression analysis: net/gross privatization proceeds vs. net lending/borrowing

Model	Regression coefficient	*t* statistics	R^2	*DW* statistics

1)	NLB_t =					
		β_1 +	99,878	1,682	0,50	2,28
		$\beta_2 \cdot PP_t$	0,961	2,649**		
		$\beta_3 \cdot NLB_{t-1}$	0,103	0,424		
		$\beta_4 \cdot D_t$	62,828	0,506		
		$\beta_5 \cdot DPP_t$	-1,462	-2,765**		
2)	NLB_t =					
		β_1 +	111,729	1,841	0,46	2,27
		$\beta_2 \cdot NPP_t$	0,887	2,405**		
		$\beta_3 \cdot NLB_{t-1}$	0,113	0,448		
		$\beta_4 \cdot D_t$	44,628	0,353		
		$\beta_5 \cdot DNPP_t$	-1,443	-2,506**		

Where:	NLB	– net lending/borrowing
	PP	– gross privatization proceeds
	NPP	– net privatization proceeds
	D	– dummy variable (until 2004 D=0, after 2004 D=1)
	DW	– Durbin-Watson statistics
	*	– significant at 1%
	**	– significant at 5%

Other macroeconomic variables, used in our analysis, were not found to be significantly correlated with net or gross privatization proceeds (see Tables 5 to 8). According to these results we cannot confirm any influence of privatization proceeds on broader macroeconomic variables. This means that in Slovenia the government followed strictly neutral budget effect of privatization and these proceeds were not used to affect government consumption and consequently other macroeconomic performance of the economy.

Table 5

Regression analysis: net/gross privatization proceeds vs. unemployment rate

Model		Regression coefficient	*t* statistics	R^2	*DW* statistics
1)	$UR_t =$				
	$\beta_1 +$	2,181	0,681	0,79	0,90
	$\beta_2 \cdot PP_t$	0,000	-0,048		
	$\beta_3 \cdot UR_{t-1}$	0,825	3,429**		
	$\beta_4 \cdot D_t$	-0,823	-0,720		
	$\beta_5 \cdot DPP_t$	-0,001	-,343		
2)	$UR_t =$				
	$\beta_1 +$	2,081	0,654	0,79	0,88
	$\beta_2 \cdot NPP_t$	0,000	0,053		
	$\beta_3 \cdot UR_{t-1}$	0,832	3,468**		
	$\beta_4 \cdot D_t$	-0,802	-0,714		
	$\beta_5 \cdot DNPP_t$	-0,002	-0,427		

Where:
UR – unemployment rate
PP – gross privatization proceeds
NPP – net privatization proceeds
D – dummy variable (until 2004 D=0, after 2004 D=1)
DW – Durbin-Watson statistics
* – significant at 1%
** – significant at 5%

Table 6

Regression analysis: net/gross privatization proceeds vs. economic growth

Model		Regression coefficient	*t* statistics	R^2	*DW* statistics
1)	$EG_t =$				
	$\beta_1 +$	3,801	1,841	0,41	2,12
	$\beta_2 \cdot PP_t$	-0,001	-0,212		
	$\beta_3 \cdot EG_{t-1}$	0,040	0,081		
	$\beta_4 \cdot D_t$	0,903	0,947		
	$\beta_5 \cdot DPP_t$	0,003	0,612		
2)	$EG_t =$				
	$\beta_1 +$	3,822	1,899	0,41	2,13
	$\beta_2 \cdot NPP_t$	-0,001	-0,254		
	$\beta_3 \cdot EG_{t-1}$	0,034	0,070		
	$\beta_4 \cdot D_t$	0,927	0,997		
	$\beta_5 \cdot DNPP_t$	0,003	0,664		

Where:
EG – economic growth
PP – gross privatization proceeds
NPP – net privatization proceeds
D – dummy variable (until 2004 D=0, after 2004 D=1)
DW – Durbin-Watson statistics
* – significant at 1%
** – significant at 5%

Table 7

Regression analysis: net/gross privatization proceeds vs. private consumption

Model		Regression coefficient	*t* statistics	R^2	*DW* statistics
1)	$PC_t =$				
	$\beta_1 +$	1394,030	2,677	0,99	2,58
	$\beta_2 \cdot PP_t$	-0,465	-0,383		
	$\beta_3 \cdot PC_{t-1}$	0,939	17,074*		
	$\beta_4 \cdot D_t$	595,710	1,174		
	$\beta_5 \cdot DPP_t$	1,028	0,592		

2)	PC_t =					
		β_1 +	1397,305	2,691	0,99	2,57
		$\beta_2 \cdot NPP_t$	-0,458	-0,390		
		$\beta_3 \cdot PC_{t-1}$	0,938	17,287*		
		$\beta_4 \cdot D_t$	610,040	1,233		
		$\beta_5 \cdot DNPP_t$	1,080	0,596		

Where:	PC	– private consumption
	PP	– gross privatization proceeds
	NPP	– net privatization proceeds
	D	– dummy variable (until 2004 D=0, after 2004 D=1)
	DW	– Durbin-Watson statistics
	*	– significant at 1%
	**	– significant at 5%

Table 8

Regression analysis: net/gross privatization proceeds vs. gross investments

Model			Regression coefficient	*t* statistics	R^2	*DW* statistics
1)	GI_t =					
		β_1 +	-172,743	-,258	0,96	2,06
		$\beta_2 \cdot PP_t$	0,783	0,652		
		$\beta_3 \cdot GI_{t-1}$	1,086	7,341*		
		$\beta_4 \cdot D_t$	499,085	0,906		
		$\beta_5 \cdot DPP_t$	0,812	0,443		
2)	GI_t =					
		β_1 +	-180,537	-,269	0,96	2,06
		$\beta_2 \cdot NPP_t$	0,700	0,594		
		$\beta_3 \cdot GI_{t-1}$	1,090	7,373*		
		$\beta_4 \cdot D_t$	490,837	0,899		
		$\beta_5 \cdot DNPP_t$	1,036	0,532		

Where:	GI	– gross investments
	PP	– gross privatization proceeds
	NPP	– net privatization proceeds
	D	– dummy variable (until 2004 D=0, after 2004 D=1)
	DW	– Durbin-Watson statistics
	*	– significant at 1%
	**	– significant at 5%

VI. CONCLUSION

The purpose of this article was to test macroeconomic effect of privatization in Slovenia in the period from 1992 until 2007. In our hypothesis we speculated that second wave of privatization in Slovenia had no significant macroeconomic effect. This hypothesis has been proven. However, obtained results were somehow different from previous results for Slovenia. Previous research more or less clearly confirmed that proceeds from privatization were used strictly for lower borrowing (thus lower public debt); the present study, which employed dummy variables to divide the observed period into two subperiods (until 2004 which corresponds to left-wing government and after 2004 which corresponds to righ-wing government) gave no firm proof of the expected fact. We have found, however, that same kind of a shift actually happened in 2004 and that privatization proceeds might be directed differently after 2004.

However, the second privatization wave might not yet start in significant manner, because until end of 2007 only two economically notable privatization transactions were realized by the government. We have to underline also that these results have to be interpreted carefully, because of a relatively short time series – further analysis in next periods would probably show a more clear picture of the topic. Other analysis, which tested macroeconomic effects of privatization, relied on data available for a couple of decades. In our case only a decade and a half was available.

REFERENCES

Aziz J., and R.F. Wescott, (1997), *Policy Complementarities and the Washington Consensus. IMF Working Paper No. 118,* (Washington D.C.: International Monetary Fund).

Barnett, S., (2000), *Evidence on the Fiscal and Macroeconomic Impact of Privatization. IMF Working Paper No. 130*, (Washington D.C.: International Monetary Fund).

Boardman, A., and A.R. Vining, (1989), "Ownership and Performance in Competitive Environments: A Comparison of the Performance of Private, Mixed and State-Owned Enterprises", *Journal of Law and Economics*, 32 (1): 1-33.

Boubakri, N., and J.-C. Cosset, (1998), "The Financial and Operating Performance of Newly-Privatized Firms: Evidence from Developing Countries", *Journal of Finance,* 53 (3): 1081-1110.

Cook, P., and K. Colin, (1998), “Privatization in Developing Countries: An Overview”, in Cook, P., and K. Colin. (ed.), *Privatization in Less Developed Countries.* (New York: St. Martin’s Press).

Davis, J., R. Ossowski, T. Richardson, and S.Barnett, (1995), *Fiscal and Macroeconomic Impact of Privatization. IMF Occasional Paper No. 194,* (Washington D.C.: International Monetary Fund).

Djankov, S., and P. Murrell, (2000a), *The Determinants of Enterprise Restructuring in Transition: An Assessment of the Evidence,* (Washington D.C.: The World Bank).

Djankov, S., and P. Murrell, (2000b), *Enterprise Restructuring in Transition: A Quantitative Survey*, (Washington D.C.: The World Bank).

Dolenc, P., (2006), *Public Assets and Debt Management. Doctoral Thesis,* (Ljubljana: Faculty of economics).

Dolenc, P., (2007a). “Privatization in Slovenia: are there any macroeconomic effects”, in Bojnec, Š. (ed.), *Managing global transitions: globalisation, localisation, regionalization.* (Koper: Faculty of Management).

Dolenc, P., (2007b). »Pulic debt management in Slovenia: empirical analysis«, in Bojnec, Š. (ed.), *Managing global transitions: globalisation, localisation, regionalization.* (Koper: Faculty of Management).

Galal, A., (1994), *Welfare Consequences of Selling Private Enterprises: An Empirical Analysis,* (Washington D.C.: The World Bank).

Havrylyshyn, O., and D. McGettigan, (2000), “Privatization in Transition Countries”, *Post-Soviet Affairs,* 16 (3): 257-286.

Katsoulakos, Y., and E. Likoyanni, (2002), *Fiscal and Other Macroeconomic Effects of Privatization. FEEM Working Paper No. 113,* (Milano: Fondazione Eni Enrico Mattei).

Laffont, J.-J., and J. Tirole, (1993), *A Theory of Incentives in Procurement and Regulation,* (Cambridge: MIT Press).

Leeds, R., (1991), “Privatization Through Public Offerings: Lessons from Two Jamaican Cases”, in Vernon, R., and R. Ramamurti (ed.), *Privatization and Control of State-Owned Enterprises*, (Washington D.C.: The World Bank).

Mackenzie, G.A., (1998), *The Macroeconomic Impact of Privatization. IMF Staff Papers No. 45.* (Washington D.C.: International Monetary Fund).

Megginson, W., R. Nash, and M. van Randenborgh, (1994), “The Financial and Operating Performance of Newly Privatized Firms: An International Empirical Analysis”, *Journal of Finance*, 49 (2): 403-452.

Megginson, W., and J.M. Netter, (2001), “From State to Market: A Survey of Empirical Studies on Privatization”, *Journal of Economic Literature,* 39 (2): 321-389.

Nellis, J.R., (1999), *Time to Rethink Privatization in Transition Economics? IFC Working Paper No. 38,* (Washington D.C.: International Finance Corporation).

Rondinelli, D., and M. Iacono Max, (1996), *Policies and Institutions for Managing Privatization.* (Geneva: International Labor Organization).
Sala-I-Martin, X., (1997), *I Just Ran Four Million Regressions. NBER Working Paper No. 6252,* (Cambridge: National Bureau of Economic Research).
Sheshinski, E., and L.F. Lopez-Calva, (1999), *Privatization and its Benefits: Theory and Evidence. HIID Development Discussion Paper No. 698,* (Cambridge: Harvard University).
Shirley, M., and P. Walsh, (2001), *Public vs. Private Ownership: The Current State of the Debate. World Bank Policy Research Working Paper No. 2420,* (Washington D.C.: The World Bank).
Shleifer, A., (1997), "State Versus Private Ownership", *Journal of Economic Perspectives*, 12 (4): 133-150.
Sobel, R., (1999), *The Pursuit of Wealth,* (New York: McGraw Hill).
Vickers, J., and G. Yarrow, (1991), "Economic Perspectives on Privatization", *Journal of Economic Perspectives*, 5 (2): 111-132.
Yeaple, S., and W. Moskowitz, (1995), *The Literature on Privatization. Research Paper No. 9514,* (New York: Federal Reserve Bank of New

PRIVATIZACIJA U POSTKOMUNISTIČKOM GOSPODARSTVU: ČINI SE DA NEMA MAKROEKONOMSKIH EFEKATA

SAŽETAK

Poduzeća u vlasništvu države i privatizacija su već dugo tema u gospodarstvu. Nakon velikih privatizacija u Velikoj Britaniji, Francuskoj, itd., privatizacija je ponovno postala interesantna tema kada su gospodarstva u tranziciji pristupila promjeni gospodarskog sustava. Cilj ovog rada je prezentirati analizu privatizacije u Sloveniji te njen potencijalni utjecaj na određene makroekonomske varijable. Zaključili smo da je do sada u Sloveniji privatizacija utjecala samo na smanjenje javnog duga dok se drugi utjecaji nisu mogli dokazati.

***Ključne riječi**: poduzeća u vlasništvu države, makroekonomski efekti privatizacije, Slovenija*

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Prethodno priopćenje

OPTIMISATION OF DECAY FACTOR IN TIME WEIGHTED (BRW) SIMULATION: IMPLICATIONS FOR VAR PERFORMANCE IN MEDITERRANEAN COUNTRIES

ABSTRACT

In this paper we propose an optimisation approach to determining the optimal decay factor in time weighted (BRW) simulation. Testing of BRW simulation with different decay factors and competing VaR models is performed on a sample of nine Mediterranean countries, over a four year period that includes the ongoing financial crisis. After optimisation the BRW simulation is among the best performing tested VaR models, second only to EVT approaches. Optimising the decay factor in regards to Lopez function results in decay factor estimates that are higher than usually employed 0.97 and 0.99. The optimal decay factors are stable over time and provide significantly better backtesting results than the standard assumptions.

Key words: *Risk management, Value at Risk, time weighted (BRW) simulation, optimisation, decay factor, Mediterranean*

1. INTRODUCTION

Although we now have at our disposal advanced VaR estimation techniques such as conditional extreme value models, there exists a need for some less sophisticated, computationally less time consuming and costly VaR models. Such models are in demand by less conservative investors or when serving as a quick approximation to the true level of risk an investor is facing. The existing approaches to estimating market risk for a portfolio of securities can be divided into three groups: fully parametric methods based on an econometric model for volatility dynamics and the assumption of conditional normality e.g. RiskMetrics and GARCH family of models; non-parametric models; and models based on extreme value theory (EVT). The nonparametric approach represents the most widely used and simplest method of calculating VaR. The main representative in this group of models is the historical simulation. The whole concept is built on the premise that potential changes in the risk factors are identical to the observed changes in the risk factors over a historical period i.e. that history regularly repeats itself. Modelling the risk factors underlying the changes in portfolio value significantly lowers the computational time since the number of relevant risk factors is considerably smaller than the number of financial instruments in the portfolio. Historical simulation assumes that the

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historically observed factor changes used in the simulation are taken from independent and identical distributions (IID) which are the same as the distribution applicable to the forecasts. The main strength of the historical simulation is that it, ex ante, does not presume any specific distribution of the data. Hendricks (1996) used simulated spot foreign exchange portfolios to show that with departures from normality historical simulation provided good estimates of the 99^{th} percentile. When using historical simulation a trade-off is made between long observation periods which potentially violate the assumption of IID and short observation periods which reduce the precision of the estimate. A more realistic setting which violates the IID assumption would be that returns from the recent past better represent today portfolio's risk than returns from the more distant past. Based on this setting in the paper from 1998 Boudoukh, Richardson, and Whitelaw, BRW hereafter, introduced a generalization of the historical simulation which assigns a relatively higher amount of probability to returns from the more recent past. In practical application this modification makes a significant difference in forecasting performance (see e.g. Boudoukh, Richardson and Whitelaw, 1998, Pritsker, 2001, Žiković 2006). Boudoukh, Richardson and Whitelaw (1998) test the performance of BRW simulation on USD/DEM exchange rate, spot oil prices and S&P500 index. They find that it performs better than the parametric models and the historical simulation and at the same time produces independent VaR errors. Žiković (2006) found that BRW simulation with decay factor set to 0.99 is superior to historical simulation for a range of confidence levels in small and illiquid markets of EU candidate states. The most comprehensive study analysing the behaviour and characteristics of BRW and historical simulation can be found in Pritsker (2001). Pritsker found that BRW and historical simulation adjust slowly to changes in the true level of risk. He concludes that correlation of the VaR estimates with the true VaR is fairly high for the BRW simulation in contrast to the historical simulation. BRW model moves with the true VaR in the long run but is slow to respond promptly to changes in the level of risk. As a result, VaR estimates based on historical simulation and BRW are not very accurate. Apart from the mentioned papers, BRW simulation is not extensively used in the mainstream VaR literature. What is even more interesting is that after the original paper from 1998 we could not find any papers calculating VaR with different decay factors from the values originally suggested.

The goal of this paper is to present an optimisation procedure to determining the optimal decay factor for BRW simulation and explore the benefits of such an optimisation on VaR forecasts. Contributions of this paper are several: development of an optimisation approach to estimation of optimal decay factor in BRW simulation, analysis of the stability of the optimal decay factors and identification of the benefits to VaR estimation from the optimisation of the decay factor. VaR models that are analyzed are: time weighted (BRW) simulation with different decay factors, parametric GARCH model with GARCH specification and distribution that has the highest Akaike information criterion (AIC) value, unconditional EVT approach using Generalized Pareto distribution (GPD) (see Longin, 2000) and conditional quantile EVT-GARCH approach (McNeil, Frey, 2000). We test the optimisation procedure and its benefits on a sample of nine stock indexes from EuroMed region. We analyse the following stock market indexes (France – CAC, Italy – MIB 30, Spain – IBEX, Greece – FTASE, Turkey – XU 100, Egypt – CASE, Croatia – CROBEX, Malta – MALTEX, Morocco – MOSEMDX). The analysed group of stock indexes is very heterogeneous comprising stock indexes from developed countries such as France, Italy and Spain as well as emerging markets such as Turkey, Egypt and Morocco.

The rest of the paper is organised as follows: in section 2 of the paper, the characteristics of time weighted (BRW) historical simulation approach to measuring VaR are discussed. In section

3 we present the optimisation procedure for obtaining optimal decay factor values and section 4 discusses the optimisation results. Section 5, analyses and compares the performance of optimal decay factor BRW model with other VaR models on a sample of nine stock indexes from Mediterranean countries at 99% confidence level. The final section summarizes the conclusions.

2. TIME WEIGHTED (BRW) HISTORICAL SIMULATION

Historical simulation (HS VaR) drastically simplifies the procedure for computing VaR, since it does not make any direct distributional assumption about portfolio returns. Due to its simplicity and speed investors often rely on VaR figures obtained by historical simulations. Under the historical simulation approach the value of VaR is calculated as the 1*00cl'th* percentile or the *(T+1)cl'th* order statistic of the set of portfolio returns. The time series of historical portfolio returns is constructed just by using the current portfolio holdings and historical asset returns.

Historical simulation VaR can than be expressed as:

$$HS - VaR_{T+1|T}^{cl} \equiv r_w((T+1)cl) \qquad (1)$$

where $r_w((T+1)cl)$ is taken from the set of ordered portfolio returns $\{r_w(1), r_w(2), ..., r_w(T)\}$. If *(T+1)cl* is not an integer value then the two adjacent observations can be interpolated to calculate the VaR. Historical simulation has a number of shortcomings, which have been well recorded (see Pritsker, 2001). Perhaps most importantly, historical simulation does not properly incorporate conditionality into the VaR forecasting framework. The only source of dynamics in the historical simulation comes from the movement of the observation window with the passing of time. Unfortunately, in practice this source of conditionality is minor. Another shortcoming of the historical simulation is that it assigns equal probability weight of *1/N* to each observation. This means that the historical simulation estimate of a specific confidence level (*cl*) corresponds to the *N(1-cl)* lowest return in the *N* period rolling sample. Because a crash is the lowest return in the *N* period sample, the *N(1-cl)* lowest return after the crash, turns out to be the *(N(1-cl)-1)* lowest return before the crash. If the *N(1-cl)* and *(N(1-cl)-1)* lowest returns happen to be very close in magnitude, the crash actually has almost no impact on the historical simulation estimate of VaR. From the equation for historical simulation it can be seen that HS VaR changes significantly only if the observations around the order statistic $r_w((T+1)cl)$ change significantly. Although historical simulation makes no explicit assumptions about the distribution of portfolio returns, an implicit assumption is hidden behind the procedure: the distribution of portfolio returns doesn't change within the window. From this implicit assumption several problems may arise in using this method in practice. From the assumption that all the returns within the observation window used in historical simulation have the same distribution, it follows that all the returns of the time series also have the same distribution: if $y_{t\text{-window}},...,y_t$ and $y_{t+1\text{-window}},...,y_{t+1}$ are IID, then also y_{t+1} and $y_{t\text{-window}}$ has to be IID, by the transitive property. Forecasts of historical simulation VaR are meaningful only if the historical data used in the calculations have the same distribution. Another problem connected with the historical simulation is the fact that for the empirical quantile estimator to be consistent, the size of observation window must go to infinity. The length of the window must satisfy two contradictory properties: it must be large enough, in order to make statistical inference significant, and it must short enough, to avoid the risk of taking observations outside of the current volatility cluster. Clearly, there is no easy solution to this problem. If the market is moving from a period of low volatility to a period of high volatility, VaR forecasts based on the historical simulation will under predict the true risk of a

position since it will take some time before the observations from the low volatility period leave the observation window. Finally, VaR forecasts based on historical simulation may present predictable jumps, due to the discreteness of extreme returns. If VaR of a portfolio is computed using a rolling window of *N* days and today's return is a large negative number, it is easy to predict that the VaR estimate will jump upward, because of today's observation. The same effect (reversed) will reappear exactly after *N* days, when the large observation drops out of the observation window.

