DOES FINANCIAL LIBERALIZATION AFFECT BANKING SYSTEM?

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Abstract.

Financial liberalization is a complex and long term phenomena, which implies that the impact of this reform on banking system should not be immediate. It will be rather gradually during a long period. Liberalization process does not occur on the same way on all markets. Each market, according to his calculations on the economic climate, has differently set its progress in liberalization reform. In this article we propose to measure the impact of liberalization process on banking system. We used the Generalized Spectral test of Escanciano and Velasco to study the informational efficiency of five banks from Eastern European countries during 2001-2012. Also we constructed three regression by using as independent variables the trilemma indexes, freedom indicators and financial banking indicators.

Keywords: *financial liberalization, banking system, informational efficiency.*

JEL classification: *N24, C87*

1. Introduction

During the '80s and '90, many developing countries in Asia, Europe, Latin America and Africa have adopted economic reforms aiming to design an economic system based on market mechanisms, which can support the development of the private sector and build a sustainable investment

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environment. Within these economic reforms, an important role was assign to the financial reforms meant to abolish the financial restrictions.

The financial liberalization consisted in assigning to the central banks more authority in carrying of monetary policy, privatization and restructuration of the financial system, liberalization of the interest rates, abolition of the credit control, elimination of the barriers on the capital flows, removal of the obstacles on competition among the financial institutions, and introduction of the equity markets. The most important goal of financial reforms was to facilitate emerging countries to improve financial development and get higher economic growth. Some studies find that financial liberalization has a positive impact on financial development, by decreasing the cost of equity capital by allowing for risk sharing between the domestic and foreign agents (Henry 2000a) and growing the level of investment (Henry 2000b, Bekaert and Harvey, 2000).

Financial development, in turn, can have an important impact on economic growth. Higher financial development is often linked to an increased economic growth. Several researches show that financial development is positively associated with economic growth (King and Levine (1993), Beck, Levine and Loayza (2000), Bekaert, Harvey and Lundblad (2005)).

As the banking sector has an important contribution in sustaining the economic growth the financial liberalization referred in a large extend to the banking system liberalization. The banking liberalization intended to enhance the efficiency of the banks, improve the allocation of credits, stimulate savings and, thus, attain a higher economic growth.

In this paper we analyze the impact of financial liberalization on banking system in Eastern European emerging countries. The paper is structured as follows. In section 2 we reviewed the prior literature on the impact of financial liberalization on banking system. Section 3 presents the empirical methodology we have applied to measure the impact of financial liberalization on banking system. In section 4 we showed the results of our empirical investigation and discussed it. Section 5 comprises the most important conclusions of our analysis.

2. Literature review

Several studies assessed the impact of financial liberalization on bank efficiency. There is no consensus regarding this issue, because their empirical results are controversial. A number of authors find that financial liberalization has a positive effect on bank efficiency and productivity, while other researches show that financial liberalization has a negative impact on bank efficiency, causing a reduction in its level.

Ribon and Yosha (1999) investigate the impact of financial liberalization on banking competition in Israel, finding that Israeli banks lost market power after reforms, in spite of the fact that the banking sector remained highly concentrated. They also reveal that liberalization led to an increase in banking competition, but the market for bank loans is less competitive then the market for bank deposits. They conclude that the increase in banking competition is due, at least in part, to international financial liberalization.

Exploring the causes and the process of mergers and acquisitions in Malaysia, Shanmugam and Nair (2003) find that this process contribute to the reduction of the banking services costs, the increase of efficiency and competition in banking industry. Njie (2006) investigate the impact of financial liberalization on bank spreads in Malaysia, showing that despite the level of government intervention, financial liberalization has efficiency-enhancing effects on Malaysian banks and bank spreads decrease significantly after financial liberalization process. Analyzing the determinants of banking system development in terms of the real income, real interest rates, trade openness and financial liberalization, Yu and Gan (2010) reveal the following results: higher GDP support the banking system development, the real interest rate and trade openness do not significantly influence the banking system development.