A more realistic setting which violates the IID assumption assumes that the returns from the recent past better represent today portfolio's risk than returns from the more distant past. Based on this setting in the paper from 1998 Boudoukh, Richardson, and Whitelaw introduced a generalization of the historical simulation which assigns a relatively higher amount of probability to returns from the more recent past. The BRW approach combines exponential smoothing and historical simulation, by applying exponentially declining probability weights to past returns of the portfolio. After the probability weights are assigned, VaR is calculated from the empirical cumulative distribution function weighted by the modified probability weights. Historical simulation method can be considered as a special case of the more general BRW model in which the decay factor (λ) is set equal to 1. Under the BRW approach, the most recent return receives probability weight of just over 1% for $\lambda = 0.99$ and a weight of over 3% for $\lambda = 0.97$. In both cases, this means that if the most recent observation is the worst loss of the *N* days, it automatically becomes the VaR estimate at 1% confidence level. The BRW method appears to remedy one of the main problems of historical simulation since very large losses are immediately reflected in VaR forecasts. The simplest way to implement BRW approach is to construct a history of *N* hypothetical returns that the portfolio would have earned if held for each of the previous *N* days, $r_{t-1},\ldots, r_{t-N}$ and then assign exponentially declining probability weights $w_{t-1},\ldots, w_{t-N}$ to the return series[1]. Given the probability weights, VaR at the specific confidence level can be approximated from $G(.; t;N)$, the empirical cumulative distribution function of *r* based on the return observations $r_{t-1},\ldots, r_{t-N}$.

$$G(x;t,N) = \sum_{i=1}^{N} 1_{\{r_{t-i} \le x\}} w_{t-i} \qquad (2)$$

Because the empirical cumulative distribution function, unless smoothed, for example via kernel smoothing, is discrete, a VaR figure at the *cl* confidence level will typically not correspond to a particular return from the return history. Instead, the BRW solution for VaR at the specific confidence level can be between a return that has a cumulative distribution that is less than *cl*, and one that has a cumulative distribution that is higher than *cl*. These returns can be used as estimates of the BRW VaR model at specific confidence level. The estimate that understates VaR at the *cl* percent confidence level (upper limit) is given by Pritsker (2001):

$$BRW^{u}(t \mid \lambda, N, cl) = \inf(r \in \{r_{t-1},\ldots r_{t-1-N}\} \mid G(r;t,N) \ge cl) \qquad (3)$$

[1] The weights sum to 1 and are exponentially declining at rate λ ($0 < \lambda \le 1$)

$$\sum_{i=1}^{N} w_{t-i} = 1$$

$$w_{t-i-1} = \lambda w_{t-i}$$

and the estimator of lower limit is given by:

$$BRW^{o}(t \mid \lambda, N, cl) = \sup(r \in \{r_{t-1}, ...r_{t-1-N}\} \mid G(r; t, N) \leq cl) \quad (4)$$

where λ is the exponential weight factor, N is the length of the history of returns used to compute VaR, and cl is the VaR confidence level. $BRW^{u}(t \mid \lambda, N, cl)$ is the lowest return of the N observations whose empirical cumulative probability is greater than cl, and $BRW^{o}(t \mid \lambda, N, cl)$ is the highest return whose empirical cumulative probability is less than cl. The main issue in evaluation of BRW VaR is the extent to which VaR forecasts based on the BRW method respond to changes in the underlying risk factors. It is important to know under what circumstances risk estimates increase when using the $BRW^{u}(t \mid \lambda, N, cl)$ estimator. The result is provided in the following proposition:

Proposition: If $r_t > BRW^{u}(t, \lambda, N)$ then $BRW^{u}(t+1, \lambda, N) \geq BRW^{u}(t, \lambda, N)$. (5)

Proof:

When BRW VaR is estimated for returns during time period $t+1$, the return at time $t-N$ is dropped from the sample, the return at time t receives weight $\frac{1-\lambda}{1-\lambda^{N}}$ and the weight on other returns is λ times their earlier values. Consequently, $r(cl)$ is defined as:

$$r(cl) = \{r_{t-i}, i = 1, ...N \mid G(r_{t-1}; t, N) \leq cl\} \quad (6)$$

To verify this proposition, it suffices to examine how much probability weight the VaR estimate at time $t+1$ places below $BRW^{u}(t, \lambda, N)$, (see Žiković, 2006):

Case 1: $r_{t-N} \notin r(cl)$ - in this case, since by assumption, $r_t \notin r(cl)$ then:

$G(BRW^{u}(t, \lambda, N); t+1, \lambda, N) < \lambda G(BRW^{u}(t, \lambda, N))$. Therefore, (7)

$$BRW^{u}(t+1, \lambda, N) = \inf(r \in \{r_t, ...r_{t-1-N}\} \mid G(r; t+1, \lambda, N) \geq cl) \geq BRW^{u}(t, \lambda, N) \quad (8)$$

Case 2: $r_{t-N} \in r(cl)$ - in this case, since $r_t \in r(cl)$ by assumption, then:

$$G(BRW^{o}(t, \lambda, N); t+1, \lambda, N) < \lambda G(BRW^{o}(t, \lambda, N)). \quad (9)$$

Therefore:

$$BRW^{o}(t+1, \lambda, N) = \sup(r \in \{r_t, ...r_{t-1-N}\} \mid G(r; t+1, \lambda, N) \leq cl) \leq BRW^{o}(t, \lambda, N) \quad (10)$$

The proposition shows that when losses at time t are bounded below the BRW VaR estimate at time t, the BRW VaR estimate for time $t+1$ will indicate that risk at time $t+1$ is no greater than it was at time t. To understand the importance of this, it suffices to examine the case when today's VaR estimate for tomorrow's return is conditionally correct, but since risk changes with returns, tomorrow's return will influence risk for the day after tomorrow. Under these

circumstances, one might wonder: what is the probability that a VaR estimate that is correct today will increase tomorrow? The answer provided by the proposition is that tomorrow's VaR estimate will not increase with probability *1−cl*. For example, if *cl* is equal to 1%, then a VaR estimate that is correct today will not increase tomorrow with probability 99%. Although the BRW approach suffers from the explained logical inconsistency, this approach still represents a significant improvement over the historical simulation, since it drastically simplifies the assumptions needed in the parametric models and it incorporates a more flexible specification than the historical simulation. BRW quantile estimator can be expressed as:

$$\hat{q}_{t+1,cl} = \sum_{j=t-N+1}^{t} y_j I\left(\sum_{i=1}^{N} f_i(\lambda;N) I(y_{t+1-i} \le y_j) = cl\right) \tag{11}$$

where $f_i(\lambda;N)$ are the weights associated with return y_i and *I(·)* is the indicator function. If $f_i(\lambda;N) = 1/N$, BRW quantile estimator equals the historical simulation estimator. The main difference between BRW approach and historical simulation is in the specification of the quantile process. With historical simulation each return is given the same weight, while with the BRW approach returns have different weights, depending on how old the observations are. Strictly speaking, none of these models is completely nonparametric, since a parametric specification is proposed for the quantile. Boudoukh, Richardson and Whitelaw in their original paper set λ equal to 0.97 and 0.99, as in their framework no statistical method is available to estimate this unknown parameter. In the next section we present an optimisation approach to determining the optimal decay factor for the purpose of VaR estimation.

3. OPTIMISATION OF THE BRW DECAY FACTOR

The forecast evaluation approach to backtesting VaR models was suggested by Lopez (1998) and is motivated by the evaluation methods often used to rank the forecasts of macroeconomic models. This approach allows for ranking of different competing models, but does not give any formal statistical indication of model adequacy. In ranking them, it also allows to take account of any particular concerns one might have. For example, higher losses can be given greater weight because of greater concern about them. Furthermore, because they are not statistical tests, forecast evaluation does not suffer from the low power of standard tests such as the Kupiec test. This makes forecast evaluation approach very attractive for backtesting with the small data sets typically available in practice. The first input in a forecast evaluation is a set of paired observations of returns for each period and their associated VaR forecasts. The second input is a loss function that gives each observation a score depending on how the observed return compares to the VaR forecast. To implement forecast evaluation, it is necessary to specify the loss function. Lopez (1998) suggested a size-adjusted loss function:

$$C_t = \begin{cases} 1 + (L_t - VaR_t)^2 & if \quad L_t > VaR_t \\ 0 & if \quad L_t \le VaR_t \end{cases} \tag{12}$$

where L_t represents a loss and VaR_t calculated VaR values at time *t*. This loss function allows for the sizes of tail losses to influence the final rating of VaR model. VaR model that generates higher tail losses would generate higher values under this size adjusted loss function than a VaR model that generates lower tail losses, ceteris paribus. However, with this loss function, there is

no longer a straightforward condition for the benchmark, and the benchmark has to be estimated by some other means. Under assumption that the observed returns are IID an empirical loss function and the value of the final score can be derived by repeating the operation a large number of times, and using the average final score as the estimate of the benchmark. However, if the VaR model is parametric, simpler and more direct approaches can be used to estimate the benchmark. For example, return data can be simulated under the assumption of a specific distributional form using Monte Carlo methods, and the average of final scores can be taken as the benchmark.

We propose the optimisation of the decay factor for BRW simulation with regards to minimising the Lopez size-adjusted function. The decay factor that minimizes the Lopez size adjusted function for a given time series is chosen as the optimal since it minimizes the deviation (positive or negative) between observed and expected VaR exceedances while taking into account the size of those exceedances. In this manner we are treating over conservative and inadequate VaR forecasts equally. Optimisation procedure can be written as:

$$\lambda_{opt} = \min_{\lambda} |C_t| \qquad C_t = \begin{cases} 1 + (L_t - \hat{q}_{t,cl})^2 & if \quad L_t > \hat{q}_{t,cl} \\ 0 & if \quad L_t \le \hat{q}_{t,cl} \end{cases} \tag{13}$$

$$\hat{q}_{t,cl} = \sum_{j=t-N}^{t} y_j I\left(\sum_{i=1}^{N} f_i(\lambda; N) I(y_{t-i} \le y_j) = cl\right)$$

The optimisation procedure is straightforward. The proposed algorithm runs through decay factor values and at each step calculates the VaR and records the VaR performance in the backtesting period at the selected confidence level. After finishing its runs through decay factor values, having recorded VaR performance for each decay factor, it searches for the VaR model with the lowest Lopez size-adjusted value in absolute terms. The decay factor that was used in the VaR model with the lowest Lopez size-adjusted value is chosen as the optimal since it produces the lowest possible deviation from the realised level of risk i.e. number of exceedances and their size.

4. BRW DECAY FACTOR OPTIMISATION RESULTS

Based on presented optimisation procedure the obtained optimal values of decay factor for time weighted BRW simulation are calculated for the analysed stock indexes during the consecutive time periods of the latest 500, 1,000 and 1,500 days.

Table 1

Optimal decay factor values for tested indexes at 99% confidence level and different time frames

Period		CAC	IBEX	MIB 30	FTASE	XU 100	CASE	CROBEX	MALTEX	MOSEMDX
1500 days	**Optimal λ**	0,994	0,993	0,996	0,997	0,996	0,991	0,995	0,998	N/A
	Lopez score	1,18	1,22	2,18	7,22	2,34	6,45	6,32	2,15	N/A
	Average VaR %	3,39	3,08	3,05	3,27	5,41	4,34	3,84	2,27	N/A
	λ = 0.99									
	Lopez score	5,21	3,25	3,21	12,25	4,36	8,45	11,37	6,15	N/A
	Average VaR %	3,21	2,96	2,84	3,12	5,31	4,31	3,63	2,22	N/A
	λ = 0.97									
	Lopez score	22,30	19,32	17,25	20,31	13,48	20,55	17,46	15,19	N/A
	Average VaR %	2,75	2,61	2,43	2,86	4,83	3,79	3,10	1,93	N/A
1000 days	**Optimal λ**	0,995	0,993	0,996	0,996	0,998	0,991	0,995	0,998	0,991
	Lopez score	5,18	4,20	6,18	10,20	1,22	6,33	6,22	4,12	2,12
	Average VaR %	2,95	2,87	2,79	3,26	4,78	4,61	2,97	2,46	3,08
	λ = 0.99									
	Lopez score	8,20	6,22	8,21	12,23	4,20	8,33	11,24	7,12	3,12
	Average VaR %	2,83	2,80	2,67	3,22	4,88	4,57	2,85	2,46	3,04
	λ = 0.97									
	Lopez score	21,24	17,26	18,24	18,27	10,29	15,38	14,28	12,14	11,16
	Average VaR %	2,52	2,53	2,39	2,98	4,49	3,95	2,66	2,14	2,67
500 days	**Optimal λ**	0,994	0,993	0,996	0,996	0,996	0,996	0,995	0,996	0,991
	Lopez score	6,15	5,17	5,15	7,15	1,13	3,22	10,20	0,04	1,05
	Average VaR %	3,48	3,63	3,19	3,81	5,16	4,87	3,32	2,64	3,30
	λ = 0.99									
	Lopez score	7,18	6,20	6,16	9,17	2,13	6,24	11,22	4,04	1,06
	Average VaR %	3,45	3,57	3,19	3,91	5,33	4,23	3,25	2,41	3,26
	λ = 0.97									
	Lopez score	14,20	10,22	12,18	12,20	4,19	11,29	12,24	6,06	6,08
	Average VaR %	3,13	3,32	2,86	3,66	4,94	3,51	3,07	2,06	2,86

Lopez optimal decay factor values show consistency over different time windows with minimal changes in their values, with the exception of Egyptian CASE index jump from 1,000 to 500 days time window. There is economic justification in optimising decay factor for each time series since once calculated these values do not change very often, and even when they change they do so by a very small amount. This is a very useful characteristic which allows the optimisation procedure not to be performed daily but far less frequently, resulting in lower computational time and costs. More developed Mediterranean countries (France, Italy, Spain and Greece) have a very stable optimal decay factor ranging from 0.993 for Spain's IBEX index to 0.997 for Greek FTASE index. Situation is similar with emerging and developing economies so we cannot point to any significant difference in the optimal decay factor based on wealth, development or size of the stock market. The highest decay factor value (0.998) was found for the Maltin MALTEX index (1,500 and 1,000 day window) and Turkish XU 100 index (1,000 day window). The lowest value of decay factor (0.991) is found for Moroccan MOSEMDX index (1,000 and 500 day window) and Egyptian CASE index (1,500 and 1,000 day window). The decay factor values are rounded to three decimal places since we found that further refinements of decay factor did not yield any significant improvements. In all of the cases optimal decay values are between 0.99 and 1, which signals that using lower decay factors, such as proposed 0.97 and 0.99 might results in unreliable VaR forecasts.

Optimised BRW model can provide practitioners with far better results than the ones we grew accustom to expect from this model.

5. VAR BACKTESTING COMPARISON

To test whether there is any practical advantage in optimising the decay factor we test the performance of optimised BRW simulation versus the usually assumed decay factors of 0.97 and 0.99 as well as an GARCH and conditional GDP and unconditional EVT-GARCH approach. Data used in the analyses of VaR models is the daily log returns from analysed indexes from Mediterranean countries. The returns are collected from Bloomberg for the period 01.01.2000 - 12.11.2008. The calculated VaR figures are for a one-day ahead horizon and 99% confidence level. To secure the same out-of-the-sample VaR backtesting period for all of the tested indexes, the out-of-the-sample data sets are formed by taking out 1,500 of the latest observations from each index. The rest of the observations are used as presample observations needed for VaR starting values and volatility model calibration. The only exception is the MOSEMDX index which started in 2002 and the analysis for a 1,500 days time frame is still not possible. That is why backtesting results for this index are based on a 1,000 days period. All of the analysed VaR models are tested in several ways to determine their statistical characteristics and ability to adequately measure market risk in the analysed markets. The first test in the evaluation of VaR performance is the Kupiec test, a simple expansion of the failure rate, which is prescribed by Basel Committee on Banking Supervision as the test for regulatory acceptance of a VaR model (see Kupiec, 1995). The second test is the Christoffersen (IND) independence test which tests whether VaR exceedances are IID (see Christoffersen, Hahn, Inoue, 2001). Although the independence of the VaR errors is not required under the Basel 2 rules, in practice it is of vital importance. The dependence of the VaR errors is crucial for the stability of any financial institution since bunched VaR errors can erase the capital reserves much faster than the slight underestimation of risk.

Kupiec and Christoffersen independence (IND) test backtesting results, at 5% significance level, for tested VaR models at 99% confidence level are presented in tables 2 and 3.

Table 2

Kupiec test backtesting results at 99% confidence level, 5% significance level, period: 1,500 days up to 12.11.2008.*

	CAC	IBEX	MIB 30	FTASE	XU 100	CASE	CROBEX	MALTEX	MOSEMDX
BRWλ=0,97									
BRWλ=0,99	+	+	+		+				+
BRWλ=opt	+	+	+		+	+	+	+	+
GARCH RM							+	+	
EVT GARCH	+	+	+	+	+	+	+	+	+
GPD	+	+	+	+	+	+	+	+	+

* Grey areas mark VaR models that satisfied Kupiec backtesting criterion

Table 3

Christoffersen independence (IND) test backtesting results at 99% confidence level, 5% significance level, period: 1,500 days up to 12.11.2008.*

	CAC	IBEX	MIB 30	FTASE	XU 100	CASE	CROBEX	MALTEX	MOSEMDX
BRWλ=0,97	+	+	+	+	+	+			+
BRWλ=0,99	+	+	+	+					+
BRWλ=opt	+	+	+	+	+	+	+	+	+
GARCH RM	+	+	+	+	+	+	+	+	+
EVT GARCH	+	+	+	+	+	+	+	+	+
GPD	+	+	+	+	+	+	+	+	

* Grey areas mark VaR models that satisfied Christoffersen independence backtesting criterion

Tested GARCH, EGARCH and GJR-GARCH models with Gaussian, T, skewed T and GED distribution performed unsatisfactory in Mediterranean stock markets, both developed and developing, providing satisfactory results only for CROBEX and MALTEX index. Such weak performance of this widely used VaR model can be attributed to the fact that the time period under consideration includes the ongoing global financial crisis. Since we are using a sufficiently long backtesting period of 1.500 days (almost six years of daily data) global financial crisis should not be used as an excuse and investors should seriously rethink the safety of their VaR models. Based on the obtained results we can safely say that it should not to be used in the tested stock markets for the purpose of risk measurement at high quantiles. The test reveal an absolutely supreme performance of conditional and unconditional EVT models that satisfied both tests for all of the tested indexes, with the only exception of the unconditional GPD model failing the Christoffersen independence test for MOSEMDX index. VaR model performance for the most developed Mediterranean countries; France, Italy and Spain is identical, with BRW simulation (optimal and 0.99 decay factor) and EVT models satisfying both employed tests. For developing Mediterranean countries VaR performance is similar to the developed ones since only the optimal decay factor BRW simulation and EVT models passed the two tests. The only exception is the Greek FTASE index for which only EVT models forecasted the true level of risk. Overall, the results are very consistent in pointing to the conclusion that for the time period under consideration only EVT models (especially the conditional EVT-GARCH model) perform satisfactory for all the tested stock indexes, while other VaR models tend to underpredict the true level of risk. The backtesting shows that performance of the BRW simulation depends, to a very large extent, upon the choice of decay factor. The BRW simulation with decay factor of 0.97 performs poorly and is not an adequate risk measure in any of the tested markets. Decay factor of 0.99 shows considerable improvements but still fails for four out of nine indexes (FTASE, CASE, CROBEX and MALTEX). BRW simulation with individually optimised decay factor brings a significant improvement over the usually used 0.99 decay factor and fails only once, in the case of Greek FTASE index. This makes the optimised BRW simulation second only to EVT approaches.

In the tested sample the optimised BRW simulation proved superior to the parametric GARCH estimation, both in developed and developing markets. The reasons for such a good performance of the optimised BRW model can be attributed to the high decay factors, in the range between 0.99 and 1.00. When using the BRW simulation with such high decay factors the observation window becomes very long since no cut-off level exist as in the case of the historical simulation. In this manner the model has a very long history from which to form the time weighted empirical cumulative distribution function and produce robust VaR forecasts. On the other hand information is updated but also lost much faster in the GARCH setup. These characteristics can work in favour of the BRW simulation and against GARCH in a situation where there are sudden bursts of volatility lasting only a couple of day. After these short bursts the excess volatility fades away only to appear again suddenly. In such instances the GARCH model cannot correctly conclude whether it is in a state of increased market stress or not. Upon visual inspection of the analysed indexes we find that exactly this is the case, especially in the period of global financial crisis. In the described circumstances the lower speed with which the BRW model with high decay factor reacts to the changes actually works in favour of the model since it does not automatically start to decrease VaR forecasts due to the calm periods between the short bursts of volatility. In situations where there is a clearly visible shift between periods of high and low volatility GARCH is obviously a preferred method. In situations where it is not easy to conclude about the characteristics of a certain period since calm and volatile days

interchange very suddenly we conclude that the BRW simulation should be preferred to GARCH estimation. The results show that making even small adjustments to decay factor for example 0.001 in case of CASE index makes the difference between an acceptable and unacceptable VaR model. This is a clear proof that optimisation of the decay factor makes a huge difference in judging the performance of the BRW simulation. It can be concluded that studies evaluating the performance of the BRW model are flawed if they do not in some way optimise the decay factor. Taking ad hoc values is certainly not a reliable way of testing the performance of any VaR model.

With regards to independence of VaR exceedances results of the Christoffersen independence test are much better but still some VaR models such as the GPD EVT and BRW model fail in some cases, meaning that their VaR errors are not IID i.e. they tend to cluster together which makes them completely unusable in these circumstances. Since EVT and the optimal decay factor BRW simulation models are the best performing models according to Kupiec and independence test it is useful to know which model gives the closest fit to the true level of risk. The results are presented in table 4.

Table 4
Lopez test ranking of competing VaR models at 99% confidence level, period 1,500 days up to 12.11.2008.*

	CAC	IBEX	MIB 30	FTASE	XU 100	CASE	CROBEX	MALTEX	MOSEMDX
BRWλ=0,97	19,25	18,28	15,20	17,28	13,48	17,49	15,38	16,19	12,16
BRWλ=0,99	3,16	3,22	3,21	9,21	6,37	8,45	11,33	7,16	4,13
BRWλ=opt	1,18	1,22	2,18	7,22	2,34	6,45	6,32	2,15	2,12
GARCH RM	12,20	15,19	17,18	8,10	12,39	9,36	2,22	-0,91	9,12
EVT GARCH	3,13	6,14	-1,92	-2,93	5,31	-10,87	-9,88	-14,00	3,06
GPD	-6,89	-9,89	-11,96	-9,93	-14,00	-11,89	-13,99	-10,98	-1,95

* Grey areas mark VaR models yielding lowest Lopez score i.e. smallest deviation from expected values

In case of CAC, IBEX, XU 100 and CASE index optimal decay factor BRW simulation has the lowest Lopez size adjusted score, making it, by this criterion, the best VaR model since it minimises the deviation between recorded and expected VaR failure rate. For MIB 30, FTASE and MOSEMDX index the EVT models were the best models with regards to Lopez score function. Parametric GARCH model was the best performing VaR model for CROBEX and MALTEX index. When looking at the Kupiec, independence and Lopez test performance of non-EVT models is far worse than reported by similar studies which can be attributed to increased market stress and occurrence of extreme loses that cannot be accounted for by classical VaR models. The magnitude of losses that occurred in these markets under the parametric models using normality assumption are expected to occur once in a thousand years and in the historical simulation models periods of such high volatility and extreme losses simply fell out of the observation sample. The only models which overpredict the true level of risk in most of the indexes are the EVT models. The Lopez test results show that although EVT, especially the conditional EVT-GARCH version is superior to the optimised BRW model often the optimised BRW model provides a closer fit to the true level neither under or overpredicting it.

6. CONCLUSION

In this paper we present an optimisation approach to determine the optimal decay factor for the BRW simulation based on minimising the deviation (positive or negative) between

observed and expected VaR exceedances while taking into account the size of those exceedances. The optimal decay factors obtained in this manner show consistency over different time windows with minimal changes in their values, which gives economic justification to their optimisation for each stock index since once calculated these values do not change very often, or they do so by a very small amount. This is a very useful characteristic which allows the optimisation procedure to be performed far less frequently. The optimal decay values are similar, for both developed and developing Mediterranean economies, ranging between 0.991 and 0.998, so we cannot point to any significant difference in the optimal decay factor based on wealth, development or size of the stock market. For the time period under consideration only the EVT models perform satisfactory for all of the tested Mediterranean stock indexes, while other VaR models tend to underpredict the true level of risk. Performance of the BRW simulation depends, to a very large extent, upon the choice of the decay factor. The BRW simulation with the decay factor of 0.97 performs poorly and is not an adequate risk measure in any of the tested markets. The decay factor of 0.99 shows considerable improvements but still fails for four out of nine indexes. The BRW simulation with the individually optimised decay factor brings a significant improvement over the usually used 0.99 decay factor. In the tested sample the optimised BRW simulation proved superior to the parametric GARCH estimation, both in developed and developing markets. The reasons for such a good performance of the optimised BRW model can be attributed to the high decay factors, in the range between 0.99 and 1.00. When using the BRW simulation with such high decay factors the observation window becomes very long since no cut-off level exist as in the case of the historical simulation. In this manner the model has a very long history from which to form the time weighted empirical cumulative distribution function and produce robust VaR forecasts. On the other hand information is updated but also lost much faster in the GARCH setup. These characteristics can work in favour of the BRW simulation and against GARCH in a situation where there are sudden bursts of volatility lasting only a couple of day. Among the non-EVT VaR models the optimal decay factor BRW simulation is a preferable method and as such presents a viable alternative when it comes to VaR estimation. The Lopez test results show that although EVT, especially the conditional EVT-GARCH version is superior to the optimised BRW model often the optimised BRW model provides a closer fit to the true level neither under or overpredicting it.

Optimisation of the decay factor makes a huge difference in judging the performance of the BRW simulation. It can be concluded that studies evaluating the performance of the BRW model are flawed if they do not in some way optimise the decay factor. Taking ad hoc values is certainly not a reliable way of testing the performance of any VaR model. In this paper we suggest optimising the decay factor with regards to the Lopez size adjusted function but there is no reason why optimisation of the decay factor with some other target function could not yield even better results. This possibility represents an interesting opportunity for future research.

REFERENCES

Boudoukh, J., Richardson, M., Whitelaw, R., (1998), "The best of both worlds", *Risk*, 11: 64-67.

Christoffersen, P., Hahn, J., Inoue, A., (2001), "Testing and Comparing Value-at-Risk Measures", Montreal: *CIRANO*, Paper 2001s-03, 22 p.

Hendricks, D., (1996), "Evaluation of Value-at-Risk Models using Historical data", *FRBNY Economic Policy Review*, April.

Kupiec, P., (1995), "Techniques for verifying the accuracy of risk management models", *Journal of Derivatives*, 3: 73-84.

Lopez, A. J., (1998), "Methods for evaluating value-at-risk estimates", *Federal Reserve Bank of New York, Economic Policy Review*, 2: 3-17.

Longin, F. M., (2000), "From value at risk to stress testing: the extreme value approach", *Journal of Baking and Finance*, 24:1097-1130

Manganelli, S., Engle F.R., (2001), "Value at Risk models in Finance", *ECB working paper series*, Working paper, No. 75.

McNeil, A. J., Frey, R., (2000), "Estimation of tail-related risk measures for heteroscedastic financial time series: An extreme value approach", *Journal of Empirical Finance*, 7:271– 300

Pritsker, M., (2001), "The Hidden Dangers of Historical Simulation", *Board of Governors of the Federal Reserve System, Economics Discussion Series*, Working paper, No. 27.