Ayadi and Hyman (2007) examine the impact of financial liberalization on the bank competition in Nigeria. They find that financial liberalization was unsuccessful in fulfillment its aim of a market-driven interest rate system and also a means for central bank to manage the banking system. The most important causes of financial liberalization failure in Nigeria

were the aspiration of authorities to attain many changes within a very short period of time, the lack of social infrastructure and the oligopolistic structure of the banking system.

Gupta, Kochhar and Panth, (2011) investigate the effects of financial liberalization on Indian banking system during 1991-2007, finding that government ownership and high fiscal deficits can limit the gains obtained from financial liberalization. Analyzing the cost efficiency of banking industry in India, Das and Drine (2011) discover that the public sector banks are the most efficient banks followed by the domestic private sector and foreign banks, contrary to the international evidence. The possible explanations of this conclusion are: the natural monopoly argument (the public sector banks obtain the advantage of the first player and as well as the economies of scale) and the analyzed period is one of the consolidation for foreign banks and the new private banks.

Trying to assess the probability of banking failure in Tunisia, Sami and Bechir (2009) evaluate and compute the effect of financial liberalization on the bank's risk exposure. Their empirical research illustrate that the boost in loans supply in Tunisian banks is positively correlated to the probability of banking failure. Moreover, the financial liberalization amplify the banking deposits, which are negatively correlated to the probability of banking failure. They also find a negative relationship between return on banking assets and the probability of failure.

Angkinand, Sawangngoenyuang and Wihlborg (2010) realized a cross-country analysis of 48 countries between 1973 and 2005, aiming to explain why financial liberalization can causes banking crisis, especially in the conditions of very weak regulation and supervision. They suggest that the relationship between financial liberalization and banking crisis may be explained by the type of liberalization, level of deposit insurance coverage, type of country and strictness of reforms.

Andrieş and Căpraru (2011) examine the link between financial liberalization and banking performance in 17 countries from Central and Eastern Europe during 2004 - 2008. Their empirical research indicate that countries with a higher level of openness and liberalization can recorded an increase the cost efficiency and offer cheaper services to their customers. Moreover, the bank's productivity are positively influenced by the level of

banking reforms, the score regarding soundness, the safety of banks and the interest rate liberalization indicator .

Andrieş, Apetri and Cocriş (2012) investigate the impact of the banking reforms on the banks' performance in 5 Central and Eastern European countries between 2001 and 2008, The authors reveal that the indexes of the financial and banking reform have a positive effect on the banking performance index measured in terms of the cost of intermediation, operational performance and return on assets.

Hassan, Sanchez and Safa (2013) studied the impact of financial liberalization and foreign bank entry of domestic Islamic banks' performance and credit availability to private sector. Their funding was that foreign Islamic banks pursue aggressive financing in host countries and earn higher net profit margin. The entry choice and existence of foreign banks are significant influenced by the banking system returns and favorable economic environment and discouraged by the higher tax policies. The entry decisions were not be significant influenced by the recent crises, that seriously affected the profitability of domestic Islamic banks. However, domestic Islamic banks performance depends on the domestic tax policies and economic conditions. They also find that credit availability to private sector suffered because of high tax and reserve rate.

3. Methodology

In order to investigate the impact of financial liberalization on the degree of informational efficiency in banking system, we estimate the following panel regressions:

$$GS_{it} = c_1 + c_2 * MI_{it} + c_3 * Kaopen_{it} + c_4 * CA_{it} + c_5 * Lo_{it} + c_6 * Dc_{it} + \varepsilon_{it} \quad (1)$$
$$GS_{it} = c_1 + c_2 * ERS_{it} + c_3 * Kaopen_{it} + c_4 * CA_{it} + c_5 * Lo_{it} + c_6 * Dc_{it} + \varepsilon_{it} \quad (7)$$
$$GS_{it} = c_1 + c_2 * MF_{it} + c_3 * IF_{it} + c_4 * FF_{it} + \varepsilon_{it} \quad (13)$$

where GS_{it} is a measure of informational efficiency for country i at time t, MI_{it} represents the monetary independence, ERS_{it} is the exchange rate stability, KO_{it} is the Kaopen index, MF_{it} represents the monetary freedom index, IF_{it} is the investment freedom index, FF_{it} is the financial freedom index, CA_{it} represents the bank capital to assets ratio, Lo_{it} represents the

bank nonperforming loans to total gross loans, Dcit is the domestic credit provided by banking sector, and the εit is the error term.

Because the analyzed sample represents a group of banks from developing countries, we used to analyze the weak form efficiency hypothesis the Generalized Spectral test of Escanciano and Velasco (2006). The methodology of the test is presented below:

is the stationary time series of returns;

i.   the null hypothesis of MDH is H0 : mj (y) = 0, j ≥ 1;

ii.   where $m_j(y) = E[Y_t - \mu \,|Y_{t-j} = y]$ and μ is the mean;

iii.   the alternative hypothesis is $H_A : P(m_j(Y_{t-j}) \neq 0) > 0$ for some j ≥ 1;

iv.   there is a nonlinear measure of dependence $y_j(x) = E[(Y_t - \mu)e^{ixY_{t-j}}]$ where x is a real number;

v.   the generalized spectral distribution function:

$$H(\lambda, x) = y_0(x)\lambda + 2 \sum_{j=1}^{\infty} \gamma_j\,(x)[\sin(j\pi\lambda)/j\pi], \qquad \lambda\varepsilon[0,1]$$

with the sample estimate as following:

$$\hat{H}(\lambda, x) = \hat{y}_0(x)\lambda + 2 \sum_{j=1}^{n-1}(1 - j/n)^{1/2} \hat{\gamma}_j(x) \frac{\sin(j\pi\lambda)}{j\pi}$$

where $(1 - j/n)^{1/2}$ is a finite sample correction factor,

$$\hat{y}_j(x) = (n - j)^{-1} \sum_{t=1+j}^{n} (Y_t - \bar{Y}_{n-j})\, e^{ixY_{t-j}}$$

and

$$\bar{Y}_{n-j} = (n - j)^{-1} \sum_{t=1+j}^{n} Y_t$$

.

Under the null martingale difference hypothesis the generalized spectral distribution becomes $H(\lambda, x) = \gamma_0(x)\lambda$ and the test takes in account on the difference between $\hat{H}(\lambda, x)$ and $\hat{H}_0(\lambda, x) \equiv \hat{y}_0(x)\lambda$, as following:

$$S_n(\lambda, x) = \left(\frac{n}{2}\right)^{1/2} \left[\widehat{H}(\lambda, x) - \widehat{H}_0(\lambda, x)\right] = \sum_{j=1}^{n-1} (n-j)^{1/2} \hat{\gamma}_j(x) \frac{\sqrt{2}\sin j\pi\lambda}{j\pi}$$

To evaluate the distance of to zero, the Cramer-von Mises norm is used:

$$D_n^2 = \int_R \int_0^1 |S_n(\lambda, x)|^2 \, W(dx) d\lambda = \sum_{j=1}^{n-1} (n-j) \frac{1}{(j\pi)^2} \int_R |\hat{\gamma}_j(x)|^2 W(dx)$$

If the standard normal cumulative distribution functions is settled as the weighing function, the following statistics results:

$$D_n^2 = \sum_{j=1}^{n-1} \frac{n-j}{(j\pi)^2} \sum_{t=j+1}^{n} \sum_{s=j+1}^{n} (Y_t - \bar{Y}_{n-j})(Y_s - \bar{Y}_{n-j}) \exp\left[-0{,}5(Y_{t-j} - Y_{s-j})^2\right]$$

where the null hypothesis of MDH will be rejected for large values of

.