Žiković, S., (2006), "Applying hybrid approach to calculating VaR in Croatia", *Proceeding of International Conference of the Faculty of Economics in Sarajevo – "From Transition to Sustainable Development: The Path to European Integration"*, Sarajevo, Bosnia and Herzegovina

OPTIMIZACIJA FAKTORA OPADANJA U VREMENSKI PONDERIRANOJ (BRW) SIMULACIJI: POSLJEDICE ZA IZRAČUN VAR-A U MEDITERANSKIM ZEMLJAMA

SAŽETAK

U radu se predlaže optimizacijski pristup određivanju optimalnog faktora opadanja u vremenski ponderiranoj (BRW) simulaciji. Testiranje uspješnosti BRW simulacije sa različitim faktorima opadanja u odnosu na široki raspon VaR modela provedeno je na uzorku od devet mediteranskih zemalja tijekom razdoblja od četiri godine, uključujući i razdoblje aktualne svjetske financijske krize. Rezultati testiranja pokazuju da nakon provedene optimizacije BRW simulacija je među najuspješnijim testiranim VaR modelima zaostajući jedino za modelima temeljenim na teoriji ekstremnih vrijednosti. Optimiziranje faktora opadanja u odnosu na Lopezovu funkciju rezultira faktorima opadanja koji su viši od uobičajeno korištenih vrijednosti 0.97 i 0.99. Dobiveni optimalni faktori opadanja su izrazito stabilni tijekom testiranog razdoblja te rezultiraju značajno boljim VaR prognozama.

Ključne riječi: *Upravljanje rizicima, rizična vrijednost, vremenski ponderirana (BRW) simulacija, optimizacija, faktor opadanja, Mediteran*

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A LONG RUN EQUILIBRIUM RELATIONSHIP BETWEEN INTERNATIONAL TOURISM, HIGHER EDUCATION, AND ECONOMIC GROWTH IN NORTHERN CYPRUS

ABSTRACT

The relationship between internatiomal tourism and economic growth deserves further attention compared to tourism demand models over the years. This study employs the bounds test for co-integration and Granger causality tests to investigate a long-run equilibrium relationship between international tourism, higher education sector, and real income growth, and the direction of causality among themselves for the Turkish Republic of Northern Cyprus (TRNC), which is not recognized by countries other than Turkey. Results reveal that international tourism and higher education are in long-run equilibrium relationship with real income growth. The major finding of this study is that although TRNC suffers from political non-recognition and emgargoes since 1974, real income growth is stimulated by growth in international tourism and higher education sector as found from Granger causality tests.

Keywords: *International Tourism, Higher Education, Economic Growth, North Cyprus*

I. INTRODUCTION

International tourism is a major source of foreign exchange for small countries as well as the larger ones. Small countries, in particular small islands, have more dependency on tourism than the larger ones since their economies are based on only a few sectors. Especially, export-oriented services tend to represent unique characteristics of small islands and therefore provide a basis for a potential comparative advantage (Mehmet and Tahiroglu 2002). Eilat and Einav (2004) suggest that international tourism is driven by unique factors of production, and may be better dealt with in a single industry study rather than in a general equilibrium trade model. They also find that political risk is very important for tourism, and that exchange rates matter mainly for tourism to developed countries. There are huge amount of studies investigating empirical relationship between international trade and economic growth (especially, trade-led, export-led and import-led growth hypotheses), but this cannot be said about empirical relationship between international tourism and economic growth (Gunduz and Hatemi-J, 2005). Furthermore, results

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of the studies made for the relationship between international tourism and economic growth are still inconclusive (See also Katircioglu, 2009a; 2009b; 2009c; Gunduz and Hatemi-J, 2005).

There is an unverified question of whether tourism growth actually causes economic growth or does economic growth contributes to tourism growth instead. Empirical studies of the relationship between tourism and economic growth have been less rigorous in the tourism literature (Oh, 2005). International tourism receipts are a major source of foreign exchange together with export revenues that well compensate current account deficits as well due to the fact that tourism spending serves as an alternative form of exports contributing to ameliorated balance of payments in many countries (Oh, 2005). On the other hand, since international tourism contributes to every sector of the economies, budget deficits also benefits from these activities via tax revenues. As McKinnon (1964) argues international tourism brings foreign exchange that can be used to import intermediate and capital goods to produce goods and services, which in turn leads to economic growth. Balaguer and Cantavella-Jorda (2002) prove the validity of tourism-led hypothesis for the Spanish economy where the Spanish economy is the second largest recipient of international tourist earnings (5.9% of its GDP) in the world after the United States. However, there is a question if this hypothesis can be proved for other countries. Therefore, the tourism-led hypothesis deserves further attention for the other economies.

Gunduz and Hatemi-J (2005) empirically confirmed the TLG hypothesis for Turkey by making use of the leveraged bootstrap causality tests. They found unidirectional causality running from international tourist arrivals to economic growth of Turkey. On the other hand, Ongan and Demiroz (2005) also investigated the impact of international tourism receipts on the long-term economic growth of Turkey by using the Johansen technique and vector error correction modeling. They found that there was bidirectional causality between international tourism and economic growth in this country; which means an expansion in international tourism stimulates growth in the Turkish economy and growth in the Turkish economy stimulates an expansion in international tourism. However, unlike the findings of Gunduz and Hatemi-J (2005) and Ongan and Demiroz (2005), Katircioglu (2009a) rejects the TLG hypothesis for the Turkish economy using the Johansen approach and bounds test for cointegration. Both tests in the study of Katircioglu (2009a) did not reveal any long-run relationship (cointegration) between international tourism and economic growth in Turkey.

Katircioglu (2009b) confirmed long-run equilibrium relationship between international tourism and economic growth in South Cyprus. But, the TLG hypothesis was not confirmed for South Cyprus according to the results of Katircioglu (2009b); tourism growth is output-driven in South Cyprus. On the other hand, Katircioglu (2009c) again confirmed long-run equilibrium relationship between international tourism and economic growth in the case of Malta. Furthermore, Granger causality test results of Katircioglu (2009c) suggest that both the TLG and output-driven tourism hypotheses can be inferred for Malta since there is bidirectional causation between international tourism and economic growth.

Dristakis (2004) examined the impact of tourism on the long-term economic growth of Greece by using causality analysis and found evidence of bidirectional causality between international tourism and economic growth in the case of Greece. Cortés-Jiménez and Pulina (2006) supported the TLG hypothesis for Spain while they rejected it for Italy by using multivariate cointegration techniques and Granger causality tests. Sequeira and Nunes (2008) show that tourism is a

positive determinant of economic growth both in a broad sample of countries and in a sample of poor countries.

Aim and Importance of the Study

Having the importance of these issues mentioned above that deserves further attention, this study empirically investigates the possible co-integration and causal link between international tourism, higher education sector, and economic growth in a small island, Turkish Republic of Northern Cyprus (TRNC), which is not a recognized state other than the mainland Turkey and suffers from political isolation and economic and politic embargoes over the years. North Cyprus has a population more than 200,000 with 10,537 US$ per capita income (SPO, 2008) and is located in a strategic location of the earth. International tourism and the emergence of higher education sector are two major sources of foreign exchange to this small island since its foreign trade is under embargoes; but, tourism sector also faces great difficulties in attracting international tourists due to the embargoes.

There are important implications and motivations for doing this study: First, international trade plays an extremely important role amidst economic concerns. However, little mention is of international tourism, in spite of its importance among foreign expenditure items (Luzzi and Flückiger, 2003) and majority of empirical studies on tourism forecasting were built on tourism demand functions. As Shan and Wilson (2001) mention several areas remain incomplete in this sort of studies and hence deserve further studies. For example, the role of international trade as one of the determinants of tourism demand is not well recognized in these studies. Thus, this study will search the relationship of not only international tourism growth with economic growth but also of international students' flow with economic growth in this small island.

Second, the econometric techniques used in the previous studies of international tourism are generally poor lacking new developments in econometrics such as co-integration and Granger causality concepts (Shan and Wilson 2001; Lim 1997; Song et al. 1997; Witt and Witt 1995).

Third, there are very few studies in the literature analyzing the impact of education on the economic performance or growth. But to the best of authors' knowledge there is no empirical study investigating the relationship between higher education sector development and economic growth till the moment. Thus, this study is the first of its kind that it investigates long run equilibrium relationship and the direction of causality between higher education growth and economic growth in the case of North Cyprus.

And fourth, Cyprus problem has been at the agenda of world countries for more than 40 years. Now, the south of Cyprus became a member of the EU whereas the north of the island does not benefit the EU regulations. Thus, this situation will continue to deserve attention from the world countries and the results of this study are also expected to give important messages to policy makers.

Tourism and Emergence of Higher Education Sector in North Cyprus

The services sector was given priority basically as a result of political isolation and embargoes faced by North Cyprus in every field. The 1980s became a transition period from manufacturing industry to services with a focus on tourism and higher education. Tourism sector was also under embargoes so the island couldn't attract considerable arrivals of tourists to stimulate significant

growth in the economy. It was targeted to attract tourists from abroad by allowing and opening casinos in the island. Now, many casinos are opened in North Cyprus, which attract many tourists from Turkey and the south of Cyprus since casinos are not allowed in both countries. There were 715,749 tourists visiting Northern Cyprus in 2006 of which 80% were from Turkey. Net tourism revenues constituted 11.2% of gross domestic product (GDP) in 2007 (SPO, 2008).

On the other hand, the demand for higher education sector in North Cyprus showed a considerable increase by 1990s mainly because of Turkish students from Turkey and advertising in the other overseas countries especially in African countries. There are six universities in North Cyprus: Eastern Mediterranean University (EMU, the oldest and the largest one that was established in 1979), Near East University (NEU), Lefke European University LEU), Girne American University (GAU), Cyprus International University (CIA) and North Cyprus Campus of Middle East Technical University (from Turkey) (METU). At the beginning of 2005-2006 academic year, there were 41,865 students studying at these six universities of which 25.3% were Turkish Cypriots, 68.3% were from the mainland Turkey, and 6.5% were from various overseas countries (SPO, 2008). Overseas students have been coming to North Cyprus for higher education since 1982. Afterwards there has been a steady increase in the number of overseas students from more than 68 countries around the world as more universities were established in the country. Having internationally recognized universities with accredited diplomas in North Cyprus contributes to the image of North Cyprus in international arena also through international conferences, seminars, social, cultural and sports activities (SPO, 2008). The expansion of infrastructure and facilities at the universities of North Cyprus continues at an unprecedented rate and may now be compared favorably to their international counterparts. Therefore, higher education sector has now been the most important sector in North Cyprus earning considerable foreign exchange and contributing to this small and non-recognized island state.

The paper proceeds as follows. Section 2 defines data and methodology of the study. Section 3 provides results and discussions and the paper concludes with Section 4.

II. DATA AND METHODOLOGY

Data used in this paper are annual figures covering the period 1979 – 2007 and variables of the study are real gross domestic product (GDP), total number of international tourists visiting and accommodating in tourist establishments of Northern Cyprus, total number of students studying at higher education institutions of North Cyprus and real exchange rates. Data were taken from State Planning Organization of Northern Cyprus (SPO, 2008) and variables except tourists and the number of higher education students are all at 2000 constant US Dollar prices.

There are several alternatives to measure tourism variable in the literature as also mentioned by Gunduz and Hatemi-J (2005): Tourism receipts, the number of nights spent by visitors from abroad and the number of international tourist arrivals from abroad. Since the great majority of higher education students in North Cyprus come from the other countries, higher education variable was proxied by total number of students studying at these institutions of the island. This is justified by the fact that student tourism is a part of international tourism. On the other hand, the bounds and Granger causality tests in this study are all trivariate systems using the real exchange rates as well. Oh (2005), Gunduz and Hatemi-J (2005) and Balaguer and Cantavella-Jorda (2002) suggest real exchange rates to be included in the existence of international tourism in order to deal with potential omitted variable problem. Thus, not only in the existence of international tourism but also in the existence of higher education, real exchange rates were

added to the bounds and Granger causality tests, which were calculated by multiplying Turkish Lira per US dollar and consumer price index (2000 = 100) in the United States, and then dividing it by consumer price index (2000 = 100) in North Cyprus.

The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP)[4] Unit Root Tests are employed to test the integration level and the possible co-integration among the variables (Dickey and Fuller 1981; Phillips and Perron 1988). The PP procedures, which compute a residual variance that is robust to auto-correlation, are applied to test for unit roots as an alternative to ADF unit root test.

To investigate long-run relationship between each pair of variables under consideration, the bounds test for co-integration within ARDL (the autoregressive distributed lag) modeling approach was adopted in this study. This model was developed by Pesaran et al. (2001) and can be applied irrespective of the order of integration of the variables (irrespective of whether regressors are purely I (0), purely I (1) or mutually co-integrated). The ARDL modeling approach involves estimating the following error correction models:

$$\Delta \ln Y_t = a_{0_Y} + \sum_{i=1}^{n} b_{i_Y} \Delta \ln Y_{t-i} + \sum_{i=0}^{n} c_{i_Y} \Delta \ln X_{t-i} + \sum_{i=0}^{n} d_{i_Y} \Delta \ln Z_{t-i} + \sigma_{1_Y} \ln Y_{t-1} + \sigma_{2_Y} \ln X_{t-i} + \sigma_{3_Y} \ln Z_{t-1} + \varepsilon_{1t} \quad (1)$$

$$\Delta \ln X_t = a_{0_X} + \sum_{i=1}^{n} b_{i_X} \Delta \ln X_{t-i} + \sum_{i=0}^{n} c_{i_X} \Delta \ln Y_{t-i} + \sum_{i=0}^{n} d_{i_X} \Delta \ln Z_{t-i} + \varpi_{1_X} \ln X_{t-1} + \varpi_{2_X} \ln Y_{t-i} + \varpi_{3_X} \ln Z_{t-i} + \varepsilon_{2t} \quad (2)$$

In equations (1) and (2), Δ is the difference operator, $\ln Y_t$ is the natural log of the dependent variable, $\ln X_t$ and $\ln Z_t$ are the natural logs of the independent variables and ε_{1t} and ε_{2t} are serially independent random errors with mean zero and finite covariance matrix.

Again, in equations (1) and (2), the F-test is used for investigating a (single) long-term relationship in a trivariate system. In the case of a long-term relationship, the F-test indicates which variable should be normalized. In equation (1), when lnY is the dependent variable, the null hypothesis of no cointegration is H_0: $\sigma_{1Y} = \sigma_{2Y}$ $\sigma_{3Y} = 0$ and the alternative hypothesis of cointegration is H_1: $\sigma_{1Y} \neq \sigma_{2Y} \neq \sigma_{3Y} \neq 0$. On the other hand, in equation (2), when lnX is the dependent variable, the null hypothesis of no cointegration is H_0: $\varpi_{1Y} = \varpi_{2Y} = \varpi_{3Y} = 0$ and the alternative hypothesis of cointegration is H_1: $\varpi_{1Y} \neq \varpi_{2Y} \neq \varpi_{3Y} \neq 0$.

In the case of co-integration based on the bounds test, the Granger causality tests should be done under the vector error correction model (VECM) since the variables under consideration are co-integrated. By doing so, the short-run deviations of series from their long-run equilibrium path are also captured by including an error correction term (See also Narayan and Smyth, 2004). Therefore, error correction models of co-integration under the trivariate system in this study can be specified as follows:

$$\Delta \ln Y_t = \alpha_0 + \varphi_{11}^{p}(L) \Delta \ln Y_t + \varphi_{12}^{q}(L) \Delta \ln X_t + \varphi_{13}^{r}(L) \Delta \ln Z_t + \delta ECT_{t-1} + \mu_{1t} \quad (3)$$

[4] PP approach allows for the presence of unknown forms of autocorrelation with a structural break in the time series and conditional heteroscedasticity in the error term.

$$\Delta \ln X_t = \alpha_1 + \varphi_{21}^{p}(L)\Delta \ln X_t + \varphi_{22}^{q}(L)\Delta \ln Y_t + \varphi_{23}^{r}(L)\Delta \ln Z_t + \delta ECT_{t-1} + \mu_{2t} \qquad (4)$$

Where

$$\varphi_{11}^{p}(L) = \sum_{i=1}^{P_{11}} \varphi_{11,i}^{p} L^i \qquad \varphi_{12}^{p}(L) = \sum_{i=0}^{P_{12}} \varphi_{12,i}^{p} L^i \qquad \varphi_{13}^{p}(L) = \sum_{i=0}^{P_{13}} \varphi_{13,i}^{p} L^i$$

$$\varphi_{21}^{p}(L) = \sum_{i=1}^{P_{21}} \varphi_{21,i}^{p} L^i \qquad \varphi_{22}^{p}(L) = \sum_{i=0}^{P_{22}} \varphi_{22,i}^{p} L^i \qquad \varphi_{23}^{p}(L) = \sum_{i=0}^{P_{23}} \varphi_{23,i}^{p} L^i$$

In equations (3) and (4), Δ denotes the difference operator and L denotes the lag operator where $(L)\Delta \ln Y_t = \Delta \ln Y_{t-1}$. ECT_{t-1} is the lagged error correction term derived from the long-run co-integration model. Finally, μ_{1t} and μ_{2t} are serially independent random errors with mean zero and finite covariance matrix. Finally, according to the VECM for causality tests, having statistically significant F and t ratios for ECT_{t-1} in equations (3) and (4) would meet conditions to have causation from X to Y and from Y to X respectively.

III. RESULTS AND DISCUSSIONS

Table 1 gives ADF and PP unit root test results for the variables under consideration. Real GDP, tourist arrivals, and RER variables are non-stationary at their levels but stationary at their first differences whereas higher education variable is stationary at its level as confirmed by both ADF and PP tests. Therefore, y, T, and RER are said to be integrated of order one, I (1), whereas HE is said to be integrated of order zero, I (0).

Table 1

ADF and PP Tests for Unit Root

Statistics (Level)	ln y	lag	ln T	lag	ln HE	lag	ln RER	lag
τ_T (ADF)	-1.89	(1)	-2.52	(0)	-0.90	(2)	-1.45	(0)
τ_μ (ADF)	1.62	(0)	0.22	(0)	-10.27*	(3)	-1.56	(0)
τ (ADF)	2.11	(0)	2.05	(0)	0.47	(3)	-0.04	(0)
τ_T (PP)	-1.52	(1)	-2.63	(2)	-1.51	(27)	-1.29	(3)
τ_μ (PP)	1.29	(2)	0.13	(1)	-10.94*	(27)	-1.68	(2)
τ (PP)	1.62	(3)	1.92	(1)	2.61	(3)	-0.04	(2)
Statistics (First Difference)	**Δln y**	**lag**	**Δln T**	**lag**	**Δln HE**	**lag**	**Δln RER**	**lag**
τ_T (ADF)	-4.47*	(0)	-4.60*	(0)	-5.46*	(1)	-5.81*	(0)
τ_μ (ADF)	-3.75*	(0)	-4.56*	(0)	-1.16	(3)	-4.93*	(0)
τ (ADF)	-3.40*	(0)	-4.10*	(0)	-1.64***	(3)	-5.02*	(0)
τ_T (PP)	-4.48*	(1)	-4.60*	(0)	-4.49*	(3)	-6.00*	(4)
τ_μ (PP)	-3.77*	(3)	-4.56*	(0)	-3.89*	(1)	-4.93*	(2)
τ (PP)	-3.45*	(3)	-4.10*	(2)	-3.01*	(2)	-5.02*	(2)

Note:

y represents real gross domestic product; T is the total number of tourist arrivals; HE is the total number of students in the higher education institutions; and RER is real exchange rates. All of the series are at their natural logarithms. τ_T represents the most general model with a drift and trend; τ_μ is the model with a drift and without trend; τ is the most restricted model without a drift and trend. Numbers in brackets are lag lengths used in ADF test (as determined

by AIC set to maximum 3) to remove serial correlation in the residuals. When using PP test, numbers in brackets represent Newey-West Bandwith (as determined by Bartlett-Kernel). Both in ADF and PP tests, unit root tests were performed from the most general to the least specific model by eliminating trend and intercept across the models (See Enders, 1995: 254-255). *, ** and *** denote rejection of the null hypothesis at the 1%, 5% and 10% levels respectively. Tests for unit roots have been carried out in E-VIEWS 5.1.

Unit root tests have provided mixed results for the variables of this study. Therefore, bounds test will be employed in this study to investigate long-run equilibrium relationship between international tourist arrivals and real GDP, and between higher education sector and real GDP for North Cyprus within the ARDL modeling approach as suggested by Pesaran et. al (2001). Critical values for F and t statistics for small samples are presented in Table 2 as taken from Narayan (2005) to be used in this study. Table 3 gives the results of the bounds test for cointegration by a trivariate system (including real exchange rates) between real GDP and international tourist arrivals to North Cyprus, and between international students' flow to North Cyprus under three different scenarios as suggested by Pesaran, et al. (2001: 295-296), which are with restricted deterministic trends (F_{IV}), with unrestricted deterministic trends (F_V) and without deterministic trends (F_{III}). Intercepts in these scenarios are all unrestricted[5].

Table 2

Critical Values for ARDL Modeling Approach

	0.10		0.05		0.01	
k = 3	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
F_{IV}	3.38	4.27	4.05	5.09	5.67	6.99
F_V	3.87	4.97	4.68	5.98	6.64	8.31
F_{III}	5.33	7.06	3.71	5.02	5.33	7.06
t_V	-3.13	-3.84	-3.41	-4.16	-3.96	-4.73
t_{III}	-2.57	-3.46	-2.86	-3.78	-3.43	-4.37

Source: Narayan (2005) for F-statistics and Pesaran et. al (2001) for t-ratios.

NOTES: (1) k is the number of regressors for dependent variable in ARDL models, F_{IV} represents the F statistic of the model with unrestricted intercept and restricted trend, F_V represents the F statistic of the model with unrestricted intercept and trend, and F_{III} represents the F statistic of the model with unrestricted intercept and no trend. (2) t_V and t_{III} are the t ratios for testing $\sigma_{1Y} = 0$ in Equation (1) and $\varpi_{1Y} = 0$ in Equation (2) respectively with and without deterministic linear trend.

Table 3

The Bounds Test for Co-integration

	With Deterministic Trends			Without Deterministic Trend		
Variables	F_{IV}	F_V	t_V	F_{III}	t_{III}	Conclusion
						H_0
(1) y and T						
F_y (y / T, RER)	5.84^{c}	5.63^{c}	-2.19^{a}	4.51^{a}	-0.19^{a}	Rejected
F_T (T / y, RER)	6.83^{c}	6.60^{c}	-2.28^{a}	13.22^{c}	-2.09^{a}	Rejected
(2) y and HE						
F_y (y / HE, RER)	5.88^{c}	6.39^{c}	-1.88^{a}	6.97^{b}	-1.53^{a}	Rejected
F_{HE} (HE / y, RER)	3.15^{b}	1.98^{a}	-1.17^{a}	1.90^{a}	-0.99^{a}	Inconclusive

[5] For detailed information, please refer to Pesaran, et al. (2001), pp. 295-296.

Note: Akaike Information Criterion (AIC) and Schwartz Criteria (SC) were used to select the number of lags required in the co-integration test. Both gave the same level of lag order, VAR= 1. F_{IV} represents the F statistic of the model with unrestricted intercept and restricted trend, F_V represents the F statistic of the model with unrestricted intercept and trend, and F_{III} represents the F statistic of the model with unrestricted intercept and no trend. t_V and t_{III} are the t ratios for testing $\sigma_{1Y} = 0$ in Equation (1) and $\varpi_{1Y} = 0$ in Equation (2) respectively with and without deterministic linear trend. [a] indicates that the statistic lies below the lower bound, [b] that it falls within the lower and upper bounds, and [c] that it lies above the upper bound.

Results in Table 3 suggest that the application of the bounds F-test using ARDL modeling approach suggest a level relationship between international tourist arrivals and real GDP in both models where T and GDP are dependent variables respectively. The null hypotheses of H_0: $\sigma_{1Y} = \sigma_{2Y} = \sigma_{3Y} = 0$ and H_0: $\varpi_{1Y} = \varpi_{2Y} = \varpi_{3Y} = 0$ can be rejected according to F_{III}, F_{IV} and F_V scenarios. On the other hand, results of bounds tests have shown that there is a level relationship between higher education growth and real income growth in North Cyprus only when real income is dependent variable as can be seen from Table 3 since the null hypothesis of H_0: $\sigma_{1Y} = \sigma_{2Y} = \sigma_{3Y} = 0$ can be rejected according to F_{III}, F_{IV} and F_V scenarios. The second model where HE is dependent does not provide any evidence for cointegration. Finally, the results from the application of the bounds t-test in each ARDL model do not allow for the imposition of the trend restrictions in the models since they are not statistically significant (See Pesaran, et al., 2001: 312).

Table 4

Granger Causality Tests

Lag Level	1		2		3		
Null Hypothesis	**F – Stat**	**t_{ECTt-1}**	**F – Stat**	**t_{ECTt-1}**	**F – Stat**	**t_{ECTt-1}**	**Result**
(1) y and T							
T does not Granger cause y	5.99*	-3.78*	5.80*	-3.46*	5.29*	-2.24**	T ⇒ y
y does not Granger cause T	0.18	0.26	0.18	0.38	0.16	-0.23	
(2) y and HE							
HE does not Granger cause y	12.80*	-5.60*	4.42*	-2.53**	4.90*	-2.03***	HE ⇒ y

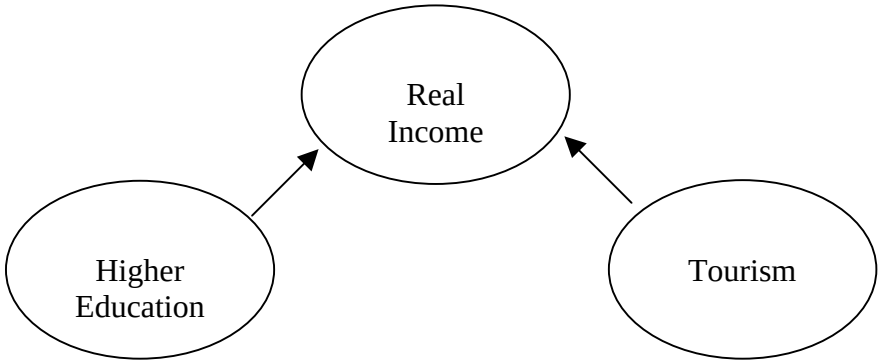
Note: 1. *, ** and ** significance at 1%, 5% and 10% levels respectively.

Having cointegrated relationships in bounds tests, the direction of causality can be now searched within the VECM mechanism as a long-run context. There are methods for lag length selection in the recent literature such as AIC (Akaike Information), SIC (Schwartz Information Criterion) and Hsiao's (1979) sequential procedure (which combines Granger's definition of causality and Akaike's minimum final prediction error (FPE) criterion). However, due to the limited number of observations in this study, maximum lag is set to 3 and VECM models were estimated for each lag length. Pindyck and Rubinfeld (1991) also point out that it would be best to run the test for a few different lag structures and make sure that the results were not sensitive to the choice of lag length. Results of VECMs are given in Table 4, which shows that there are unidirectional causalities that run from international tourist arrivals to real GDP and from higher education to

real GDP. The major finding of this study is that a growth in international tourism and higher education sector stimulates (precedes) a growth in the economy.

Figure 1

International Tourism, Student Tourism, and Economic Growth in Northern Cyprus



IV. CONCLUSION

This paper empirically investigated long-run equilibrium relationship between international tourism, higher education, and economic growth in TRNC, which suffers from political non-recognition, isolation, and embargoes since 1974. Results of the present study reveal that long-run equilibrium relationship exists between international tourism and economic growth, and between higher education and economic growth in this small island. The major finding of this study is that economic growth in Northern Cyprus is international tourism and higher education sector driven. This is to say that both tourism-led growth and higher-education-led growth hypotheses are confirmed for Northern Cyprus as also can be seen in Figure 1 according to the results of Granger causality tests in this study. This finding is very important for such an isolated economy and for also policy makers as well as academicians in the field due to the fact that tourism and higher education significantly contributes to North Cyprus economy. Furthermore, this study has shown that Turkish Cypriot authorities should give more attention for promoting universities as well as international tourism for the island. Private sector investments in improving infrastructure and facilities should be encouraged by government to enhance better infrastructure, quality and professional service both at the universities and the hotels since they are two main parts of international tourism in North Cyprus. Encouraging infrastructure and facilities in higher education institutions and the hotels will mean a greater flow of international tourist and student arrivals to Cyprus, because it is mainly customer satisfaction that will attract more tourists and students from abroad.

Finally, this study has shown that tourism and growth relationship still deserves further attention from researchers for comparison purposes since its results contradict with some and are consistent with some other studies in the relevant literature.

REFERENCES

Balaguer, J. & Cantavella-Jordá, M. (2002). "Tourism as a long-run economic growth factor: The Spanish case". *Applied Economics*, 34 (7), 877-884.

Cortés-Jiménez, I. & Pulina, M. (2006). "A further step into the ELGH and TLGH for Spain and Italy". Working Paper Series, Fondazione Eni Enrico Mattei, Nota Di Lavoro 118.2006.

Dickey, D. & Fuller, W.A. (1981). "Likelihood ratio statistics for autoregressive time series with a unit root". *Econometrica*, 49, 1057-1072.

Dristakis, N. (2004). "Tourism as a long-run economic growth factor: An empirical investigation for Greece using causality analysis". *Tourism Economics*, 10 (3), 305-316.

Eilat, Y. and Einav, L. (2004), "Determinants of International Tourism: a Three-Dimensional Panel Data Analysis". *Applied Economics*, 36, 12, 1315-1327.

Gunduz, L. & Hatemi-J, A. (2005). "Is the tourism-led growth hypothesis valid for Turkey?" *Applied Economics Letters*, 12, 499 – 504.

Hsiao, C. (1979) "Causality in econometrics", *Journal of Economic Dynamics and Control*, November, 321-46.

Katircioglu, S. (2009a), "Revisiting the Tourism-led-growth Hypothesis for Turkey Using the Bounds Test and Johansen Approach for Cointegration", *Tourism Management*, 30 (1): 17-20.

Katircioglu, S. (2009b), "Trade, Tourism and Growth: The Case of Cyprus", *Applied Economics* (Forthcoming).

Katircioglu, S. (2009c), "Testing the Tourism-Led Growth Hypothesis: the Case of Malta", *Acta Oeconomica* (Forthcoming).

Lim, C. (1997). "An econometric classification and review of international tourism demand models". *Tourism Economics*, 3 (1), 69-81.

Luzzi, G. F. & Flückiger, Y. (2003). "An econometric estimation of the demand for tourism: The case of Switzerland". *Pacific Economic Review*, 8 (3), 289-303.

Mehmet, O. and Tahiroglu, M. (2002) "Growth and equity in microstates: Does size matter in development?", *International Journal of Social Economics*, **29 (½)**, 152-62.

McKinnon, R. (1964). "Foreign exchange constrain in economic development and efficient aid allocation". *Economic Journal*, 74, 388-409.

Narayan, P. K. (2005), "The saving and investment nexus for China: evidence from cointegration tests", Applied Economics, 37 (17), 1979 - 1990.

Narayan, P. K. and Smyth, R. (2004) "The relationship between the real exchange rate and balance of payments: empirical evidence for China from co-integration and causality testing", *Applied Economic Letters*, **11**, 287 – 91.

Oh, C. K. (2005). "The contribution of tourism development to economic growth in the Korean economy". *Tourism Management*, 26, 39-44.

Ongan, S. & Demiroz, D. M. (2005). "The contribution of tourism to the long-run Turkish economic growth". *Ekonomický časopis / Journal of Economics*, 53 (9), 880-894.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). "Bounds testing approaches to the analysis of level relationships". *Journal of Applied Econometrics*, 16, 289–326.

Phillips, P. C. B. & Perron, P. (1988). "Testing for a unit root in time series regression". *Biometrica*, 75, 335-346.

Pindyck, R. S. & Rubinfeld, D. L. (1991). *Models and Economic Forecasts*. McGraw-Hill Inc.

Sequeira, T. N. & Nunes, P. M. (2008), "Does Tourism Influence Economic Growth? A Dynamic Panel Data Approach". *Applied Economics*, 40, 18, 2431-2441.

Shan, J. & Wilson, K. (2001). "Causality between trade and tourism: Empirical evidence from China". *Applied Economics Letters*, 8, 279-283.

Song, H., Romilly, P., & Liu, X. (1997). An Empirical Study of Outbound Tourism Demand in the UK, Paper Presented at the 17th Annual Symposium on Forecasting. Barbados, June, 19-21.
State Planning Organization (SPO) (2008), *Economic And Social Indicators*, Follow Up And Coordination Department, Prime Ministry, Lefkosa, North Cyprus.

Witt, S. F. & Witt, C. A. (1995). "Forecasting tourism demand: A review of empirical research". *International Journal of Forecasting*, 11 (3), 447-475.

DUGOROČNI ODNOS RAVNOTEŽE IZMEĐU MEĐUNARODNOG TURIZMA, VIŠEG OBRAZOVANJA I GOSPODARSKOG RASTA U SJEVERNOM CIPRU

SAŽETAK

Veza međunarodnog turizma i gospodarskog rasta zaslužuje daljnju pažnju u usporedbi s modelima turističke potražnje tijekom godina. Istraživanje koristi bounds test za kointegraciju i Grangerove testove kauzalnosti kako bi se istražio dugoročni odnos ravnoteže međunarodnog turizma, sektora višeg obrazovanja i rasta realnog prihoda, te pravca kauzalnosti među njima za Tursku Republiku Sjeverni Cipar (TRNC) koju u međunarodnoj zajednici priznaje samo Turska. Rezultati pokazuju da se međunarodni turizam i više obrazovanje nalaze u odnosu dugoročne ravnoteže s rastom realnog prihoda. Najznačajniji nalaz ovog istraživanja je da iako TRNC nije politički priznata i pod embargom je od 1974., rast realnog prihoda je stimuliran rastom međunarodnog turizma i sektorom višeg obrazovanja kako pokazuju Grangerovi testovi kauzalnosti.

***Ključne riječi**: Međunarodni turizam, više obrazovanje, gospodarski rast, Sjeverni Cipar*

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CONTRACTUAL LIABILITY OF THE GUEST FOR DAMAGE IN DIRECT HOTEL-KEEPER'S CONTRACT

JEL: K-12

ABSTRACT

The article analyzes recent tendencies in the Croatian and comparative laws according to which the contractual liability of the guest for proprietary and non-proprietary hotel-keeper's damage is acknowledged. Through analysis of the same institute in Croatian and comparative law it is demonstrated that contractual liability of the guest, in addition to specific duties from various legal systems, determines the breach of the two main obligations of the guest: payment the price of the services and behavior in the hotel premises in accordance with the same purpose. Contractual liability of the guest for proprietary and non-proprietary damage reinforces the contractual hotel-keeper's position and reputation, as well as the protection of his property. Guest will be liable for hotel-keeper's proprietary damage, which includes all the regular damages and lost hotel-keeper's profit. The most common causes of contractual liabilities of the guest for non-proprietary hotelkeeper's damage are: 1) injury of the hotelkeeper's reputation and 2) various types of hotelkeeper's anxiety, dissatisfaction or discomfort.

Keywords*: contractual liability, proprietary and non-proprietary damage, direct hotel-keeper's contract, guest's liability, comparative law.*

1. INTRODUCTION

Adoption of the principles of guest's contractual liability for damage in direct hotel-keeper's contract, in Croatian and comparative law, has long been burdened with a twofold problem. The first problem, especially for hotel-keepers (*hoteliers*), represents perception that guest in the direct hotel-keeper's contract has only rights and, except for the payment of the price, no liability (**Sherry, 1993, 769-773**). The second problem regarding the different nature was the fact that in the Croatian and comparative law, the guest was not liable for non-proprietary damage of the hotel-keeper; it was understood that the legal system should not recognize such liability at all, let alone the fact that non-proprietary damage for breach of the contract would be compensated to the hotel-keepers (**Moret, 1973, 663-702**).

The first problem, the understanding that the guest in direct hotel-keeper's contract has also obligations and liabilities, is resolved only in a partial manner. In the Croatian theory there is no deeper analysis of the guest's contractual liability for damage of the hotel-keeper; there is only a systematic review of the customs that forms special type of the guest's obligations, out of which a conclusion is deducted that Croatian law recognizes two contractual obligations of the guest for whose breach the guest is liable for hotel-keeper's damage (**Gorenc & Šmid, 1999, 25**): 1) the

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obligation to use the premises for accommodation and accessory services in accordance with house rules, customs and business practices (such as "good guest") and 2) the obligation to pay the price for the hotel services provided. In the Croatian Special procedures for the catering industry (*Posebne uzance u ugostiteljstvu*) from 1995, which regulates the direct hotel-keeper's contract, certain guest's obligations are mentioned.

Comparative law distinguishes two ways of accepting postulates that the guest also has the obligation in direct hotel-keeper's contract. Legal theory of one countries (Italy, UK) recognizes only the guest's rights in this contract, out of which the guest's obligations from the hotel-keeper's rights against the guest in direct hotel-keeper's contract of hotel services, are deduced, although there are exceptions (**Castoldi, 2003, 148**). Theories of other states (France, Germany, USA) explicitly recognize the existence of the guest's contractual obligations, although there are opposing points of view (**Jefferies, 1995, 177-182**).

The theory of comparative law sets aside similar contractual obligations of the guest in direct hotel-keeper's contract as well as the Croatian theory (behavior, payment), adding some special obligations: 1) the obligations of respecting the fixed length of stay upon booking (France), 2) the obligations of prohibiting conduct of any activities in the hotel room (Italy) and 3) the obligations to leaving the hotel building in the event of infectious disease (SAD). There is no doubt that the guest has obligations in the hotel and that for them he is liable to the hotel-keeper.

The second problem, guest's contractual liability for non-proprietary damage of the hotel-keeper, has been resolved positively. In the past few years, the institute of contractual liability for non-proprietary damage in the Croatian and comparative law is introduced. In the Croatian law this institute appeared with the adoption of Obligations Relations Act (*Zakon o obveznim odnosima* - further ZOO) in 2005 (in force since 01.01.2006.); with the provision of Article 346 Paragraph 1 of the new ZOO, in the Croatian legislation the institute of contractual liability for non-proprietary damage is introduced (**Radolović, 2005, 111-114; Klarić, 2006, 381-385**). Although the direct hotel-keeper's contract is regulated by the Special procedures for the catering industry, the ZOO's provisions of the contractual liability for non-proprietary damage apply also to the obligations of the guest.

In comparative laws nowadays, the twofold way to accept the institute of contractual liability for non-proprietary damage is defined. Some countries, despite the fact that institute is not regulated in their legislation, started to interpret extensively the civil codes' unchanged norms, accepting the institute through the jurisprudence and theory (**Bona & Monateri, 2004, 1-807**); the courts of justice broadly adjudge the compensation of the damages recognizing the non-proprietary nature of the damage (France, Italy and Austria). Other states explicitly regulate the contractual liability for non-proprietary damage by special laws and precedents (Germany, UK, USA). Applying this solutions, Croatian and comparative law achieved great progress in respecting the rights of persons and dignity (**Larenz, 1976, 342-346**) of contracting subjects (natural and legal persons).

Two questions related to the type of damage that the hotel-keeper may sustain are imposed. What kind of proprietary damage can a hotel-keeper sustain, and can he suffer a non-proprietary damage at all?

The hotel-keeper, as well as every lender in the obligation's relation, may suffer proprietary damage in the form of ordinary damages (e.g. guest brakes a mirror in the hotel) or lost profits (e.g. guest steals the cheque on holder from the reception desk). Hotel-keeper may also suffer a non-proprietary damage, whether he is a natural or legal person (**Klarić, 1995, 393-416**), in almost all elaborated legal systems (Croatian and comparative). The most common non-proprietary damage that the hotel-keeper may sustain due to breach of contract by the guest, can be classified into two groups: 1) breach of the hotel-keeper's reputation (e.g. arrival of a drunken guest in the dirty clothes at the gala dinner at the 5-star hotel) and 2) various types of hotel-keeper's anxieties, dissatisfaction or discomfort (e.g. the guests celebrating in a hotel room all night disturbing the hotel's peace).

While the hotel-keeper will rarely sue the guest for suffered non-proprietary damage (bad advertising, loss of time, payment of attorneys, etc.), in the future these lawsuits in the Croatian and comparative law can be expected, which will have to result in a more cautious behavior of the guest in the hotel-keeper's (hotel) facilities.

2. CONTRACTUAL LIABILITY OF THE GUEST FOR DAMAGE IN THE DIRECT HOTEL-KEEPER'S CONTRACT IN THE CROATIAN LAW

2.1. THE DIRECT HOTEL-KEEPER'S CONTRACT AND THE GUEST'S OBLIGATIONS TO THE HOTEL-KEEPER

The direct hotel-keeper's contract, due to the fact that our legislators do not give him a designated legislative space, is regulated by the Special procedures for the catering industry from 1995 (Official Journal - further NN, 16/95, 108/96). In the same Customary Practice the definition of the contract is not given; it is only determined when the same is concluded (custom 8.) and what is the subject of the contract (custom 13.). Croatian legal theory (**Gorenc & Šmid, 1999, 12**) defines a direct hotel-keeper's contract as a contract that obligates hotel-keeper to provide temporary accommodation and its accessory services takes care of his person and property and the guest in return agrees to pay the price. The parties of the contract are hotel-keeper (hotelier) and guest (natural person who uses accommodation and accessory services on the basis of direct hotel-keeper's contract).

The subject of the paper's analysis is guest's contractual obligation and his contractual liability in the case of breaching the obligations under the direct hotel-keeper's contract. These guest's obligations, in line with the introduction of the institute of contractual liability for non-proprietary damages by the Article 346 Paragraph 1 of the new ZOO **(Radolović, 2005, 111-114; Klarić, 2006, 381-385)** are increased, so that the relationship of the guest to hotel-keeper is significantly enhanced; in case of breaching the contractual obligations, the guest will be liable for hotel-keeper's proprietary and non-proprietary damage, regardless the legal personality of the hotel-keepers (**Nass, 1962, 89; Gavella, 2000, 34**). The most common reasons for guest's contractual liability to the hotel-keeper for non-proprietary damage will be: 1) violation of the hotel-keeper's reputation (e.g. arrival to the 5-star hotel pool in dirty clothes) and 2) various types of hotel-keeper's anxieties, dissatisfaction or discomfort (e.g. guests celebrate at night in the room disturbing the peace of the hotel).

According to the Croatian legal theory solutions (**Gorenc, 1983; Šmid, 1984, 33-38; Gorenc, 1995, 23-42; Gorenc and Šmid, 1999, 25-27; Gorenc, 2002, 14-17**), the guest in direct hotel-keeper's contract has two major obligations to hotel-keeper, whose violation represents the contractual liability for proprietary and non-proprietary damage: 1) obligation to use the premises for accommodation and accessory services in accordance with house rules, customs and business practices (such as "good guest") and 2) obligation to pay the price for the hotel services provided.

2.2. THE LIABILITY OF THE GUEST FOR BREACHING THE OBLIGATION TO USE THE PREMISES (ROOMS) FOR ACCOMMODATION AND ACCESSORY SERVICES SUCH A „GOOD GUEST“

The guest is liable for the hotel-keeper's proprietary (e.g. damage to the hotel equipment) and non-proprietary damage (e.g. insulting the other guests in the TV room) in case of breaking the "good guest" rule or not using the rooms for accommodation and common premises in accordance with house rules, business practice and Special procedures for the catering industry. The same liability means that the guest (**Gorenc & Šmid, 1999, 25**): 1) can not disturb the silence, peace and order of other hotel guests, 2) must use the room and keep the hotel-keeper's property (devices,

equipment, inventory) giving the attention of "good host“ and in accordance with the purpose and 3) must comply with the hotel's house rules.

Guest is not allowed to disturb the silence, peace and order of the other guests (***VSRH Rev. 616/2004*** - unregistered guest can not be liable for breaching the hotel-keeper's reputation): a) if the guest in the hotel's room and common premises uses the devices (radio, tv) in a way that it disturbs other guests, the hotel-keeper may deny him the use of them (custom 44.2.3.) and b) if the guest's behavior interferes with the other guests, the hotel-keeper may claim the compensation for the damage (e.g. proprietary damage: earlier departure of guests from the hotel, non-proprietary damage: breaching the hotel-keeper's reputation) and breaking the contract (custom 59.).

Guest is required to use the accommodation area with the care of "good host" and according to its purpose (custom 29.): a) the guest may use a room for his accommodation and for the person denoted in the contract, and not others, b) the guest may not prepare food and drink in the hotel room and c) the guest may not use hotel rooms for commercial purposes (commercial space).

The guest is obliged to keep hotel-keeper's property with the same („good guest“) care that includes: a) transmission of rooms to the hotel-keeper in prior existing situation (custom 30.2.), b) liability on the principle of presumed guilt (his and his persons) for damage to hotel-keeper's property (custom 30.3.), c) the prohibition of use of electrical appliances (e.g. heater, fan) in the room, if they are not allowed according to the house rules (custom 44.1.), d) the prohibition of bringing the animals to the hotel (if not contracted or allowed by house rules and then only in specific areas, for example, in space for cats); guest is strictly (objectively) liable for any damage that is done by the animal to the hotel-keeper or other guests (custom 45.) and e) ban on bringing incendiary, explosive and heavy aromed material (custom 46.) to the hotel facility.

The guest is obliged to abide by the house rules of the hotel (otherwise, the hotel-keeper can demand breaking the contract and claiming damages), including (custom 59): a) registration to a particular person engaged to receive guests, b) leaving the keys at the reception, c) taking meals at specific times and d) not taking out the hotel-keeper's things from guest's room or common facilities (towels, soap, sheets).

2.3. THE GUEST'S LIABILITY FOR BREACHING THE OBLIGATION TO PAY THE PRICE OF HOTEL SERVICES

Guest is primarily liable for the hotel-keeper's damage caused by breaching of the obligation to pay the price of hotel services. The guest is obliged to pay the price of services immediately after the service was done or after every 7 days of using the services, while the hotel bill is to be paid at the termination of the contract, and exceptionally it can be demanded from the guest to pay for the overnight stay in advance, especially if the guest has only a hand luggage or not even that (custom 40.). If the guest does not pay the price for the services or compensation for unused services (e.g. the guest decides not to use contracted half-pension), a hotel-keeper has the right to keep movable property (right of retention) that was brought by the guest to the hotel facility, until the complete collection of claims by public auction (custom 41-42, article 742. ZOO); a hotel-keeper can not keep the guest's personal things (identity card, passport, photos, letters) or things that do not have particular property value (shoes, shirts, magazines). If the guest fails to perform the obligation to pay on time, he must pay legally penalty interest (***VSRH Rev 1932/1991*** - there is no liability of the guest that could not pay for hotel services because his deposited money was stolen by hotel-keeper's workers).

The general rule of the guest's obligation to pay the services, in the Croatian legal theory (Gorenc & Šmid, 1999, 26), includes three levels of defining services prices (custom 31.): 1) the guest pays

the price explicitly agreed with the hotel-keeper, 2) if the contract does not exist, the guest pays the price according to the price list of the hotel, taking into account discounts and allowances, and 3) the price of services includes accessory services of using TV (for watching regular programs and in the TV room), pool, beach and children's playgrounds, regardless if the guest uses them.

The guest is obliged to pay special fees to the hotel-keeper (extras): 1) for entering the hotel with a special program (e.g. marriage), music (e.g. concert) or events (e.g. graduation party) (custom 31.4.), 2) residence tax and insurance premium (custom 32.), 3) for usage of mini-bar drinks (custom 33.), 4) for usage of telephone, fax, printer (custom 34.), 5) for viewing special television programs or setting up the TV in the room (custom 35.) and 6) for usage of additional (extra) bed in a double room (custom 37.3.).

Guest is entitled to discounts on prices of hotel services: 1) for children aged two to seven years (custom 36.1.2.), 2) for certain categories of guests (e.g. celebrities, priests, students; until 1991 the hotelkeepers had lower prices ("discounts") for "domestic guests" (**Tadej, 1973, 175**), which is abolished due to discriminatory and non-market base.) (custom 36.3.), and 3) for usage of only one bed in a double room (custom 37.1.).

3. CONTRACTUAL LIABILITY OF THE GUEST FOR DAMAGE IN THE DIRECT HOTEL-KEEPER'S CONTRACT IN COMPARATIVE LAW

3.1. FRANCE

First works (**Toulouse, 1899, 8-9; Rul, 1906, 1-163**) that have regulated direct hotel-keeper's contract (*le contrat d'hotellerie*) are found in the French law. In these early works dating from the late 19th and early 20th century (**Charpentier, 1913, 233**) the guest's (*client*) obligations are not to be found at all; the same provisions can also not be found in the French Civil Code (*Code civil*). The provisions on the liability of the hotel guest in French law are found fragmentary in the rare legislative acts, business practices and other rare legal sources of the French law.

French legal theory emphasizes three main guest's obligations in the hotel-keeper's contract, for whose breaching is the guest liable for hotel-keeper's proprietary and non-proprietary damage (**Moret, 1973, 701 -702**): 1) the obligation of payment for various rendered services by the hotel-keeper (*paiement des différentes prestations fournies*), 2) the obligation to use the hotel facilities in a "good host" manner ("*en bon père de famille*") and 3) obligation to respect the fixed length of stay when booking (*respect de la durée du séjour fixée lors de la réservation*).