4.   Data

We choose to analyze the banking system efficiency by using the daily closing values of five banks: Romanian Bank for Development – BRD, Komercni banka – KOM (Czech Republic), OTP Bank (Hungary), Bank Pekao - PEK (Poland), and Transilvania Bank – TLV. The analyzed period is 2001 – 2010. All closing values are expressed in national currency.

The value of informational efficiency is calculated as GSit=|p-0.5|, where p is the p-value of Generalized spectral test. The frequency of both dependent and independent variables is annually. MIit, ERSit and KOit are the

indexes of the trillemma measures proposed by Aizenman et al. (2010) (figure 1).

Figure 1: Trilemma indexes
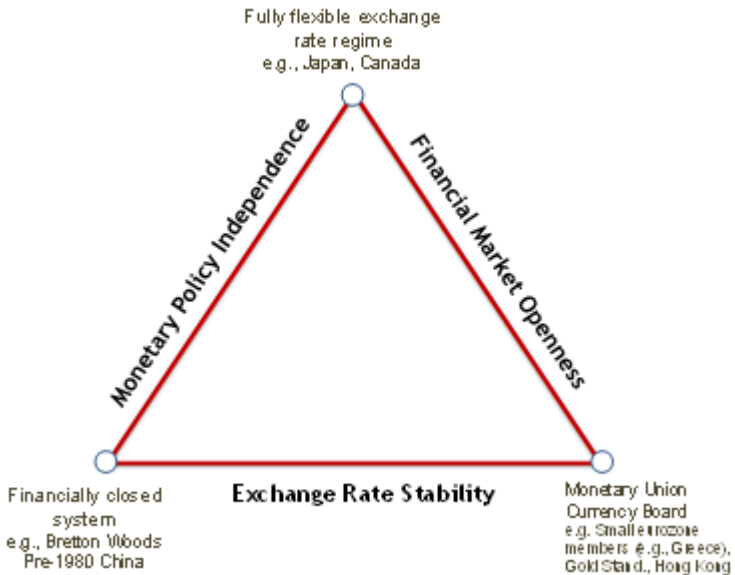
Source: Aizenman J., Chinn M.D., Ito H. (2008)

The first index is measured as the reciprocal of the annual correlation between the monthly interest rates of the domestic country and the base country. Second index can bring out price stability and lower risk premium.The third index was developed by Chinn and Ito (2006, 2008), and represents the capital account openness. Kaopen index is based on the information that regards the restrictions in the International Monetary Fund's

Annual Report on Exchange Arrangements and Exchange Restrictions. Its higher values will indicate that a country is more open to capital transactions aboard.

The freedom indexes are obtained from heritage database. Monetary freedom index is a measure of price stability combined with an assessment of price controls. The investment freedom index shows the restrictions imposed on investment. The financial freedom index is a measure of banking efficiency. Also, it represents a measure of independence from government control and interference in the financial sector.

The annual data for the CAit, Loit, and Dcit independent variables are taken from the World Bank's World Development Indicators database and are expressed in percentage.

5. Empirical results

Variable	(1)	(2)	(3)	(4)	(5)	(6)

The values of Generalized Spectral test were estimated in Matlab program, by using 500 numbers of bootstrap iterations. We can see that the analyzed banks become more efficient in the weak form, but the appearance of the global financial crisis has diminished the level of informational efficiency. For the Romanian banks, we calculate for each year an average of the p-values. We estimate the regression in a panel data in Eviews. Furthermore, we use the panel generalized method of movements' without effects.