Contractual liability of the hotel guest for breaching the obligation to pay certain hotel services provided to him in the hotel facility represents, in the French law, the guest's contractual liability for hotel-keeper's proprietary damage, and also an offence according to the French Penal Code (*Code pénal*), for which the fine penalty and imprisonment is predicted (**Guyot, 2004, 156**).

Payment of services provided by hotel-keepers is reduced to two essential parts: a) payment of the main obligation shall be executed at once, usually the last day of the accommodation and b) payment of other accessory services (swimming pool, bar, telephone) shall be executed immediately after the use of these services or together with the principal payments on the day of departure, if the hotel-keeper agrees with such payment method.

In order to settle for non-payment of services, hotel-keeper has a right of retention, pledge and selling things (*droit de rétention et droit de faire vendre*), brought to the hotel by the guest (*les effets du client*). Special guest's obligation is to report on time the damage to his or hotel-keeper's property, made inside of the hotel building (e.g. fall of the inproper chandeliers in the hotel room destroyed

guest's mobile phone). Otherwise, the hotel-keeper will be not liable for guest's damage, and the guest will be liable for hotel-keeper's damage (**Magnin, Thaller & Percerou, 1937, 239-240**).

The guest's obligation to use hotel rooms as a "good host" includes: 1) use of the hotel room and care of the hotel-keeper's property with the attention of "good host"; French theory is still having second thoughts about the adequate expression of a "good guest" represented by the phrase "*en bon père de famille*" (**Fee & Nativel, 2008, 110-111)**, because of possible discriminatory (ethnic, racial, national, sexual) implication of this notion, 2) use of various contracted services (e.g. *internet caffe*), that hotel-keeper offers (e.g. if the pension service was not used, the guest will still have to pay the penalty for not using that service); such understandings became more evident in the verdict of the French Supreme Court (***Cass Civ, III, from 09.10.2001.***), whereby the guest is liable for hotel-keeper's damages due to the fact that furniture of some people was stolen by hotel-keeper's computer, in the way that the guest stole the hotel personnel's password, entered into the computer store (*virtual cybermarket*), sold the furniture and damaged people, 3) use of the hotel accommodation in the specified time, with liability for the damage caused by shorter stay in a hotel without hotel-keeper's guilt (e.g. because he is bored in the hotel), 4) abiding by the hotel's house rules and not interfering with other guests (*respecter le repos des autres clients*), 5) not bringing the pets without the consent of the hotel-keeper, 6) returning of the used room in good condition and submitting the keys at the reception, and 7) hotel room can be used only by the guest and people who have been reported by the guest.

Guest is liable for damages due to breaching the obligations of respecting the fix length of stay upon booking (**Lutz & Schmidt, 1993, 83-98**). If the guest decides to extend the stay in the hotel-keeper's facilities outside the agreed time, French law recognizes two options: 1) it can be done without guest's liability only if the hotel-keeper allows the extension (e.g. if the hotel-keeper has not already booked a room, and the guest pays the price for additional day), 2) the guest is strictly contractually liable (*la responsabilité contractuelle*) for any damage, proprietary and non-proprietary, if the hotel-keeper proves that he had suffered it (*qu'il a subi un préjudice*) (e.g. if the guest remains two days longer in the hotel and pays for this extension, he still has to reimburse the proprietary damage to the hotel-keeper, due to the fact that hotel-keeper had to refuse other guests, and remained "empty" for five days, as well as non-proprietary damages for breaching his reputation for cancellation of the reservation to "fair guests").

3.2. GERMANY

In the German law direct hotel-keeper's contract (*der Hotelvertrag*, *der Beherberungsvertrag*), is indirectly grounded in the provisions of the German Civil Code (*BGB*) from 1896; the German legislation, namely, does not recognize this contract at all. Provisions of the BGB and other sources of law, regarding the direct hotel-keeper's contract, are provisions of some other contracts.

In the German legal theory (**Canaris, 1970, 219-220**), the direct hotel-keeper's contract is referred to as a mixed contract (*Gemischter Vertrag*) (**Firentscher, 1997, 404-407**), based on business and customary practice, concepted by seven different contracts (**Gitter & Gernhuber, 1998, 176**) of private law, although there are different interpretations (**Born & Bastian, 2004, 44**) 1) the lease (rent) contract (*Mietvertrag*, paragraph 535. of the BGB), 2) the service contract (*Dienstvertrag*, paragraph 611. of the BGB), 3) the pension contract (*Pansionvertrag*), 4) the contract on sale (*Kaufvertrag*, paragraph 433. of the BGB), 5) the work (labor) contract (*Werkvertrag*, paragraph 631. of the BGB), 6) the contract for delivery (*Werklieferungsvertrag*) and 7) the deposit contract (*Verwahrungsvertrag*, paragraph 688. of the BGB).

Regarding such nature of a direct hotel-keeper's contract in the German theory, the guest's liability is essentially reduced to the fulfillment of the obligations of all contracts (by the contracting party which receives or uses certain services) from which the direct hotel-keeper's contract is made. In addition, German legal theory, however, distinguishes two most important obligations of the guest in direct hotel-keeper's contract, whose breach means the guest's liability for the hotel-keeper's proprietary and non-proprietary damage (**Dettmer & Hausmann, 2006, 165-166**): 1) the obligation to pay the price of services provided (*Zahlung*), 2) the obligation to use hotel premises with the special care and according to their current purpose (*Vertragsgemäßer Gebrauch*).

Liability of the guest for breaching the obligation to pay the price of hotel services includes few basic principles (**Dettmer & Hausmann, 2006, 165-166**): 1) the guest is obliged to pay for hotel services provided in the exact specific time (*zum vereinbarten Zeitpunkt*), otherwise he has to pay penalty interest; unless otherwise agreed, the guest will pay the price for service immediately after providing the services (§ 271. BGB); the guest will pay the agreed price to the hotel-keeper, and if such does not exist, the price stated in the hoteliers' price list (*Speisekarte*) while staying in the hotel, and if the guest leaves the hotel, he is liable for non-payment of the price (**Hänssler & Dahringer, 2007, 433-434**), 2) specificity of the German law is that only the guest, as a contractual partner, may pay the price of services (*verpflichtet is nur der Vertragspartner selbst*), 3) in the case of guest's non-payment for services, hotel-keeper has a lien on things brought to the hotel facility by the guest, as well as the right of public sale, if the guest does not pay the price after a certain time (*Pfandrecht des Behergerungswirts an eingebrachten Sachen des Gastes*); in the verdict of the German judiciary from 1902 (ACP 93, 131, 1902.) it was established that the hotel-keeper does not have the right to retain the guest or a person that accompanied him; in the second sentence from 1928 (RG, 82, 1928.) it was established that the hotel-keeper can take securities that are not owned by the guest, if they are brought into the hotel facility by the guest (**Bitter, 2006, 225**), 4) the guest has to pay reduced price services if, due to illness, death of a family member or storms (*Krankheit, Tod eines Angehörigen und Wetterverhältnissen)* he does not appear in the hotel, and 5) discounts on service prices can only be used by children and members of the hotel-keeper (*Kinder und Angehörige*).

The guest is liable for breaching the use of hotel rooms in accordance with the attention and purpose, out of which it is concluded that (**Dettmer & Hausmann, 2006, 165-166**): 1) the guest can use the room for accommodation only (*Nutzung nur zu Wohnzwecken*), and not for commercial purposes, 2) the guest is required to keep the hotel-keeper's property in the room and facility, and carefully manage the inventory, equipment and devices (*sorgfältiger Umgang mit dem Mobiliar und Ausstattung*), and also act with a particular care (*Obhutpflicht*, § 242 BGB) regarding the hotel-keeper's things (**Hänssler & Dahringer, 2007, 433-434**), 3) guest's behavior must not interfere with the hotel-keeper's business (*keine Störung der Betriebsabläufe*), 4) the guest can not cancel reservation within 7 days prior to the contract beginning (e.g. the guest whose conference was canceled a day before the start, can not cancel the reservation without paying the full price), 4) guest's behavior should not disturb other hotel guests (*keine Störung anderer Gäste*) and 5) the guest has to respect the agreed time of the accommodation in the hotel and check out at the exact agreed time (*Abreise zur vereinbarten Zeit*).

Rare authors (**Mikolasek & others, 2004, 276**) distinguish another special guest's liability for the breach of obligations in direct hotel-keeper's contract - the liability of the guest for the breach of the obligation to keep hotel-keeper's property (*Schadenshaftung*) in the hotel facility, but is, nevertheless, more popular the opinion that these obligations belong to the genesis of the obligations to use the hotel rooms in a certain way (with special attention).

3.3. ITALY

Italy has a long tradition of theoretical knowledge (**D'Amelio, 1911, 992-1000; Giovene, 1940, 656-659**) of the direct hotel-keeper's contract (*il contratto d'albergo*). The first reason for this is that even in old *Codice civile* from 1865, the substance of the relationship between guest and hotel-keeper was governed, regarding things brought by the guest (**De Rugero, 1917, 144**), and the second reason was that in Italian cities (like Venice, Rome and Naples), modern tourism came to life very early. In these early works, legal theory devoted very little attention to the liability of the guest (*cliente, albergato, viaggiatore*) to the hotel-keeper (*l'albergatore*); only the hotel-keeper's contractual liability to guests was recognized; largely dominated opinion was that the guests, except for the payment of services prices, do not have any liabilities in the hotel facility.

General understanding of the Italian legal theory today is that the direct hotel-keeper's contract is not a named type of contract (*il contratto tipo*), but a contract *sui generis* that represents set of business practices among tourist subjects. In almost all Italian legal literature, the direct hotel-keeper's contract is defined as a set of obligations of hotel-keeper to guest (**D'Ettore & Marasciulo, 2008, 47**), and very few sources of literature write about obligations of the guest; in those sources guest's obligations are reduced to the guest's obligation to pay the price for hotel services provided (**De Gennaro, 1947, 279-280**).

The development of the legal theory about the guest's obligations towards the hotel-keeper in a direct hotel-keeper’s contract took place in the last twenty years. Under the influence of French and UK law, the Italian literature has expanded the range of duties and guest's liabilities. According to all previously mentioned facts, the contemporary Italian legal theory recognizes four major guest's obligations **(Castoldi, 2003, 148)** in the direct hotel-keeper's contract, whose breach represents guest's contractual liability to the hotel-keeper's proprietary and non-proprietary damage: 1) the obligation of payment for the provided hotel services (*il pagamento dell prezzo*), 2) the obligation of respecting the time of arrival and departure to/from the hotel (*il rispetto dei tempi di arrivo e di partenza*), 3) the obligation of keeping safe from damage hotel premises put to disposal (*il rispetto dei locali messi a disposizione*) and 4) the obligation of prohibiting conduct of any activity in the hotel room (*il divieto di svolgere una qualsiasi attivitá nella camera d'albergo*).

The guest's liability for breaching the payment obligations for the provided services is the basic liability of the guest in the hotel-keeper's contract. Price for services provided is paid according to the contract with the hotel-keeper (*prezzo patuito*); if there is no such contract, then in accordance with a hotel-keeper's price list (*prezzo previsto dai listini*). Italy's recent theory (**Ricci, Jannelli & Migliaccio, 2007, 30-31**) specifically separates the obligation to pay for accommodation (*per l'uso dell' alloggio*), which is executed immediately upon the termination of the contract, and the payment for accessory services (*per tutte le prestazioni accessorie godute*), which must be executed immediately after using them. Due to non-payment of services, hotel-keeper has a right of retention on the guest's things up to 6 months (article 2954. of *Codice civile*). The hotel-keeper's right of retention (*il privilegio*) applies also on brought things that are property of third parties, if the guest has not informed the hotel-keeper that the same are not his property (**Ghironi, 1917, 25**).

The guest’s liability for breaching the obligations of respecting the time of arrival and departure to/from the hotel is important from the aspect of the guest's booking. Hotel-keeper, namely, accepts the guest's reservation in the time when the hotel room is free. Breaching the obligation of respecting the time represents the guest's liability for damage. According to Italian customs, time of arrival (*arrivo*), from when the room can be used, is 18 hours at the scheduled day, and the time of departure (*partenza*), from when the room should be freed, is between 12 and 14 hours on the last day of accommodation (**Castoldi, 2003, 148**).

The guest is liable for breaching the obligation to keep safe rooms placed at his disposal. Guest is obliged to keep safe with the attention of "good host" (*buon padrone, buon padre di famiglia*) and

according to its purpose (*secondo la destinazione*) hotel-keeper's property in the hotel room and common premises, put to disposal by the hotel-keeper. Regular usage of premises involves habitation (*abitazione*) and respect (*rispetto*) of the hotel-keeper's property (**Galli & Monti, 2006, 83**). Guest has no obligation to deposit valuables to the hotel-keeper for safekeeping (Italian Supreme Court, ***Cass. Civ. 28812. from 05.12.2008.***).

Special guest's liability regards breaching the obligation of prohibition of conducting any activity in the hotel-keeper's hotel room. This is primarily related to dangerous activities such as burning matches for cooking, ironing and use of dangerous equipment (*accendere fornelli per cucinare, stirare ed usare attrezzi pericolosi*). Guest can not use the room for commercial purposes as business premises, nor rent the room to third person, and can not receive the person not reported in the contract into the hotel room (**Castoldi, 2003, 148**).

3.4. UNITED KINGDOM

The tradition of understanding the contractual relationship (*hotel-keeper's contract*) between the hotelier (*hotel keeper*) and guest (*customer*) is much longer in the United Kingdom law than in the laws of European continental system (**The Scottish Law Reporter, 1881, 573; Scotland Court of Session & others, 1881, 802**). Institute of guest's contractual liability for hotel-keeper's damages is fragmented, characteristically for the UK law, among many sources of law (**Boella & Pannett, 1999, 1-22**): from the precedents of *common law* to legislative solutions. It is thought by UK theorists (**Hutton, Baker & Bradley, 2001, 63-64**) that the reservation contract (*the contract of booking*) precedes the direct hotel-keeper's contract, except when the guest is present in the hotel-keeper's facility.

UK law specifically distinguishes two types of relationships between guests and hotel-keepers in direct hotel-keeper's contract (**Boella & Pannett, 1999, 65-167**): 1) the relationship between the guest and the hotel-keeper as "occupier" of hotel premises, based on special laws: a) *Occupier's Liability Act* (*OLA*) from 1957 (amended in 1984), b) *Fire Precautions Act* (*FPA*) from 1971, c) *Environmental Protection Act* (*EPA*) from 1990 and the precedents of common law and 2) the relationship between the guest and hotel-keeper as the hotel owner (*proprietor*), based on the Hotel Proprietors Act (HPA) from 1956 and the precedents of common law.

To the UK lawyer it is theoretically inconceivable that the guest has obligations in the direct hotel-keeper's contract, other then the payment. UK legal theory, analyzing the hotel-keeper's liability (**Barth, 2008, 261-264**), explains that the guest has only rights (except for the price payment), and deriving from such understanding, *argumentum a contrario*, the conclusion can be drown that some hotel-keeper's rights are also in the essence the guest's obligations, and that the guest has different obligations to the hotel-keeper as occupier of premises then to the hotel-keeper as the hotel proprietor.

Given these facts, the UK law distinguishes two most important guest's obligations in direct hotel-keeper's contract, whose breach means guest's liability for (non)-proprietary hotel-keeper's damage (**Boella & Pannett, 1999, 166-167**): 1) obligation of guest's behavior in the hotel facility in accordance with good order and in a dignified way (*good order and decency*) and 2) the obligation to pay the price of the provided hotel services (*payment*).

Guest's liability for breaching the conduct in the hotel, according to good order and decency, means respecting house rules and not disturbing the hotel-keeper and other guests at the hotel. For this purpose, the hotel-keeper can break the contract with the guest and expel him from the facility, if the guest is aggressive, rude or has unsuitable behavior; in the case **Lamond vs. Richard (1897.)**, British Court of Appeal issued a precedent by which the hotel-keeper has the right to enter the guest's room at any time, if he suspects that the guest interferes with the hotel order and disturbs other guests; in the case of **Gill and Another vs. El Vino Co. Ltd. (1983.)**, the Court of Appeal

decided that guests (group of young colored people) did not violate the obligation of good and decent conduct, singing along with the bar's band, but the hotel-keeper was guilty for making them leave, violating in this way the *Race Relations Act* from 1976.

Liability of the guest for breaching the obligations to pay the price for use of services provided at the hotel is a fundamental contractual guest's liability. The same liability involves the obligation to pay the price for services provided on time and in full. Guest's departure without paying represents a breach of contract, but also a theft according to the meaning of Article 3 of the *Theft Act* from 1978; in the case of ***Ritz vs. McDavitt (1981)***, the court found that for breaching these obligations, the guest would have left the building, which in this particular case did not happen.

Due to suspicion of guest's purchasing power or moral, hotel-keeper has the right to charge the guest staying at the hotel in advance. This possibility stems from Article 1.3. HPA, according to which the hotel-keeper has an obligation to accept any guest who looks for accommodation and accordingly may discretely assess who is capable and willing to pay (*able and willing to pay*) the price of hotel services. In such situation hotel-keeper can accept a reasonable part of the price in advance or make the guest leave.

In case that the guest did not pay for services, hotel-keeper, under Article 2.2 of the HPA, reserves the right to retention and pledge of the guest's property (*lien*), till their public sale after a certain period; in the case ***Sunbolf vs. Alford (1838.)***, British court found that the hotel-keeper can not keep the guest for non-payment of the price; in the case of ***Robins vs. Gray (1895.)***, Court of Appeal found that the hotel-keeper can take a lien of any property that the guest brings into the hotel, regardless of whether it is owned by the guest; that precedent has been confirmed in the case of ***Berman & Natans vs. Weibye (1981.)***, in which the hotel-keeper kept the property of the guest's companion; in the case of **Marsh vs. Police Commissioner (1944.)**, Court of Appeal has established the principle *within the hospitium*, according to which hotel-keeper can keep the guest's things even if guest did not enter them into the hotel room, but it is enough that they are in the facility or additional premises; in the case of ***Mulliner vs. Florence (1878.)***, Court of Appeal found that the hotel-keeper can keep things of guest's wives, although they are not under contract with the hotel-keeper.

3.5. UNITED STATES OF AMERICA

Legal theory **(Prasad, 1902, 145)** of the USA has been interpreting the direct hotel-keeper's contract (*hotel (inn)keeper's contract*) as a series of relationships between hotel-keeper (*innkeeper*) and guest (*client*), in the system of special legislation (*statutory law*) and the precedents of common law (**Jefferies, 1983, 3-5**) for a long time. Special *Americans with Disabilities Act (ADA)* from 1992 includes a provision by which the hotel-keeper must move the guest who spreads infectious disease away from the hotel; therefore there is a special guest's obligation, who knows that he is suffering from infectious diseases, to leave the hotel.

The guest's liability for (non)-proprietary damage, in the American legal theory (**Goodwin & Gaston, 1992, 256-259**), is determined with the obligations that the guest has towards the hotel-keeper: 1) the obligation to pay for the hotel services, food and beverage (*services, food and drink*) and 2) the obligation to behave in a respectful, reasonable and dignified manner for the duration of the contract (*courteous, reasonably and dignified manner at all times*).

Guest's general's obligation is to pay on time for the service provided, for food and drinks used during the direct hotel-keeper's contract (**Goodwin & Gaston, 1992, 256**). If the guest breaches this obligation, he will be liable for damage; in case ***Morningstar vs. Lafayette Hotel Co. (1914.)***, the court in New York has founded that, in the situation where the guest refused to pay to the hotel-keeper for food and the hotel-keeper decided to withhold food services, the hotel-keeper has the right

not to serve the guest who has not paid the price of individual services. Similar situations are also in the cases ***Sawyer vs. Congress Square Hotel (1961.)*** and ***People vs. Lerhinan (1982.)***. Within this guest's obligation it is understood that the guest is liable for hotel-keeper's damage if he cancels the reservation too late, and the hotel-keeper does not rent the room to other guests; in the case of ***Opryland Hotel vs. Millbrook Distribution Services, Inc. (1999.)***, the court in Tennessey found that for the cancellation of booking for 200 congress guests, the organizer of the congress that made the reservation at the hotel, is liable for hotel-keeper's damage, amounting to the price that the hotel-keeper should have charged 200 guests; in the case of ***Princess Hotels International vs. Delaware State Bar Association (1998.)***, a court in Delaware decided that the Bar Association, that made the reservation for 3 days and left after 2 days, is liable for damage amounting to the price that hotel-keeper should have charged for this one day.

The guest's liability for the breach of the obligation of "good" behavior is determined through a variety of specific duties which are *de facto* examples from USA jurisprudence. The first duty is the obligation that the guest behaves at the hotel in a way that does not interfere with the hotel-keeper or other hotel guests (*conduct which endangered the safety of others*), whose breaching involves failure to comply with house rules, bringing animals into the hotel, the spread of infectious diseases, the use of excessive force or verbal abuse of the other guests; in the case ***Gore vs. Whitemore Hotel (1983.)***, a court in Montana decided that drunk guest who was threatening the other guests, is liable for each (non)-proprietary damage, for compromising the security of other guests, and that such behavior leads to loosing the hotel room and the possibility for the hotel-keeper to break the contract and expel him from the hotel; the court in Kentucky, in the case ***Raider vs. Dixie Inn (1923.)***, decided that a female guest violated the obligation of good behavior because she was a prostitute (nowadays it is almost certain that the courts would decide otherwise). Second guest's duty is to use reasonable care to the hotel facility in order for the fire not to brake out (*not to burn down a hotel room*); in the case ***Firemans's Fund vs. Knobbe (1977.)***, the court in Nevada said that the fact that the guests left cigarettes butts in the hotel room is not sufficient for their liability for fire, because it is not a serious negligence for which they would be liable; moreover, hotel-keeper had 18 keys of the room, so it is possible that the member of his staff left additional butt or lit a cigarette (**Goodwin, 1987, 343-344**). The third guest's duty is prohibition of theft of the hotel-keeper's property from the hotel (*not to steal from the inn*), which mainly refers to soaps, towels and pillows. The fourth guest's duty is (**Cournoyer and others, 2004, 249**) not to use a hotel room for commercial purposes (*such as office space*); in the case ***Cramer vs. Tarr (1958.)***, a court in Maine has decided, that despite the fact that the guest was using the room for commercial purposes (for what he would have been liable if the hotel-keeper had proved the damage), a hotel-keeper is liable for the theft of his goods. Fifth guest's duty is to return the guest's room in the clean state, in the way he had received it; the rule is stated in the case ***Nelson vs. Ritz Carlton (1933.)***, in which, in contrary, the hotel-keeper provided guests with dirty rooms. Guest's sixth duty is to hand over the keys to the rooms on time and leave the hotel after the termination of the contract (**Sherry, 1993, 147**); contract is terminated even if the guest does not do that, but then he must compensate the hotel-keeper's damage due to extended stay (*overstaying*).

3.6. European Union

In the EU the regulation of direct hotel-keeper's contract, according to the principle of subsidiarity (Article 5 of the EC Treaty), is left to the legislations of the member states. In that sense is the European law on the guest's contractual liability for hotel-keeper's damage the law of individual member states. There is no source of law that would explicitly regulate the guest's liability for damage in direct hotel-keeper's contract on the European Union level. However, two sources indirectly regulate some aspects of the guest's liability for damage due to breach of direct hotel-keeper's contract: 1) Principles of European Contract Law (PECL) and 2) Principles of European law on Service Contracts (PEL SC).

In 1995, the European Commission had formed a working group (body) of prominent experts, under the guidance of Professor Ole Lando, which produced "*Principles of European Contract Law*". The interpretation of the need for these principles was the consolidation of fast development of the European law volume, regulating the growing number of special agreements (**Lando & Bale, 2003, 434-438**). Principles of European Contract Law (*Lando's Principles*), until the entry of the new European legal order into force, had only the power of being drafts to national legislations and recommendations to member states. What is especially important for the guest's contractual liability for damage is that the principles do not leave any doubts; creditors (hotel-keepers) are given compensation for proprietary and non-proprietary damage. In the article 9:501 of Lando's principles, under the title "Right to damages", it is stated that: "(1) *The aggrieved party is entitled to damages for loss caused by the other party's non-performance which is not excused of debtor's liability (under Article 8:108.).* (2) *The loss for which damage is recoverable includes: (a) non-pecuniary loss; and (b) future loss which is reasonably likely to occur*". European law, indirectly, determines that the guest is liable for hotel-keeper's non-proprietary damage.

Few years ago (2006/2007), Expert Group of the European Commission (**Barendrecht, 2007, 599-614**) created the Draft "Principles of European Law on Service Contracts", which in Article 4.113 regulates only the hotelier's liability (*Liability of the Hotel-Keeper*) for guest's damage (the provisions are mainly equivalent to the Paris Convention from 1962). However, in paragraph 7 of mentioned article, it is pointed out that the guest's obligation is to report any damage that happened to him during accommodation, usage of food, beverages and other hotel-keeper's services; otherwise is the guest itself responsible for that damage.

3.7. International law

In the field of international law there is no unified legal source that would edit guest's liability for damage due to breach of direct hotel-keeper's contract. The reasons for this are different solutions of individual countries, difference in basic understanding of guest's contractual liability and arrangement of the guest's contractual liability for damage in the two legal systems: Anglo-American, where the institute is covered by numerous precedents and special laws, and European Continental, based mainly on the business practices and very few legal solutions of individual countries in that circle.

The problem of creating an international convention on the unification of decisions on direct hotel-keeper's contract began by UNIDROIT in 1977 at the meeting in Rome, and in 1979 the first text of the draft convention on the hotel-keeper's contract (**UNIDROIT, 1979**) was created. The draft was discussed until 1986, when the idea of making the International Convention on the direct hotel-keeper's contract ceased to exist due to the impossibility of formulating clauses that would satisfy all the countries in the same way.

Draft Convention on the hotel-keeper's contract regulated all relevant issues regulated by the direct hotel-keeper's contract: a) the field of contract application (Articles 1 and 2), b) the term of the contract (Article 3), c) the duration of the contract (article h.), d) the hotel-keeper's liability (Article 5 and Articles 11-15) and the most interesting e) the liability of the guest - the consumer (Article 6) and payment of the contract (Articles 9 and 10).

Liability of the guest (consumer) has been regulated in details in Article 6 of the draft Convention. Guest's liability was limited to the amount that represents 50% of the cost of the contract for period of 7 days. This guest's liability can not be limited or reduced previously using the contract. Hotel-keeper must do everything in order for the damage to be as small as possible (Article 5. paragraph 2.). Regarding the guest's obligation for contract payment, in the articles 9 and 10 of the draft Convention it was founded that (**Evans, 1988, 473-475**): a) hotel-keeper can ask in advance certain amount of money as a guarantee of the financial solvency of the guest, b) hotel-keeper must previously notify the guest that he does not take checks as a payment method, and c) in case of not

paying the service price, the hotel-keeper has the right of retention and lien to guest's property, as well as public sale of the property for settlement of his claims from the guest.

4. CONCLUSION

Former conception of contract law that the guest does not bear contractual liability for the hotel-keeper's damage has long been obsolete. Recent trends in the Croatian and comparative law recognizes the liability of the guest for damage in a direct hotel services' contract; moreover, the guest's liability will include proprietary and non-proprietary character of the hotel-keeper's damage. Contractual liability of the guest is defined by his contractual obligations towards the hotel-keeper. In the Croatian and comparative law, these often include paying hotel the services and good conduct in the hotel premises.

The most common reasons for guest's contractual liability for non-proprietary damage of the hotel-keeper are: 1) violation of the hotel-keeper's reputation (e.g., coming in 5-star hotel in the dirty clothes) and 2) various types of anxiety, frustration or discomfort of the hotel-keeper (e.g., drunken guests disturb the peace of the hotel). In tourism industry such solutions will strengthen the position and the reputation of hotel-keeper, as well as enforce the protection of his property.

In the Croatian law, the liability of the guest according to the hotel services contract is derived from the provisions of Croatian Special procedures for the catering industry and the ZOO. Until the entry into force of the new ZOO (01.01.2006.), the guest's liability was limited only to property damage; the guest today, according to the article 346. paragraph 1 of the ZOO, is liable to the hotel-keeper also for the non-proprietary damage for breaching the contract, regardless the legal nature of the hotel-keeper. Croatian legal theory emphasizes main liabilities of the guest: guest's behavior as a good guest and the obligation to pay the price of services provided.

Provisions on the liability of the guest in French law are found in fragments in the rare laws and business practices of the French law. In accordance with new interpretations of standards from Article 1149 of the *Code Civil*, the guest will be liable for proprietary and non-proprietary damage of the hotel-keeper. French legal theory emphasizes special obligation of the guest in relation to other laws - respect of a fixed length of stay upon booking (*respect de la durée du séjour fixée lors de la réservation*).

In German legal theory, the direct hotel-keeper's contract is referred to as a mixed contract (*Gemischter Vertrag*), based on business practice and composed of seven contracts of private law (the contracts of lease (rent), services, food and beverage, sales, labor, delivery and deposit). Therefore, the liability of the guest is drawn to fulfillment of the service recipient’s liabilities in all contracts of which the direct hotel-keeper's contract is composed. In addition, German legal theory recognizes also classical guest's liabilities: paying the price for services provided (*Zahlung*), and use of hotel facilities according to their current purpose (*Vertragsgemäßer Gebrauch*).

Major understanding of the Italian legal theory is that the direct hotel-keeper's contract does not represent a specific type of a contracts (*il contratto tipo)*, but rather a contract *sui generis*, which is a set of business practices among tourist subjects. However, in almost all Italian legal literature this contract is defined as a set of hotel-keeper's obligations to the guest, and very few literature sources define the obligations of the guest; according to them the guest's liabilities are paying the price for services provided to the hotel-keeper. Under the strong influence of other comparative laws, Italian theory expanded the range of the guest's contractual liabilities in the direct hotel-keeper's contract and added respecting the time of arrival and departure from the hotel and the prohibition of

performing any activity in the hotel room (*il divieto di svolgere una qualsiasi attivitá nella camera d'albergo*) to traditional guest's liabilities of paying and good conducting.

The UK law distinguishes two most important guest's liabilities in direct hotel-keeper's contract, the conduct in the hotel facilities (*good order and decency*) and payment of price for using the hotel services (*payment*), through the relationship between the guest and the hotel-keeper as provider (*occupier of premises*) of premises (OLA' 1957, FPA' 1971, EPA' 1990 and common law precedents) and as owner (*proprietor*) of the hotel (HPA' 1956 and common law precedents).

The USA law recognizes the contractual liability of the guest for hotel-keeper's damage in the direct hotel-keeper's contract through several precedents. In addition to traditional guest's liabilities (paying the price and behavior in the hotel), American legal theory recognizes also special liability of the guest for violation of the obligation of leaving the hotel in case of illness from infectious diseases, according to the special law, the Americans with Disabilities Act (ADA) dating from 1992.

The European Union recognizes the guest's contractual liability according to the principle of subsidiarity. The institute of the contractual liability for non-proprietary damage (Article 9:501) enters into the European law through the Lando principles (PECL), which determines the relationship of the guest to the hotel-keeper. Draft principles of European law on service contracts (PEL SC), Article 4.113. paragraph 7 emphasizes that the obligation of the guest is to report any damage that happened to him during accommodation, meals, beverages and other hotel-keeper's services, otherwise is the guest itself liable for that damage.

In international law, the draft of the UNIDROIT Convention on hotel-keeper's contract regulates the contractual liability of the guest (consumer) through a limitation of the liability to the amount of up to 50% of the contract amount for period of 7 days, and through three postulates: a) a hotel-keeper may require a certain amount of advance payment as a guarantee for the guest's ability to pay, b) hotel-keeper must notify the guest if he does not receive checks as payment method, and c) hotel-keeper has the right of retention and collateral, as well as public sale of the guest's property for settlement of accounts receivable.

REFERENCES

1. Barendrecht, M., (2007), *Principles of European Law, Service Contracts (PEL SC)*, (München, Sellier. European Law Publisher).
2. Barth, S., (2008), *Hospitality Law: Managing Legal Issues in the Hospitality Industry*, (New Jersey, Toronto, John Wiley & Sons, Inc.).
3. Bitter, G., (2006), *Rechtsträgerschaft für fremde Rechnung - Aussenrecht der Verwaltungstreuhand*, (Bonn, Mohr Siebeck).
4. Boella, J. & Pannett, A., (1999), *Principles of hospitality law*, 2nd edition, (Brighton, London, Cengage Learning EMEA).
5. Bona, M. & Monateri, G., (2004), *Il nuovo danno non patrimoniale*, (Milano, IPSOA).
6. Born, K. & Bastian, H., (2004), *Der integrierte Touristikkonzern*, (München, Oldenbourg Wissenschaftsverlag).
7. Canaris, C.W., (1970), *Die Vertrauenshaftung im deutschen Privatrecht*, (Augsburg, Jus).
8. Castoldi, G., (2003), *L'esame scritto e orale di abilitazione alla professione di accompagnatore turistico: manuale di preparazione*, (Milano, HOEPLI Editore).
9. Charpentier, E., (1913), *La profession d'hôtelier: étude juridique du contrat d'hôtellerie et de quelques questions économiques*, (Paris, G.Oudin).
10. Cournoyer, N.G., Marshall, A.G. & Morris, K.L., (2004), *Hotel, Restaurant ans Travel Law*, 6th Edition, (New York, Thomson - Delmar Learning).
11. D'Amelio, M., (1911), *Sulla responsabilitá degli albergatori pei furti ai viaggiatori*, (Milano, RDC).
12. De Gennaro, G., (1947): *Del deposito in albergo*, (Firenze, CCC).
13. De Rugero, R., (1917), *La riforma del Codice Civile circa la responsabilitá degli albergatori*, (Napoli, Studi giuridici in onore di V.Simoncelli).
14. Dettmer, D. & Hausmann, T., (2006), *Recht in Gastwerbe und Touristik*, (Hamburg, Verlag Handwerk und Technik).
15. D'Ettore, F.M. & Marasciulo, D., (2008), *Il contratto d'albergo - profili civilistici*, (Milano, Giuffre Editore).
16. Evans, M., (1988), „Some Reflections on the Draft UNIDROIT Convention on the Hotelkeeper's Contract“, *UNIDROIT: Background to the Draft UNIDROIT Convention on the Hotelkeeper's Contract, Special Publication*, 1 (1).
17. Fée, D. & Nativel, C., (2008), *Crises et politiques du logement en France et au Royaume-Uni*, (Paris, Presses Sorbonne Nouvelle).
18. Firentscher, W., (1997), *Schuldrecht*, 9edition, (Berlin, Gruyter Lehrbuch).
19. Galli, A. & Monti, B., (2006), *Il danno da vacanza rovinata. La gestione del contenzioso nelle agenzie di viaggio*, (Milano, Edizioni FAG Srl).
20. Gavella, N., (2000), *Osobna prava*, I dio, (Zagreb, Pravni fakultet u Zagrebu).
21. Ghironi, G.P., (1917), *Trattato dei privilegi, delle ipoteche e del pegno*, (Torino, Bocca).
22. Giovene, A., (1940), *Il contratto d'albergo*, (Milano, RDC).
23. Gitter, W. & Gernhuber, J., (1988), *Gebrauchüberlassungverträge*, (Tübingen, Artibus Ingenius).
24. Goodwin, J.R., (1987), *Hotel Law, Principles and Cases*, (Las Vegas, Nevada & Columbus, Ohio, Publishing Horizons, Inc.).
25. Goodwin, J.R. & Gaston, J.R., (1992), *Hotel & Hospitality Law - Principles and Cases*, 4th edition, (Scottsdale, Arizona, 1992, GS Publishers).
26. Gorenc, V., (1995), „Nove hrvatske posebne uzance u ugostiteljstvu“, *Acta turistica*, 7 (1).
27. Gorenc, V. i Šmid, V., (1999), *Poslovno pravo u ugostiteljstvu i turizmu*, (Zagreb, Školska knjiga).

28. Gorenc, V., (2002), „Izravni ugovor o hotelskim uslugama“, *Pravo i porezi*, 20 (6).
29. Gorenc, V., (1996), *Posebne uzance u ugostiteljstvu s komentarom*, (Zagreb, RRIF),
30. Gorenc, V., (1983), „Ugovori o hotelskim uslugama“, *Ugostiteljstvo i turizam*, 12 (1).
31. Guyot, C., (2004), *Le droit du tourisme: Régime actuel et développements en droits belge et européen*, (Bruxelles, De Boeck Université, Larcier).
32. Hänssler, K.H. & Dahringer, B., (2007), *Management in der Hotellerie und Gastronomie: Betriebswirtschaftliche Grundlagen*, (München, Oldenbourg Wissenschaftsverlag).
33. Hutton, J., Baker, S. & Bradley, P., (2001), *Principles of Hotel Front Office Operations*, (Brighton, London, Cengage Learning EMEA).
34. Jefferies, J.P., (1995), *Hospitality Law*, (East Lansing, Michigan, Educational Institute of the AH&MA).
35. Jefferies, J.P., (1983), *Understanding Hotel/Motel Law*, (East Lansing, Michigan, Educational Institute of the AH&MA).
36. Klarić, P., (1995), „Nematerijalna šteta pravne osobe“, *Zbornik Pravnog Fakulteta u Zagrebu*, 45 (4-5).
37. Klarić, P., (2006), „Odgovornost za neimovinsku štetu zbog povrede ugovora o organiziranju putovanja“, *Zbornik Pravnog Fakulteta u Zagrebu*, 56 (7, posebni broj).
38. Lando, O. & Beale, H., (2003), *Principles od European Contract Law Part I and II*, (Bruxelles, Den Haag, Biggleswade, Kluwer Law International).
39. Larenz, K., (1976), *Lehrbuch des Schuldrechts*, I, (München, Beck).
40. Lutz, K.B. & Schmidt, C.J., (1993), *Tourisme et Hotellerie: Lectures et Vocabulaire en Français*, (Columbus, Ohio & Montreal, Canada, McGraw-Hill Professional).
41. Magnin, P., Thaller, E.E. & Percerou, J., (1937), *Annales de droit commercial et industriel français, étranger et international*, (Paris, A. Rousseau).
42. Mikolasek, O., Müller, M., Winter, H., Rachfahl, G. & Pratsch. E, (2004), *Das große Lexikon der Hotellerie und Gastronomie*, 4rte Edition (Hamburg, Behr's Verlag Deutschland).
43. Moret, L., (1973), *Le contrat d'hôtellerie*, (Paris, RDC).
44. Nass, G., (1962), *Person, Personlichkeit und iuristiche Person*, (Berlin, Duncker & Humbolt).
45. Prasad, B., (1902), *Law of Landlord and Tenant, and of Hotel-keeper and Guest*, (Harvard, Cambridge, Massachusetts, Punjab publishing & stationery company).
46. Radolović, A., (2005), „Naknada neimovinske štete zbog povrede ugovora“, *Zbornik radova: Naknada štete u primjeni novog Zakona o obveznim odnosima*, posebno izdanje, Narodne Novine, 1 (1).
47. Ricci, P., Jannelli, R. & Migliaccio, G., (2007), *Profili gestionali e rivelazioni contabili delle imprese alberghiere*, (Roma, Franco Angeli Edizioni).
48. Rul, B., (1906), *Le contrat d'hotellerie ou rapports juridiques entre l'hotelier et le voyageur*, (Paris, V.Giard & E. Brière).
49. Scotland Court of Session, Scotland High Court of Justiciary, Great Britain, Parliament, House of Lords, (1881), *Cases Decided in the Court of Session, Court of Justiciary, and House of Lords*, (London, T. & T. Clark).
50. Sherry, J.E.H., (1993), *The Laws of Inkeepers*, 3rd edition, (Ithaca, New York, Cornell University Press).
51. Šmid, V., (1984), „Ugovor o hotelskim uslugama“, *Ugostiteljstvo i turizam*, 12 (6).
52. Tadej, K., (1973), *Cijene hotelskih usluga kao instrument turističke politike u Jugoslaviji*, magistarski rad, (Zagreb, Ekonomski Fakultet 1973/12).
53. The Scottish Law Reporter, (1881), *Cases decided in the Court of Session, Court of Justiciary, Court of Teinds, and House of Lords*, (Glasgow, W.& R.A. Veitch).
54. Toulouse, J.L., (1899), *Du contrat d'hôtellerie: privilège et responsabilité de l'hôtelier (lois du 31 mars 1896 et du 18 avril 1889)*, (Paris, Lagarde et Sebille).

55. UNIDROIT, (1979), *Project sur le convention de contrat de hotellerie*, (Roma, UNIDROIT).

UGOVORNA ODGOVORNOST GOSTA ZA ŠTETU U IZRAVNOM UGOVORU O HOTELSKIM USLUGAMA

Sažetak

Rad analizira novije tendencije hrvatskog i usporednog prava kojima se spoznaje ugovorna odgovornost gosta za imovinsku i neimovinsku štetu ugostitelja. Kroz analizu istog instituta u hrvatskom i usporednom pravu, vidljivo je da ugovornu odgovornost gosta, povrh posebnih obveza iz pojedinih pravnih sustava, determiniraju povrede dviju glavnih obveza gosta: plaćanja cijene usluga i ponašanja u hotelskom objektu u skladu s namjenom istog. Ugovorna odgovornost gosta za imovinsku i neimovinsku štetu ojačava ugovorni položaj i ugled ugostitelja, te zaštitu njegove imovine. Gost će odgovarati ugostitelju za imovinsku štetu, što uključuje svaku običnu štetu i izmaklu dobit ugostitelja. Najčešći razlozi ugovorne odgovornosti gosta za neimovinsku štetu ugostitelja jesu: 1) povreda ugleda ugostitelja i 2) razni tipovi nemira, nezadovoljstva ili nelagode ugostitelja.

***Ključne riječi**: ugovorna odgovornost, imovinska i neimovinska šteta, izravni ugovor o hotelskim uslugama, odgovornost gosta, usporedno pravo.*

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UDK: 658.14/.15:368

Review
Pregledni rad

MODEL OF FINANCIAL AFFORDABILITY OF INSURANCE HOLDER IN THE CONTEXT OF INSURANCE COMPANY RISK MANAGEMENT

ABSTRACT

This paper analyses the manner of evaluation of insurance holder affordability conducted by an insurance company. A well done financial analysis and appropriate methodology applied enable our greater efficiency when making strategic decisions by selecting business partners, production programs, placing funds into investment programs with an aim of preserving and increasing company value, protecting interest of shareholders, insureds and other insurance creditors.

Adequate macroeconomic methods are applied against a corresponding software application, the analysis and synthesis of which lead to conclusions verifying the set hypothesis that there is at least one model satisfying the required and sufficient condition to reduce the level of risk of an insurance company by determining the financial standing of an insured. On a sample of data corresponding results are obtained and commented on in the conclusion of this paper.

Key words: *insurance, risk management, effectiveness, financial standing of insured.*
JEL classification : *D81; G22; L15.*

1. INTRODUCTION

Modeling has a significant role in business processes management and enhancing their quality. Special metrics are developed in all business segments (Mendling, 2008).

Effectiveness and efficiency are a subject of business, thus being an area of interest of insurance companies as well (George, 2002) which cannot survive without expert teams and leaders who are to ensure efficiency of operations. Complex companies understand that they are a part of a globalization process bringing new views on economics and triggering new motivational factors of labor.

Insurance companies conduct specific operations relying on risk management and use of modern actuarial theories, dynamic and complex models with components of non-deterministic turbulences. The application of a diverse and multidisciplinary approach is a condition which must be satisfied by an insurance company to stay in the domain of stability in conducting business. (Asprey and Machietto, 2003). Due to the fact that in every business organization, therefore in insurance business as well, there are structural errors, there is a need of conducting a research in technical, legal and insurance aspects in order to minimize these errors. That is aslo significant in terms of inclusion of insurance companies in the e-business enviroment and knowledge economy.

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The aim of the paper is to justify the concept of development of quality management effectiveness in an insurance company by analysing the criteria of financial standing of an insured, as well as by making a mathematical model through which it will be easier to reach the desired results. The research should show the reasonableness of introducting a new approach in operations of insurance companies in order to enhance efficienecy and make decisions based on critically selected information. The model applied in this paper offers a precise calculation of the financial standing of an insured by applying the Altman Z method which is rarely used in the practice of insurance companies, although we are of opinion it yields good results, and for that reason it is recommended.

This paper offers one possible solution in managing insurance company risks, ensuring preservation and enhancing value of a company, protection of interests of shareholders, insureds, insurance beneficiaries, injured third parties and other creditors of insurance companies. In its operations, the company is exposed to diverse uncertainty factors, arising from its inability to precisely determine the probability of occurrence and outcome of potential events. Its management is responsible for the assessment of the level of uncertainty the compay is willing to accept in order to attain basic risk managament objectives as efficiently as possible. For that purpose, an insurance company must draw up a methodology as a framework for adopting individual policies and procedures for managing various types of risks to which it is exposed in conducting its operations. The decision-making framework contains assurance that the company operates on the principles of: a) safety, b) securing and preserving company values and interests of everyone in the insurance chain and c) profitability. Its management is required to identify all significant risks, consider all relevant information from the internal and external environment and to adjust all activities of the company to the changed circumstances.

Basic principles observed by the company in order to preserve value on the long run are: investment in human resources, setting up an efficient and effective system of internal controls and defining its entrepreneurial strategy, predominantly oriented to insurance products quality, improvement of company capacities, satisfaction and trust of insureds and the public against the achievement of realistic profitable goals.

The methodology and framework of company risk management define a philosophy of insurance company governance which is to maintain an optimum balance between its growth strategy and profit targets on the one, and risks and efficient utilization of resources on the other hand. Good risk management improves: human resources, capital, brand, knowledge, experience, management skills and capabilities, as well as activities relating to identifying market demands.

2. RESEARCH PROBLEM AND HYPOTHESES

The research conducted in this paper proved that an insurance company is a good model for following up the efficiency of risk management in it. Increase in premium income is a consequence of efficiency accompanied by a growth in the number of insureds, having as a result a continuous growth in the number of employees of the insurance company involved in insurance and accompanying activities.

The application of the model under review on the selected insurance company (»DDOR Novi Sad«) enables us to give a hypothesis by which we define and through a software application create a model for making decisions enabling efficient and effective reduction of a risk to which a potential insured is exposed.

3. MODEL DESCRIPTION

3.1 METHODOLOGICAL NOTES ON THE MODEL

The model under review is realised under conditions of transition and change of ownership relations by capital increase or setting up mixed ownership companies. Governance, integrations, divisions, cooperatives, inward and outward investments, distribution of salaries and allocation of income, consumption, business policy, business finances and accounts have been changed by finding a company/insured through various systemic changes. This issue was approached in our company from a scientific and practical point of view, seeking methods and tools by which operating results of a company being an insured or wishing to become an insured have been analysed. The modern approach requires integration of organized knowledge based on rules, procedures and norms of doing business and on best practice. Our model is a repository of knowldedge being a basis for development and management of business processes in the future. The idea is to maintain, through development of capabilities to learn faster, the competitive advantage for which all in the company are interested.

A wrongly selected methodology and ill conducted analysis can result in a number of adverse consequences: a) wrong strategic and current operating decisions; b) ill selection of business partners; c) wrong selection of a production program/service; d) failed investment; e) misplaced funds; f) ill judgment as to significance of elements needed for evaluation of the financial standing of the company being the subject of insurance and a number of other deficiences leading to negative results.

In the evaluation of the financial standing of an insured, a concept and structure of DSS (Decision Support System) is used, based on the implementation of the model base, database and dialogue subsystem (Table 1)

Table 1
DSS Concept and Structure in the Evaluation of Insured's Financial Standing

M_1 – Data on insured	M_2 - Balance sheet	M_3 – Income statement
M_4 – Coverage calculation	M5 – Ratio analysis	M 6 – Balance analysis by net working funds
M_7 – Cash-flow analysis	M_8 – Funds-flow analysis	M_9 – Altman Z Method

Source: own research

By introducing an automated office operating, electronic mail and electronic conference tools were created (conference via computer), replacing group meetings in one place. The true sense of using these tools is achieved by integrating them into a DSS concept, i. e. its inclusion in the concept of automated business activities (Balaban and Ristić, 1998). The result of such integration is a GDSS (*Group Decision Support System*). In the GDSS analysis, a new component in the form of communication procedures is met. While a DSS interactive system is based on computer assisted resolving of poorly structured problems, by this analogy, a GDSS is a computer-based interactive system, assisting in resolivng *unstructrued* problems of a group of people who make decisions while working together (as a group). GDSS software components contain a) a database, b) a model base, c) specialized applicative programs for group use (graphic and statistical part for operational research), realized as a GDSS component enabling efficient use of technology by group members and d) flexible user-friendly interfaces. Group members, together with a so called group intermediary or a mediator, represent a group component of the GDSS, with the mediator's role pretty much depending on the specific features of a particular software, problem or user.

The idea of using a GDSS in this paper is applied in identifying the financial standing of an insured, and primarily in a modern comprehension of the financial standing of a business entity, and therefore our model should confirm the necessity of a multidimensional approach in this context. A modern comprehension of the financial standing of an insured is based on a partial examination of its financial capacity presented for a given period in balance sheet, income statement, cash-flow plan and asset-flow statements (derivative

financial statements). Financial standing is a dynamic category representing a group of dynamic events which, at one point, reflect a current reaction of a continuous business and financial standing of a business entity. Instead of a statistical, it is necessary to give preference to a dynamic approach in its evaluation, A dynamic approach, beside the examination of the financial capacity of an insured, also implies analysis of cost-effectiveness flows for a given accounting period.