In table 1, we can see the result of the first regression:

C	0.187569*	0.203054***	0.207059***	0.316205***	0.308116***	0.382323***
	(1.856738)	(2.781928)	(2.934308)	(12.84572)	(11.8368)	(30.42394)
MI	0.006034	0.003768				
	(0.349237)	(0.271995)				
Kaopen	0.072413***	0.074706***	0.07539***	0.058777***	0.081621***	
	(2.963525)	(3.409832)	(3.509332)	(3.030559)	(4.473464)	
CA	-0.01077					
	(-0.22519)					
LO	-0.02973**	-0.02934**	-0.03046**	-0.03408**		-0.05357***
	(-2.03649)	(-2.05208)	(-2.25327)	(-2.49834)		(-4.03927)
DC	-0.03204	-0.03134	-0.0321			
	(-1.56503)	(-1.57024)	(-1.6454)			
R^2	0.48059	0.479815	0.478716	0.439513	0.344962	0.300387

Table 1: Financial liberalization and banking system liberalization (1)
Source: Own processing in Eviews

Notes: White t-statistics are in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% levels.

The empirical results show that only KAOPEN index has a significant and positive impact on informational efficiency. KAOPEN has a positive impact on banking system. This is the first principal component of the variables that indicate the existence of multiple exchange rates, restrictions on capital account and current account transactions, respectively the requirements of the surrender of export proceeds. The bank nonperforming loans to total gross loans have a significant and negative impact on banking system efficiency.

In the seventh regression, we obtained the same results (table 2). It is surprising that the exchange rate stability and monetary independence don`t have an impact on banks efficiency. Also, the three freedom indicators, don`t have any impact on banking system efficiency (table 3). In our paper from 2012 by using another regression, we find that monetary freedom

indicator has a negative and significant impact on banks efficiency. We propose to study in our further research, why we obtain such a difference if we use different regressions.

Variable	(7)	(8)	(9)	(10)	(11)	(12)
C	0.188778**	0.183775	0.207059***	0.316205***	0.308116***	0.382323***
	(2.039842)	(2.149213)	(2.934308)	(12.84572)	(11.8368)	(30.42394)
ERS	0.014366	0.012826				

	(0.509984)	(0.493565)				
Kaopen	0.078304***	0.07699***	0.07539***	0.058777***	0.081621***	
	(3.286336)	(3.507086)	(3.509332)	(3.030559)	(4.473464)	
CA	0.006423 (0.154887)					
LO	-0.027157*	-0.028076*	-0.030458**	-0.034079**		-0.05357***
	(-1.713783)	(-1.937746)	(-2.253267)	(-2.498339)		(-4.03927)
DC	-0.029063	-0.030005	-0.032099			
	(-1.361927)	(-1.487726)	(-1.645401)			
R^2	0.482684	0.482319	0.478716	0.439513	0.344962	0.300387

Table 2: Financial liberalization and banking system liberalization (7)

Source: Own processing in Eviews

Notes: White t-statistics are in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% levels.

Table 3: Financial liberalization and banking system liberalization using freedom indicators

Variable	(13)	(14)	(15)	(160)	(17)	(18)	(19)
C	0.33018	0.25903	0.35949	0.42140	0.5952*	0.596952	0.483555

			9	7*	**	***	***
	(1.430096)	(1.12779)	(1.658736)	(1.952859)	(3.863153)	(4.320332)	(3.96424)
MF	-0.16506 (-1.52389)	-0.12252 (-1.15211)	-0.01671 (-0.25487)	-0.07843 (-1.05814)			0.021783 (0.566373)
IF	0.078348 (1.543505)			0.08465 (1.674801)	0.058667 (1.177936)	0.058059 (1.32222)	
FF	0.0679 (1.094713)	0.078758 (1.258822)			-0.00116 (-0.02695)		

Source: Own processing in Eviews

Notes: White t-statistics are in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% levels.

3. Conclusions

Financial liberalization of the banking sector in the analyzed countries presents the following features: a cautious approach to new market access for new banks; commercial bank model adopted was a competitive type, it was not based on regional or sector segmentation; debt loans were handled transparently by regulatory policies with government financial intervention; capital account liberalization was slow and cautious, there have been developed explicit systems of deposit protection, the important role of privatization to foreign strategic investors, banks governance, regulation and supervision. Despite this trend, interbank interest rates have been volatile.

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