Operating models presented in this paper (M1, M2 ... M9) give support to management in making decisions. Each of the requirements or tasks should be assigned a corresponding model which will use internal data, and this type of management defines the content of models as well. A possibility of inclusion, derivation, altering, combining and controlling the model is an essential feature of a DSS which makes it significantly different from traditional management information systems. Models included in the base could be classified by categories: for managerial purposes, according to a criterion of selected technologies (e.g. models of building blocks), according to a criterion of functional applicatbility (financial models, marketing models, accounting models etc.).

The user of models under review is a person (insurance agents, financial analysts and risk assessors) facing problems or decisions supported by the designed DSS. The manner of making a final decision depends on the functional hierarchy of a user of the offered solutions and its capabilities. A final decision on the financial standing of an insured is made by risk management managers. Managing company risks is not one-time performing an isolated activity, but a continuous carrying out of a number of activities, integrated in business activities of a company and activities of governing and managing the company. Company committment to this framework of risk assessment (use of the model under review), incorporating presentation of a financial analysis and structure of an insured, gives a reasonable assurance that company objectives will be attained.

3.2 MODEL STRUCTURE

Adequately pursued policy of an insurance company implies a control over premium collection and funds investment in terms of the amount, period of investment, riskiness, maturity and the amount of expected yield. In accordance with the conducted research, we give specific examples of assessment of the financial standing of an insured, processed in the insurance company information system. By analysing the financial standing, we control a) those interested in obtaining an insurance policy (insureds) and b) insurance policy grantors (insurance companies) whose interest and objective is to perceive all risks and circumstances prior to making a decision on insurance policy issuance. Analyses made so far were based on tracking indicators, balance sheet and income statement analysis and they depended to a large extent on intuition, experience and resourcefulness of a specific manager. In this paper, by using the Altman Z method, we came to a mathematical model presenting the financial standing of a client (insured) in the form of matrices. By integrating this model in a general decision-making model, we aslo included in it the decision-making mathematical model with its previously mentioned components.

It is known that E. Altman published in 1968 a process of deriving a formula of the so called Z score (Ćirović, 1970 and 1976). The method relates to predicting bankruptcy as a multivariant formula for measuring financial health of any company, being a powerful diagnostic tool for forecasting a probability whether a company will after certain time span (predetermined, e.g. 2 years) enter a period of bankruptcy. Our model is proposed in such a way that the period of bankruptcy risk determining is not measured for the „year“ time horizon, but for the period „immediately“. All these subsystems are realized by some of the software tools verified on the market.

By probing the needs of a decision-making model in the case of determining a financial standing , four entities were found to exist and presented in detail in

Table 2

Entity 1: ***Register of insurance holders***	**Entity 2:** ***Insured's balance sheet records***	**Entity 3:** ***Insured's income statement records***	**Entity 4:** ***Processing parameters records***
▫ code ▫ name ▫ head office ▫ address ▫ telephone ▫ fax ▫ E-mail address ▫ contact person ▫ giro account	▫ code ▫ date of drawing up ▫ unpaid subscribed capital ▫ non-current assets ▫ current assets ▫ short-term receivables ▫ short-term financial investments ▫ prepaid expenses ▫ loss ▫ non-operating assets ▫ equity ▫ long-term provisions ▫ long-term liabilities ▫ short-term liabilities	▫ code ▫ from (date) ▫ to (date) ▫ operating income ▫ tax on income and income benefits ▫ contributions for income and benefits ▫ costs and taxes ▫ contribution expenses ▫ financial income ▫ interest expenses ▫ non-operating and extraordinary income ▫ revaluated income ▫ net result of insured	▫ code of evaluator ▫ name, family name of financial standing evaluator ▫ date of determining financial standing ▫ ordering party of the financial standing report (determined according to detailed needs of a decision-making model user)

Source: own reserach

By software realization of the model dialogues, data base structure and applicative software for determining financial standing of an insured are generated. Dialogue enables a solution user to navigate through the software solution in order to perform a quality exploitation of GDSS idea. There are data-comprising menues (input, alteration, deletion, review and/or printing) from the insureds register, for balance-sheet data comprising, for income-statement data comprising and a special dialogue system for insured's financial standing evaluation (Pejić, Radmanović, Stanišić, 1991).

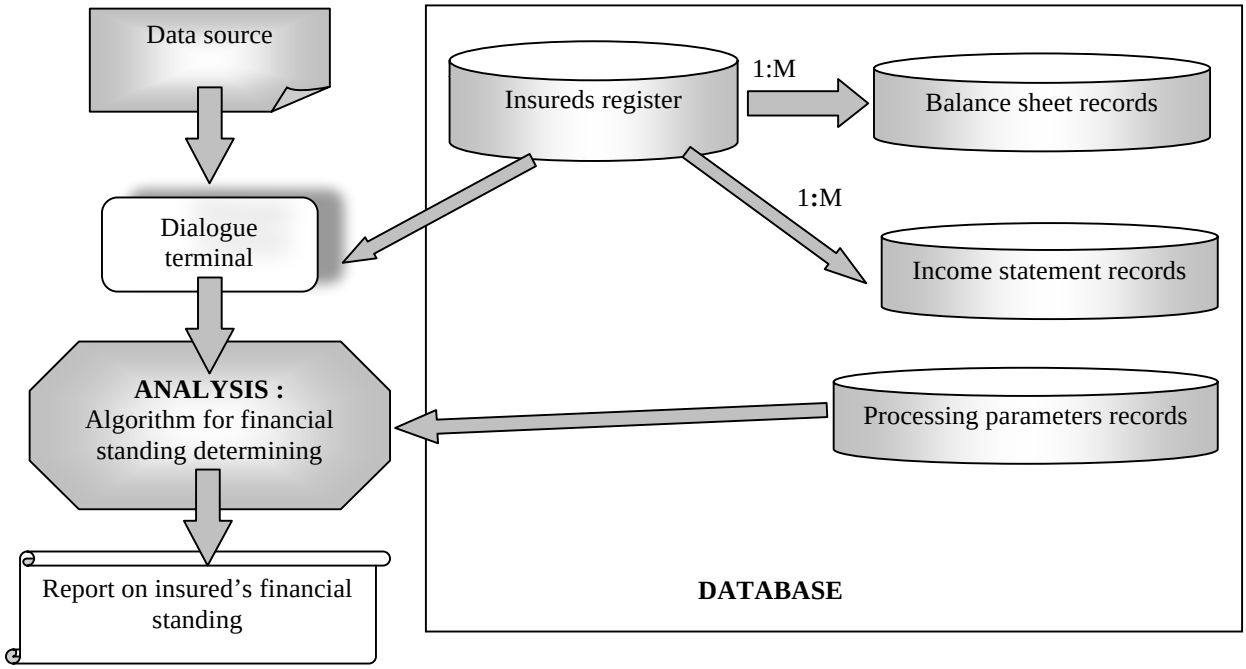
Note: *firstly*, each entity in the E-R (Entity-Relationship) model has at least one attribute

being a key to data access. With entity 1, *insurance holder code* is a unique key, whereas with entities 2 and 3 data multiplications are also possible with the same key and *secondly*, sources of data could be given in various media (disquette, CD, magnetic tape, paper, by communication line through modem, in paper form). Sources of data are organized within documents management, archive material organization and register material, being a base for a more sophisticated system: KDD - Knowledge Data Discovery).

Image 1. gives a global structure of relations among entities, the link of the procedure for determining financial standing to generate reports. It presents relations among entities and some functions crucial for determining the financial standing of an insured.

Figure 1

Illustration of the"E-R" (Entity-Relationship) base model for evaluation of insured's financial standing



Source: own research

The analysis of the financial standing of an insured is defined as an *algorithm*, i. e. a set of functions enabling, on the basis of inputs and financial-standing data, to make a decision on the size of risk for which a corresponding protection would be given. That is significant at evaluation of various alternatives and strategies, defining aims to be in line with the selected strategy and finally at designing risk management mechanisms. Acceptance of a certain level of a risk by insurance company is a part of its value creating and preserving process, implying gain expectance, commensurate to the accepted risk level. With risk management, a company improves its knowldedge and skills relating to risk indentification and assessment, defining the acceptable level of risk in relation to the planned growth and income of the company.

3.3 SOFTWARE SOLUTION OF THE MODEL

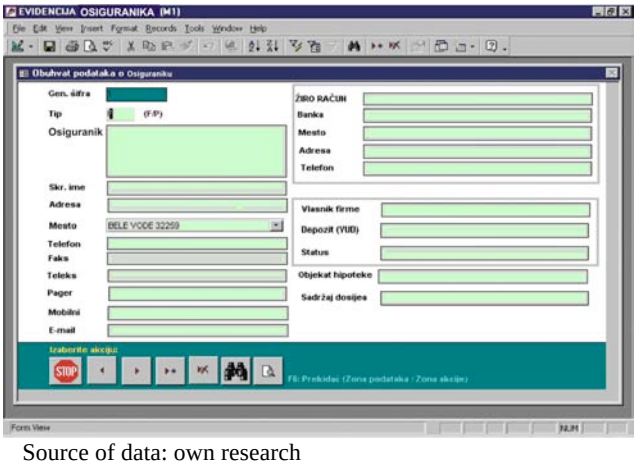
By data analysis on the basis of bookkeeping (operating and statistical) records and financial statements (balance sheet and income statement), we come to indicators for evaluation of the financial standing of an insured. Data on assets and sources of assets are taken from a standardized Balance Sheet Form (according to the methodology prescribed by the law on bookkeeeping of the respective conutry), according to interim financial reporting. Data given by the analytical service to internal and external users must be true and objective for all users, equally fair and not contradicting. Data on operating success, both in annual account and interim financial reporting are taken form the standardized Income Statement Form (according to the methodology prescribed by the law on bookkeeping of the respective country). In order to perceive as realistically as possible the financial standing of a company

being the subject of insurance, data on uncovered loss according to the annual account are given as the current balance. By reviewing relevant criteria, the following instruments and procedures in balance analysis will be identified: balance analysis on the basis of coverage account, ratio analysis, balance analysis on the basis net working funds, cash-flow analysis, funds-flow analysis. Due to the previously mentioned model complexity, these analyses will not be dealt with individually, as these are constituent parts of the model.

GDSS structure is in our solution expanded by a model base management system (MBMS) as a software system with the following functions: model creation, utilization of subroutines and other building bolocks, dynamic creation of new routines and reports, updating, model changing (Lazarević 1993; Mario, 1991). That way, it enables users to manipulate models by making experiments until a desired goal is reached. The base is created by an adequate databse management system (DBMS). A dialogue subsystem is controlled by a software called the dialogue generating and management system (DGMS). The dialogue subsystem offers its user an interface system containing input-output devices and provides a communication with the DSS through a function controlling the information flow and a function transforming user's input into languages which could be input by the DBMS. A knowledge management subsystem is seen as an laternative subsystem and could be used as a support to any other subsystem or as an independent component. The software part of the DSS is made of four components (E1, E2, E3 and E4) and could be supplemented by additional hardware and software parts. Beside these basic components, users are also deemed a part of the DSS, and DSS contribution could be measured by the success of interaction between computers and decision makers. A DSS structure for the assessment of the financial standing of an insured (given in Image 2) is comprised of nine modules (synthetic presentation of modules according to functions is given in Table 3). A corresponding menu is given for each model of the structure. Computer ECDL (European Computer Drawing Licence) certified employees carry out the operating methodology and come to desired results. A form for compiling data for insured's records is given in Image 2.

Figure 2

Module M1- the Insured



Source of data: own research

The offered model encompasses the following components within the risk management framework: *internal environment, defined company objecives, event identification, risk assessment, response to risks, control of activities, information and ocmmunications, as well as monitoring and supervision.* Such approach is made possible by modern information systems, which, in a qualitatively new, way bridge the gap created between the traditional approach in anticipating financial standing (*rough methods*) and the new quantitative approach. Methods of ratio analysis, cash flow and their modalities are built-in into daily decision-making in operations of an insurance company and relate to financial analysis issues. All listed methods are, first of all, pragmatic, and, one must admit, frequently the only mainstay in the decision-making process of an insurance analyst. Statistical approaches are conducted in order to spot certain causes of bankruptcy of an insured (company).

Table 2

List of Modules by Functions

M_1 – Data on Insured - name, family name, - address, - telephone numbers. - e-mail addres, - T.Rn. - deposit - object of mortgage - contenf of file, etc.	**M_2 - Balance Sheet** - unpaid subscribed capital - non-current assets - working assets - short-term receivables - loss - equity - long-term provisions - long-term liabilities etc.	**M3 – Income Statement** - operating income - interest expense - tax expense - contributions - net reserves - revaluating income - non-operating and extraordinary income - contributions paid by employees etc.
M_4 – Coverage Account - structure of commercial property - financial structure - property coverage by equity	**M5 – Ratio Analysis** - liquidity ratio - solvency ratio or security ratio - management ratio - cost effectiveness ratio	**M 6 – Analysis of Balance by Net Working Assets** - fixed capital - inventories - receivables - cash - own sources - long-term loans - short-term borrowings
M_7 - Cash Flow Analysis - Gross CF - Net CF	**M_8 - Funds Flow Analysis** - balance-sheet item selection - time span defining - review of variables and statistical calculations - variable nature of allocation	**M_9 – Altman Z Method** (see Image 3 relating to the evaluation of insured's creditworthiness)

Source: own reserach

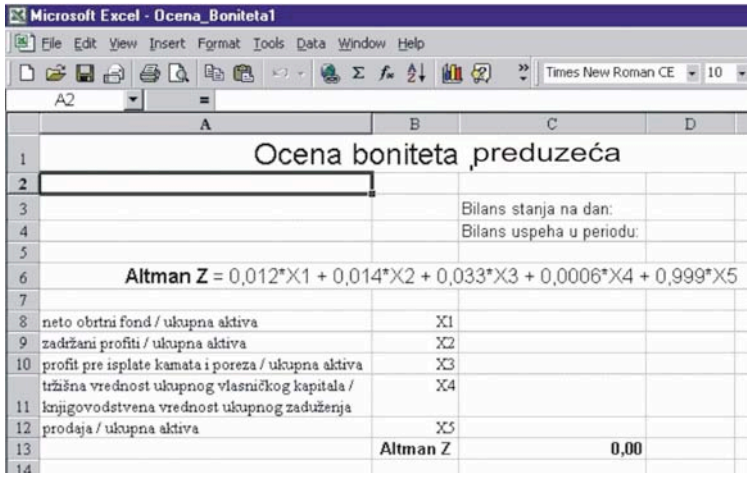
As the analysis of indicators is not perfect, and errors sometimes could be made in spite of best efforts, when interpreting results one must have in mind limitations in its application which are overcome by including other unemployed methods, such as:

Decomposition analysis, comprised of calculations of the relevant participation of certain items in assets, liabilities or income statement. A decomposition analysis performed in such a way could be termed classical, whereas in the case of a modern decomposition analysis, a measure of relevant changes is a total of logarithm differentials of the data calculated.

Net working funds analysis. The main postulate of financial equilibrium is term matching of sources of financing with assets. That means that non-current assets must be financed exclusively by non-current, and current operations by current assets. As the congruence of collection of goods sold and recovery of current assets is excluded, it must be assumed as a safety margin that a portion of current assets is also financed by non-current assets, which is called net working funds – NWF. That is why it is said that NWF are an excess of permanent capital over net immobilizations. Permanent working assets – PWA, circulating assets and liabilities differential, refer to that part of capital being permanently employed in the ocurse of a year. By the PWA to NWF ratio, we get an answer to a question in what percentage permanently employed assets in current operations are covered by permanent capital.

Control analysis gives an idea of a firm which cannot be seen from statements, but one can find initial elements in them. In the course of this analysis, a risk assessment manager particularly pays attention to: a) *existence of hidden and secret reserves,*b) *current assets quality* (*inventories, buyers, ...*), c) *liqudation value of a firm,* on the basis of which a bank loan coverage is determined (quantity of money which could be *obtained* from the compulsory sale of land and buildings, equipment, current assets), d) o*ccurrence of preinvestment* in operations of a firm, its causes (inflation, increase in inventories, real increase in taxes and dues), as well as the manner of remedying preinvestment (additional capital raising, divestment etc.), e) a*dequate volume of credit* which could be granted to a firm, depending on the purpose for which the credit will be used, condition of an economic cycle in which an industry or economy as a whole is, source of credit repayment, repayment term, quality of management etc.) and f) i*nstruments of securing credit repayment* which could be provided by a firm (collateral bill, check, mortgage, lien,...)

Figure 3
Module M9: Assessment of the Financial Standing of a Company by Applying Altman-Z Score



Source: own reserach

4. RESULTS

4.1 THEORETICAL AND RETROSPECTIVE BASIS

In our work so far, we have pointed out main prnciples of the Z-score model. It should also be added that some authors describe the perspective of Altman-Z method from the aspect

of an *ex-ante/ex-ponto* theory (Agarwal, Raffler, 2006). On other side, Altman-Z is useful in the area of real estate (Lee, 2004). Real estate is the area of business with risk aspects similar to those of insurance companies. "DDOR Novi Sad" is the insurance company whose database is used for this research. The assessment of the financial standing of insureds by Z-score has been generated in a software ambience - Windows 95 operating system and Excel 2000 (spreadsheets) as a part of 2000 Microsoft Office package).

4.2 ANALYTICAL-EXPERIMANTAL RESULTS

Results of the analysis are given on the examples of 6 insureds (clients). Altman-Z method is used for indicators of the financial standing of insureds, with the following formula used in this method:

Altman Z = 0,012 * X1 + 0,014 * X2 + 0,033 * X3 + 0,006 * X4 + 0,999 * X5

In this analytical model, the following financial indicators are used: X1 = net working funds / total assets; X2 = retained profits / total assets; X3 = profit before interest and tax / total assets; X4 = market value of total equity / book value of total debt and X5 = sales / total assets.

Benchmarks are determined according to statistical data on the presented „Balance Sheets“ and „Income Statements“ of the subject firm – the insured. In accordance with the company business policy, the obtained result is compared to the valid financial standing criterion: zone reviewing structure and financial standing quantification are obtained on the basis of the following matrix:

If Altman Z is below 1.81 …….. bankruptcy zone
If Altman Z is above 1.81 but below 2.99 …….. grey zone
If Altman Z is above 2.99 ……... safe zone

The resuslts presented in this paper are obtained on the sample of 100 insureds, selected on the basis of a long-standing cooperation with them. Due to its extensiveness, a sample of six insureds is taken as the result of the research presented:

*Financial standing assessment (**Insured** **D2**). Balance sheet as of 31 December 2008*
Income statement for the period 1 January to 31 December 2008

Altman Z = 0.012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.42, X2 = 0.00, X3 = 0.26, X4 = 1.20 and X5 = 3.19. Calculated: Altman Z = 3.20

*Financial standing assessment (**Insured** **D4**). Balance sheet as of 31 December 2008 and Income statement for the period 1 January to 31 December 2008*

Altman Z = 0.012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.42, X2 = 0.00, X3 = 0.26, X4 = 1.20 and X5 = 3.19. Calculated: Altman Z = 3.00.

*Financial standing assessment (**Insured** **S1**). Balance sheet as of 31 December 2008 and Income statement in the period 1 January to 31 December 2008*

Altman Z = 0.012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.74, X2 = 0.12, X3 = 0.29, X4 = 1.20 and X5 = 2.71. Calculated: Altman Z = 2.73.

*Financial standing assessment (**Insured** **S6**). Balance sheet as of 31 December 2008 and Income statement in the period 1 January to 31 December 2008*

Altman Z = 0.012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.31, X2 = 0.09, X3 = 0.23, X4 = 1.20 and X5 = 2.42. Calculated: Altman Z = 2.43.

Financial standing assessment **(*Insured* L3).** *Balance sheet as of 31 December 2008 and Income statement in the period 1 January to 31 December 2008*

Altman Z = 012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.08, X2 = 0.00, X3 = 0.04, X4 = 1.20 and X5 = 0.52. Calculated: Altman Z = 0.53.

Financial standing assessment **(*Insured* L5).** *Balance sheet as of 31 December 2008 and Income statement in the period 1 January to 31 December 2008*

Altman Z = 012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.05, X2 = 0.01, X3 = 0.04, X4 = 1.20 and X5 = 0.35. Calculated: Altman Z = 0.36.

Two insureds (client codes D2 and D4) have results classified as the "safe zone" with the ratio above 2.99. Two insureds (client codes S1 and S6) are from the "grey zone" with the ratio above 1.81 and below 2.99. There are two insurance holders (client codes L3 i L5) from the "bankruptcy zone" with the ratio below 1.81.

From Altman-Z applied this way we could conclude that insureds (clients) D2 and D4 are from highly developed economic industries, insureds (clients) S1 and S6 are from medium-developed economic industries, whereas insureds (clients) L3 and L5 are from poorly-developed industries. Therfore, this analyisi shows their premium payment capacity, i.e. the magnitude of insurance company risk if they were issued insurance policies.

4.3 POSSIBILITES OF APPLICATION AND CAPABILITIES OF THE MODEL

The model described in this paper offers broad possibilities for application in insurance companies and banks. Besides, it can be upgraded and extended, depending on the requirements of a specific analysis. The research model can be a significant contribution in the evaluation of the financial standing of insureds in the function of risk management in a modern insurance company.

5. CONCLUSION

This paper was written within a process of developing a more general model intended to be a support to effective and efficient quality management within an insurance comapny, as an intersection of examples in practice in other insurance companies and scientific modelling. A more general model contains a group of factors through whicih this need of an insurance company is tracked. One of the criteria for the assessment of the model is the financial standing criterion – financial assessment of an insured, its financial capacity.

The model used is focused on financial indicators aimed at a more rational procedures and costs ensuring the most efficient risk management system. This model also proved efficient in practice as one of possible solutions. The paper indicates that: a) there are no *new* models for anticipating the financial standing of an insured which could bypass a financial analysis of insureds, b) the majority of reasons of a bad standing of an insured or a potential insured does not rest among exogenous factors (aggregated economic conditions) and c) the majority of fundamental business failure problems of insureds are within their company itself. In other words, variables X_i present in any quantitative model are in the domain of the financial
analysis of insureds.

A conclusion is reached that the applied software model classifies in the best way insureds as financially sound *(safe zone)*, financially satisfactory *(grey zone)*, and insolvent *(bankruptcy zone)*, i. e. those facing business failure in the near future.

The application of the model under review to the selected »DDOR Novi Sad« from Novi Sad, Serbia, enabled a verification of the hypothesis that a decision-making model defined this way and realized as a software enables effective and efficient reduction of insurance risks of a potential client.

Indicators of company operations do not show anything in themselves. Their significance is seen only when compared to other insureds in the same industry. The results of the paper would be even more reliable had the sample contained more data. This shortcoming was overcome by a choice of data generating extremes (by applying strata).

The future and necessary research relates to its further implementation into the »DDOR Novi Sad« IT support as a part of a new philosophy – philosophy of smart information systems.

REFERENCES

1. Agarwal, V., Taffler, R. (2005), *Twenty-five years of z-scores in the UK: do they really work?*, EFMA -European Financial Management Association, Meetings 2006, Madrid; (www.efmaefm.org/efma2006/papers/932609_full.pdf - preuzeto: 20.01.2009)
2. Asprey, S.P., Macchietto, S. (2003), *Dynamic Model Development: Methods, Theory and Applications*, Elsevier Science
3. Balaban, N., Ristić, Ž. (1998), *Sistemi podrške odlučivanja*, Subotica: Ekonomski fakultet, Univerzitet u Novom Sadu
4. George, M.L. (2002), *Lean Six Sigma : Combining Six Sigma Quality with Lean Production Speed*, NewYork : McGraw-Hill.
5. Lazarević, B. (1993), *Modeli podataka u projektovanju i radu informacionih sistema*, Beograd: Fakultet organizacionih nauka, Univerzitet u Beogradu
6. Lee, B. (2004), *A Pricing Model for Master Leases in Real Estate*, New York University: Leonard N. Stern School of Business
7. (w4.stern.nyu.edu/emplibrary/ Benton_Lee_honors_2004.pdf - preuzeto: 20.1.2009)
8. Mario, R.. (1991), *Projektiranje informacijskih sustava*, 2. izdanje, Zagreb: Informator
9. Mendling, J (2008), *Metrics for Process Models: Empirical Foundations of Verification, Error Prediction, and Guidelines for Correctness*, Springer Verlag.
10. Pejić, L., Radovanović, R., Stanišić, M. (1991), *Ocena boniteta preduzeća*, Beograd: Privredni pregled.
11. Ćirović, M. (1970), *Bankarski i kreditni sistem*,(Savrenena administracija, Beograd).
12. Ćirović, M. (1976), *Monetarno kreditni sistem, (*Savremena administracija, Beograd).

MODEL FINANCIJSKE MOGUĆNOSTI NOSITELJA OSIGURANJA U KONTEKSTU UPRAVLJANJA RIZIKOM OSIGURAVAJUĆE KUĆE

Sažetak: *U radu se analizira način ocjene financijske sposobnosti osiguranika od strane osiguravajuće kompanije. Kvalitetno urađena financijska analiza i pravilno odabrana metodologija omogućavaju nam veću učinkovitost pri donošenju strateških odluka, odabiranjem poslovnih partnera, proizvodnih programa, plasiranjem finansijskih sredstava u investicione programe u cilju očuvanja i uvećanja vrijednosti kompanije, zaštiti interesa akcionara, osiguranika i drudih poverilaca osiguranja.*

Primijenjene se adekvatne makroekonomske metode uz odgovarajuću softversku aplikaciju, čijom se analizom i sintezom došlo do zaključaka kojima je verifikovana postavljena hipoteza da postoji makar jedan model koji zadovoljava potreban i dovoljan

uslov da se snizi razina rizika osigravajuće kompanije utvrđivanjem finansijske sposobnosti osiguranika. Na jednom uzorku podataka dobijeni su odgovarajući rezultati koji se komentarišu u zaključku ovog rada

Ključne riječi: *osiguranje,upravljanje rizicima, učinkovitost, bonitet osiguranika.*

JEL klasifikacija : *D81; G22; L15.*

Gordana Kordić[1]

PRIKAZ KNJIGE

NASLOV: Uspon novca – financijska povijest svijeta

AUTOR(I): Niall Ferguson

IZDAVAČ: Naklada Ljevak

MJESTO I GODINA IZDANJA: Zagreb, svibanj 2009.

Profesor povijesti na Sveučilištu Harvard i poslovnog upravljanja na Harvard Business School, autor niza knjiga te urednik u „Financial Times"-u Niall Ferguson, u svojoj knjizi „Uspon novca – financijska povijest svijeta" donosi priču o povijesti svijeta promatranu kroz povijest novca i financija. Samo naizgled u pozadini priče o novcu je ona o razvoju svjetskog gospodarstva, borbama za prevlast, smjenama panike i euforije, optimizma i pesimizma, balonima koji se napuhuju i ispuhuju. Autor prati novac od njegovih prapočetaka u drevnim civilizacijama, preko razvoja tržišta dionica, obveznica i nekretnina sve do suvremenog doba, sofisticiranih financijskih derivata i financijske krize koju su uzrokovali. U vremenima kada o novcu i financijskim transakcijama razmišljamo više nego ikad, ovo je knjiga koja samo naizgled pripada žanru beletristike, ali u osnovi je rezultat višegodišnjih istraživanja i multidisciplinarnog pristupa fenomenu novca i njegovih pojavnih oblika.

1. SINTETIZIRANI PRIKAZ KNJIGE

Knjiga „Uspon novca – financijska povijest svijeta" sastoji se od 8 dijelova, uključujući uvod i pogovor, a tu su još i zahvale, bilješke, popis ilustracija i kazalo. Hrvatsko izdanje, koje je izašlo u svibnju 2009. godine, ima 374 stranice u prijevodu Damira Biličića te stručnu redakturu mr. sc. Hrvoja Volarevića.

Prvo poglavlje, *Snovi o bogatstvu*, govori o nastanku novca. Posebno se izdvaja trenutak uvođenja arapskih brojki koje su poznavale (i) decimalni sustav u svakodnevnu primjenu što je dalo novi poticaj razvoju financija. Pojava i razvoj komercijalnog, poslovnog bankarstva opisano je kroz razvoj firentinske obitelji Medici koja je, kao jedna od najznačajnijih obitelji renesanse, utjecala ne samo na razvoj bankarstva i financija nego i na umjetnost, graditeljstvo, ali i politička kretanja. Uskoro se (tijekom 17 stoljeća u Nizozemskoj, Švedskoj i Engleskoj) javljaju i prve banke koje su ujedinjavale javne i privatne interese, iz kojih se kasnije razvijaju današnje središnje banke.

Drugo poglavlje bavi se tržištem obveznica te je nazvano *O čovjekovim obvez(nic)ama*. Talijanski gradovi - države iz 14 i 15 stoljeća emitirali su vrijednosne papire s fiksnim prinosom i isprva su na taj način samo posuđivali novac od svojih građana (umjesto da ih, npr, oporezuju), ali uskoro su počeli i trgovati tim dugom na sekundarnom tržištu. Jednako kao i na bojišnici, ratovi su se dobivali ili gubili i na financijskim tržištima što se potkrepljuje pričom o „financijskom Bonaparteu", Nathanu Mayeru Rothschildu. Autor nas podsjeća i kako postojanje sekundarnog tržišta podrazumijeva ne samo zaradu, nego i

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posljedice loših procjena ulagača, posebno u uvjetima rata ili masovnih histerija izazvanih manipulacijom informacijama uz obećanja o velikom dobitku u budućnosti.

U središtu pozornosti trećeg poglavlja jest prikupljanje kapitala emisijom dionica. Kako je jedan od rizika tržišta kapitala i napuhavanje cijena te nastanak financijskih mjehura ono ima i prigodan naziv *Mjehuri, mjehuri* … Opasnosti koje prate prikupljanje kapitala kroz manje iznose uz obećanje sudjelovanja u budućoj zaradi objašnjeno je kroz 5 faza: *mamac* (nove i unosne poslovne mogućnosti), *euforija* (neumjereno trgovanje koje vodi porastu cijena dionica), *manija* (na burzu privučeni zaradom dolaze i ulagači koji ne poznaju dobro opasnosti i rizike te manipulatori i prevaranti), *nelagoda* (počinje prodaja i izvlačenje zarade) te sve završava *nepovjerenjem* (koje vodi padu cijena dionica i rasprskavanju mjehura). Nastanak dioničkih društava opisan je kroz nastojanja nizozemskih trgovaca da preuzmu nadzor nad trgovinom mirodijama iz Azije kroz Ujedinjenu nizozemsku istočnoindijsku kompaniju. Kakve su potencijalne posljedice dioničkog financiranja, ali i postojanja banke koja izdaje javne banknote (kao zamjenu za kovanice) te što se događa pod utjecajem obećanja buduće zarade i mjehura kojeg su stvorila špekulativna očekivanja prikazano je kroz životopis J. Lawa, koji je iz Škotske pobjegao kao osuđeni ubojica, da bi u Francuskoj stekao ugled i moć. Njegove financijske transakcije dovele su do propasti francuskog financijskog sustava, rušeći povjerenje u „papirnate“ oblike držanja vrijednosti, ali i uzrokujući trajne fiskalne probleme Monarhiji. Povijest Lawova mjehura ponovila se u XX stoljeću na slučaju Enrona, kompanije čija je propast otkrila kako su se spektakularni poslovni uspjeh i visoke zarade temeljili na manipuliranju podacima. Do koje razine će vrijednost dionica rasti, hoće li i kada doći do (snažnog) pada njihove vrijednosti, pitanje je na kojem su i novac i ugled izgubili brojni ekonomisti, ali i obični ljudi, vlasnici manjih udjela.

Poglavlje 4, nazvano *Povratak rizika,* bavi se rizicima i osiguranjem od nastanka štetnih događaja. Na brojnim primjerima, od šteta nastalih kao posljedice uragana Katrina u New Orleansu preko povijesnih, udovičkih mirovinskih fondova u Škotskoj u 18 stoljeću i ranijih oblika zaštite od rizika u riječnom transportu do analiza japanskog i čileanskog modela, autor analizira načine zaštite života i imovine od nastanka nepredviđenih događaja. Osim različitih oblika osiguravajućih društava, preispituje se i socijalna funkcija države koja je od svog postanka imala različite programe pomoći ugroženim slojevima stanovništva. Suvremeni trend starenja stanovništva na globalnoj razini i sve dulji životni vijek kao uzroci rastućih potreba da se osiguraju sredstva za nepredviđene događaje neminovno vode razvoju novih financijskih tehnika i instrumenata.

U priču o nekretninama, kojima se bavi 5 poglavlje nazvano *Sigurno kao kuća,* uvodi nas priča o popularnoj društvenoj igri Monopol gdje se igrači natječu u posjedovanju što većeg broja nekretnina i ubiranju rente. Tvrdnja koja se provlači kroz cijelo poglavlje jest činjenica kako vlasništvo nad nekretninom u biti ne daje sigurnost samom vlasniku, nego njegovim vjerovnicima kao i da je uvriježeni mit o sigurnosti ulaganja u nekretninu naprosto netočan, jer i to tržište može doživjeti pad kao i bilo koje drugo. Loše upravljanje osobnim financijama, unatoč posjedovanju značajnog imetka u nekretninama, može voditi bankrotu (kako je i pokazano na primjeru propasti rastrošnog vojvode od Buckinghama). Unatoč svim argumentima koji ukazuju na suprotno, formalnim ograničenjima (obično neriješenim vlasničkim odnosima) te opasnostima od prijevara u trgovanju nekretninama, one se tradicionalno smatraju prvoklasnim oblikom ulaganja.

Poglavlje 6, *Od carstva do Kimerike*, analizira povijest međunarodnih financija kroz zlatni standard, preko sustava iz Bretton Woodsa pa sve do njegovog napuštanja i rasta utjecaja međunarodnih institucija na tržišta u nastanku. Nove vrste fondova i nove teorije o ponašanju tržišta, čiji autori su tvrdili kako su pronašli odgovor na pitanje kako izbjeći rizik i ostvariti maksimalni profit, prije ili kasnije su opovrgnute kretanjima na samom tržištu. Poglavlje završava „Kimerikom“, analizom suvremenih odnosa Kine i Amerike.

Slijedi *Pogovor* kao sažeti prikaz rečenoga na prethodnim stranicama, znakovitog naziva *Postanak i pad novca.*

2. KRITIČKI OSVRT NA KNJIGU

U nesigurnim vremenima globalne financijske krize knjiga ovakve tematike je iznimno aktualna, interesantna i korisna ne samo za znanstvenike, nego i za značajno širu čitalačku publiku. Povijest svijeta autor promatra kroz aspekt novca i financija, štoviše, dokazuje tezu po kojoj je upravo novac, neovisno o obliku u kojem se javljao, bio jedna od ključnih pokretačkih sila napretka. Kroz niz primjera iz povijesti, autor nas podsjeća kako je upravo ona „učiteljica života“ te kako iz ranijih događaja, jer se pojave i obrasci ponašanja ponavljaju, možemo izvući mnoge pouke (iako to često propustimo učiniti).

Knjiga „*Uspon novca - financijska povijest svijeta*“ pisana je jasnim i nedvosmislenim **jezikom**. Obzirom je autor vrsni povjesničar, povijesne likove i događaje prikazuje nam u sasvim drugačijem svjetlu, približavajući ih svakodnevnici i navodeći mnoštvo samo naizgled nebitnih detalja iz njihovih života. **Naslov knjige** aktualan je, jasan i intrigantan te nedvosmisleno ukazuje na tematiku kojom se knjiga bavi.

Ova knjiga nije udžbenik (iako se svakako može preporučiti kao dodatna literatura studentima ekonomije, politologije i sličnih fakulteta) te je namijenjena svima koje zanimaju međuodnos povijesti, međunarodnih financija i ekonomije te politike. Tematika je, obzirom na financijsku krizu koja je uzdrmala temelje zapadne civilizacije i lavinu događaja koju je pokrenula, iznimno **aktualna**. Ipak, jezik i stil pisanja samo su naizgled jednostavni i beletristički. Korištena **terminologija**, broj **bibliografskih jedinica** te količina i kvaliteta **podataka**, kao i širina obuhvata tematike kojom se autor bavi, pokazuju nam kako je riječ o vrsnom znanstveniku širokog obrazovanja koji i najsloženije teme obrazlaže **jasno, nedvosmisleno i razumljivo**. Ono što je izdvaja iz niza knjiga slične tematike jest njezina multidisciplinarnost koja nam daje cjelovit uvid u kompleksnu pojavu kao što je novac, koji proizlazi iz ekonomskih odnosa, ali nije samo ekonomska, nego značajno šira varijabla.

Gospodarska kriza koja je uzdrmala svijet u drugoj polovici 2007 godine i čije posljedice ćemo osjećati još dugo, svakako je doprinijela porastu interesa za knjigama koje se detaljno bave problematikom novca, monetarne politike, financijskih tržišta i institucija te njihovim mjestom u gospodarstvu i društvu u cjelini. Iako se knjiga čita brzo i dosta lako, jedna je od onih kojoj se čitatelj uvijek rado vrati i u kojoj će svaki put pronaći nešto novo.

Lovre Božina*

PRIKAZ KNJIGE

NASLOV: Uspešnost poslovanja – Uticaj na dinamiku bilansa

AUTOR(I): dr.sc. Marinko Vranković

IZDAVAČ: Visoka škola strukovnih studija za računovodstvo i berzansko poslovanje

MJESTO I GODINA IZDANJA: Beograd, 2009

1. SINTETIZIRANI PRIKAZ KNJIGE

Znanstvena knjiga "Uspešnost poslovanja - Uticaj na dinamiku bilansa" dr.sc. Marinka Vrankovića, sveučilišnog docenta i profesora Visoke škole strukovnih studija za računovodstvo i berzansko poslovanje u Beogradu, bavi se uvijek aktualnom, a danas osobito važnom, problematikom uspješnosti poslovanja poduzeća, oslanjajući se na povezanost računovodstvene i financijske teorije i prakse. Autor već u predgovoru navodi kao neophodan multidisciplinaran pristup problematici sinteze poslovnog uspjeha i njegova utjecaja na dinamiku bilance. Kao iskusan gospodarstvenik, sveučilišni docent, autor brojnih stručnih i znanstvenih rasprava primjereno poznaje probleme koji postoje u ocjeni utjecaja bilance na uspješnost poslovanja , pa je očekivati bilo da će se njegova istraživanja oslanjati ne samo na teoriju nego i praksu, kako onog što jeste u suvremenim ekonomijama tako i na ono što je nastalo na povijesnim temeljima tzv. tržišno-planskih ekonomija.

Uključujući uvodna i zaključna razmatranja, knjiga je podijeljena u osam međusobno povezanih cjelina, u kojima je autor razvijao ne samo tradicionalno poznate pristupe financiranju, nego je i uložio znatan napor u razlaganje za domicilne prilike prikladnog pristupa financiranju, zbog brojnih gospodarskih problema koji inače nisu sukladni tržišno stabilnim ekonomijama.

U osnovi temeljni rezultati autorova istraživanja ogleda se u uspostavljenu povratne sprege željenog i ostvarenog profitnog položaja poduzeća a ogledaju se u slijedećem:

- uspostavljen je model mjerenja ekonomskog uspjeha te pokazatelji uspješnosti poslovanja poduzeća kroz definiranje modela kvantitativnog mjerenja ekonomskog uspjeha;
- u pristupu kvantitativnom izražaju mjere uspjeha poduzeća autor je prišao rabeći računovodstveno-financijsku dimenziju uspjeha, čime je odredio i težište njegova istraživanja - financijske mjere performansi;
- rentabilnost poduzeća autor je doveo u vezu s dva pokazatelja: stope dobitka i koeficijentom obrta kapitala, čime se matricom rentabilnosti dvostruko izražava i kvantificira profitna sposobnost poduzeća: prvo, stopom dobitka tj. preko robno-novčanih tokova, i drugo, koeficijentom obrtaja kapitala, realnog i financijskog;

Autor se u formuliranju njegova istraživanja oslanja na bilančnu teoriju razlaganja poslovnog uspjeha, tj. polazi od mišljenja da je profitni položaj metodološki i suštinski iskaz stanja ekonomskog uspjeha. Pri tome kao odrednice profitnog položaja poduzeća uzima: prinos uloženih realnog i financijskog kapitala (povećanje imovine); razinu, dinamiku i strukturu financijskog rezultata poslovanja i ukupnog prihoda; čimbenike rizika ostvarenja financijskog rezultata; financijsku moć, stopu sigurnosti; i donju točku rentabilnosti.

Promjene stanja profitnog položaja poduzeća u istraživanju izražavaju se dinamikom i komparacijom, čime se profitni položaj poduzeća izražava kao povoljan ili nepovoljan odnosno adekvatnost ili neadekvatnost strukture imovinske s obzirom na principe rentabilnosti, sigurnosti, likvidnosti, zaštite vjerovnika, nezavisnosti i financijske elastičnosti. Na taj način uspostavljene su mogućnosti određivanja profitnog položaja poduzeća s obzirom na kriterije strategije održivog rasta i razvoja. Time autor osim što profitni položaj poduzeća izražava u novčanom obliku istodobno uzima u obzir i realne tokove u ekonomiji kao važnu sastavnicu bilanciranju imovine.

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U istraživanju profitnog položaja poduzeća autor ne tretira financijske tokove koji pokreću proizvodno-prometne aktivnosti, u vidu primanja i izdavanja. Financijski tokovi, financijski položaj i izvješća o tokovima ukupne imovine poduzeća ostaju izvan okvira istraživanja autora. To se može i prihvatiti s obzirom na činjenicu da je taj aspekt financijskog položaja poduzeća relevantan kod istraživanja utjecaja financijskog mehanizma i financijske analize oslonjene na monetarne i nemonetarne financijske oblike i institucije, a takvo istraživanje bi znatno proširilo istraživački poduhvat. Istina to bi doprinijelo istraživačkom naporu autora na već izabranom pristupu temi istraživanja, usmjerenoj na programiranje ciljne profitne stope kao funkcije maksimalizacije konačne relacije između ostvarene dobiti i angažiranog kapitala tj. programiranje strategije ostvarivanja najpovoljnije profitne stope u poslovanju poduzeća.

Istraživanje je polazeći od analize postojećeg stanja, definiranja i izbora ciljeva i globalnih mjerila poslovanja i razvoja, omogućilo autoru koncepciju strategije poslovanja i razvoja, normativnim definiranjem konkretnih ciljeva i zadataka organizacijskih cjelina, te uspostavljanje prethodne i naknadne kontrole uz eventualne korektivne mjere. Na taj način moguće je da poduzeće kontinuirano prati svoj profitni položaj i provjerava stanje i strukturu realne i financijske imovine, ka važna saznanja o primjerenosti poslovnih odluka glede ekonomskog položaja. Time se pravodobno otkrivaju neželjeni tijekovi u profitnom položaju, kao i njihovi uzroci. Temeljem toga moguće su spomenute korekcije poslovnih odluka ili, pak, promjena strategije glede strukturiranja imovinske bilance. Računovodstvene informacije služe pri tome kako za projektiranje ž eljene tako i za kontrolu i ocjenu ostvarene učinkovitosti poslovanja. Naime, tijekom poslovanja računovodstvo pruža potrebite podatke glede usporedbe planiranih i ostvarenih vrijednosti. Povratna sprega glede poslovnog okruženja, polazeći od računovodstvenih obavijesti, omogućava stalnu usporedbu i optimalizaciju poslovanja konkretnog, prema prosjeku drugih srodnih ili konkurentnih poduzeća. Time je upotpunjena povratna sprega ciljanog, planiranog (prethodna kontrola) i ostvarenog (naknadna kontrola) profitnog položaja poduzeća uzimajući pri tome čimbenike uspostavljanja povratne sprege u uvjetima makroekonomskih promjena i internih poslovnih aktivnosti. Sustav (feed back) kontrole na taj način kroz formuliranje ekonomskih ciljeva i njihovu valorizaciju kroz usporedbu s ostvarenim rezultatima, omogućava uključivanje postavljenih poslovnih ciljeva u organizacijske aktivnosti, što uprava poduzeća čini odgovornom za ostvarivanje svakog pojedinačnog cilja poslovanja te za kontinuitet u praćenju izvršavanja postavljenih strateških planova. Sukladno tome i nagrade uprave vrše se na temelju pokazatelja izvršenja planiranog i ostvarenog poslovanja.

Na kraju, autor je dao argumente o potrebi uspostavljanja sustava standarda usporedbe prije početka komparativne analize uspješnosti poslovanja, a pruženi su i dokazi o potrebi da se u sustav već poznatih povratnih veza ugradi novi vid povratnih veza - feed external, radi pouzdanijeg odlučivanja, a time i učinkovitijeg upravljanja imovinom poduzeća. U tome je komparativna analiza nužnost, jer omogućava stalnu povezanost unutarnjeg financijskog, organizacijskog i poslovnog ustroja s poslovnim okruženjem.

Zbog naslijeđa iz prošlosti, sve ekonomije izišle iz tržinsko-planskog povijesnog stanja imaju poduzeća uglavnom kapitalno nepodešena i u aktivnim bilančnim pozicijama slabo disperzirana, a to svakako nameće zaključak o nerazvijenosti financijskih oblika, financijskih transakcija, financijskih tokova i financijskih institucija. Sve to određuje i financijski položaj poduzeća i njihov položaj na tržištu roba, financijskih oblika, rada i ideja. U tome smislu osobito je važno istraživanje autora, koji je svojim iskustvom i teorijskim znanjem uspješno povezao teoriju i praksu, oslonjenu na analitičku osnovu proizašlu iz bilanciranja imovine. Zato se može kazati da knjiga dr.sc. Marinka Vrankovića nije samo namijenjena studentima dodiplomskih studija, već je značajan dio teksta posvećen razjašnjavanju osnovnih problema suvremenih poduzeća. Knjiga je, kao takva, vrijedno štivo za sve one koji svakodnevno traže izlaz iz složenih praktičnih problema upravljanja imovinskom bilancom, što je važno osobito u ekonomijama koje traže putove izlaska iz vrtloga privatizacijskih "ponzzi" igara u kojima nije bilo mjesta stručnom znanju i iskustvu. Nadamo se da će knjiga profesora Vrankovića pomoći svima koji su u te složene igre ulazili na različit način, ali su potrebita š ira ekonomska znanja da bi danas mogli s uspjehom stvarati pozitivno ekonomsko ozračje u prilikama kada je nužno poboljšati prinos na uloženi equity.

Knjiga je i primjer kako se upornim radom može pripomoći u rješavanju složene i uvijek različito interpretirane povijesne privatizacijske stvarnosti imovinske strukture u bilancama poduzeća ekonomija nastalih na tržišno-planskoj osnovi. Naravno, ovim istraživanjem otvoren je jedan segment različitih utjecaja na dinamiku poslovanja suvremenog poduzeća, što će vjerojatno znakovito utvrditi početak za neka nova istraživanja u kojima će neki novi istraživači slijediti znanstveni zanos (koji istina jednako ne pripada nama svima) profesora Vrankovića. Možda će komparativna analiza konačno dati jasniji put u dijalog koji kroz različite bilančne strukture i mjere poslovnog uspjeha konačno

vodi, sve nas izišle iz tržišno-planskog okruženja, u svijet modernih tržišnih ekonomija. Nedovoljno poznavanje prošlosti i sadašnjosti prirodno povećava složenost predviđanja budućih ekonomskih tijekova. Ako je točna tvrdnja da ekonomisti mogu bolje predvidjeti ponašanje ljudi nego što ljudi mogu sami, jer je akcija jednog čovjeka posve nesigurna a ponašanje velike grupe ljudi slijedi zakone vjerojatnosti, onda je svako ekonomsko istraživanje vrijedno, osobito ono koje ne slijedi dominaciju tendencije i mode među ekonomistima, te kao takvo omogućava ponekim ekonomistima da s uspjehom koriste zakone vjerojatnosti. Profesor Vranković svojim istraživanjima jedan je među takvima, koji je u svom istraživanju analitički utvrdio odlučan značaj malog broja donosilaca poslovnih odluka (uprave u poduzećima) koji svojim nepredvidivim odlukama utječu na tijek ekonomskih zbivanja. Istina, apsoluttna sigurnost nije zagarantirana u znanosti općenito, pa je i u ekonomskoj stvarnosti apsolutna sigurnost rezultat jedino neznanja. Zato ima uvijek smisla istraživati poboljšanja društva s različitih aspekata. Ekonomija je jedan od njih i kao takva puna je istraživačkih tema u kojima je moguće pronaći uzroke koji koče napredak prema blagostanju. Svatko tko nešto vrijedi unosi u istraživanja svoje napore, sklonosti, shvaćanje dužnosti i odanost idealima, vođen plemenitim takmičenjima i čuvajući intelektualni integritet. Profesor Vranković u tome pogledu je primjer i onima koji u ekonomsku znanost dolaze ali i onima koji svakodnevno traže izlaz iz složene prakse u kojoj ništa nije sigurno i niša trajno vrijedno, pa je potrebito znati "kako uistinu stojimo". U glede toga "kako uistinu stojimo" profesor Vranković je u svom istraživanju došao do značaja sve tri grupe ekonomista: empiričara, graditelja romana, i nositelja politike. Očito, pošao je od tvrdnje da je suvremena ekonomika ono što rade ekonomisti. A danas ekonomisti zaista rade puno toga pa je suvremena ekonomska, odnosno financijska analiza postala njihov stalni pratitelj.