

INFLUENCE OF QUANTITATIVE AND QUALITATIVE FACTORS OF BANKING SECTOR DEVELOPMENT ON ECONOMIC GROWTH IN SOUTH EAST EUROPEAN COUNTRIES*

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Abstract

The aim of this article is to determine the level and the nature of the quantitative and qualitative factors' influences on development of the banking sector and their influence on economic growth in South-East European countries (SEE). We used a OLS model with panel-corrected standard errors (PCSE) and panel data from six transition countries for the period 1999-2006. We measure the qualitative development in the banking sector with the margin between deposit and lending interest rates (INT). Quantitative aspects of the banking sector were measured using variables: Domestic credit to private sector as share of GDP and variable Domestic credit provided by banking sector as share of GDP. Quantitative development of the banking sector affects the economic growth in the observed period, since variable Domestic credit provided by banking sector proved statistically significant. However, the second variable, Domestic credit to private sector, did not prove to be significant in the observed period. With respect to the results obtained for the qualitative banking sector development, the INT variable did not prove significant for economic growth.

JEL classification: E58, G21, O42

Key words: banking sector, economic growth, quantitative and qualitative financial sector development, South-East Europe, Europe, OLS with panel-corrected standard errors (PCSE)

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1. Introduction

Numerous empirical studies on growth determinants in transition countries (De Melo et al.; 1996, Havrylyshyn 2001, Berg et al. 1999) attempt to explain differences in economic growth performances. However, the studies did not pay particular attention to the relatedness between financial market and economic growth. Drakos' paper (2002) discusses effects of banking sector structure on economic performances, while Koivu's paper (2002) deals with quantitative and qualitative aspects of the banking sector and their influence on the banking sector. In this context, this paper also attempts to give a modest contribution in filling the gap in the literature. Therefore, we concentrate on banking sectors as they typically have dominated financial intermediation in transition countries. We emphasise the importance of both the qualitative and the quantitative aspects of the banking sector and measure the qualitative development in the sector with the margin between deposit and lending rates used in Koivu (2002). As in many earlier studies, our second variable for the level of financial sector development is Domestic credit to private sector as share of GDP (DCTPS). Besides this variable, the study also used variable Domestic credit provided by banking sector as share of GDP (DCBS), which we did not encounter in earlier empirical studies. We used an OLS with panel-corrected standard errors (PCSE) and data from six transition countries for the period 1999-2006. By empirical analysis, we primarily wanted to test the earlier papers' results, using data for longer time periods, and then try to gain some new insights using some additional variables.

In section 2 we discuss theoretical framework about financial system development and growth. The following section 3 presents the data used in this study and methodology. Section 4 summarises the empirical results, and section 5 provides overall conclusions.

2. Theoretical framework

Technological changes and capital accumulation are the driving forces for sustained economic growth in most macro-economic growth theories, including neo-classical and endogenous growth theories. The micro-economic rationale for financial systems is based largely on the existence of frictions in the trading system. As the integral part of the growth process is financial systems through provision of funding for capital accumulation and for the diffusion of new technologies. At the same time adequate functioning of financial systems can reduce information asymmetric and acquisition costs, through efficient connection of savers and investors and eventually influenced economic growth. Financial systems perform several functions that serve to ameliorate these frictional costs (Pagano, 1993; Levine, 1997) and thus bear on capital accumulation and technological progress. Four broad groups of services are

examined here: a) mobilizing savings; b) diversifying risk; c) allocating savings; and d) monitoring the allocations of managers (Leahy, 2001).

Postulating a link between financial development and economic growth entails relaxing some neo-classical assumptions. First, in an Arrow-Debreu model with no information or transaction costs, there is no need for a financial system. Hence, it is the costs of getting information and making transactions that create incentives for the emergence of financial markets and institutions. Second, in a neo-classical growth model, only the exogenous technology factor affects the steady-state per capita growth rate. Hence, in this theoretical framework, the level or type of financial development could affect the long-term growth rate only via a very limited route if it directly affected the *rate* of technological progress (Tsuru, 2000).

A recent surge of interest in the link between financial development and economic growth has resulted mainly from the development of endogenous growth models, which raise the possibility of an influence of institutional arrangements on growth rates. These models could thus offer important insights to the impact of financial development on economic growth. Through changes productivity of capital or the efficiency of financial systems and/or the saving rate, financial development could influence the economic growth rate.

As the consequence of finance-growth relationship, more efficient transformation of saving into investment and the effect on the saving rate become the channels through finance influences economy growth. The efficient of a financial system is related to the allocation of funds to the most profitable projects. In such a way, by allocating capital more efficiently, a financial system could improve the productivity of capital, and hence economic growth. However, this process is costly. First, in order to find the most profitable project, financial systems need to monitor or screen alternative projects. Even if high-return projects are detected, their possible high risks might discourage individuals from investing in these projects. Thus, financial systems must play a role of risk-sharing and induce individual investors to invest in riskier but higher-return projects. The role of information acquisition and risk-sharing by financial intermediaries was explored by Greenwood and Jovanovic (1990). Bencivenga and Smith (1991) showed that financial intermediaries have possibility to enhance the productivity of capital and influence the growth rate through funds allocation to more illiquid and productive assets and reducing the premature liquidation of profitable investments.

3. Data and modelling

The empirical analysis used data for 6 transition countries in South East region[†] in the 1999-2006 period. It is well known that there are significant problems

[†] Albania, Bosnia and Herzegovina, Bulgaria, Croatia, FYR Macedonia, Romania,

with transition countries data. Despite the fact that there are different sources for independent variables we used in the models, the aim was to use data from just a few sources in order to avoid problems resulting from different ways of defining the variables and collecting data.

Economic growth is a complex process affected by a number of factors, and theory gives us no clear or single answer to the question about the right model specification. Literature also contains a dilemma as to whether the dependent variable in the empirical analysis of economic growth should be the real GDP per capita growth rate or its value (Mervar, 2002). Most analyses use GDP growth rate, starting from the assumption that changes in the explanatory variables have a permanent effect on the GDP growth rate. Consequently, the dependent variable in the paper is the real GDP per capita growth rate. The source for this variable is the World Banks World Development Indicators database.

The paper analyzed the qualitative and quantitative financial sector development. It is a standard practice in measuring the quantitative development of the financial sector in empirical studies to use measures of components of the financial system (relative to GDP) such as: (1) Liquid liabilities, consisting of currency and interest-bearing liabilities of bank and non-bank financial intermediaries, is intended as a measure of the overall size of the financial intermediary system, (2) Private credit of deposit money banks provided to the private sector, consisting of the total claims of deposit money banks on the private sector, aims to measure the degree of financial intermediation that occurs in the banking system, (3) Stock market capitalisation, consisting of the value of listed shares, attempts to measure the ease with which funds can be raised in the equity market. An alternative measure is total claims of deposit banks and other financial institutions, the latter including insurance companies, finance companies, pooled investment schemes (mutual funds) savings banks, private pension funds and development banks (Leahy et al.; 2001). This study used two variables: Domestic credit to private sector (% of GDP)[‡] and Domestic credit provided by banking sector (% of GDP).

The qualitative effectiveness of banking sector was measured using the interest rate margin (INT) as the difference between deposit and lending rate in the banking market. According to Koivu (2002), the margin is likely a good estimator for efficiency in the banking sector as it describes transaction costs within the sector. If the margin declines due to a decrease in transaction costs, the share of savings going to investments increases. As growth is positively linked to investment, a decrease in transaction costs should accelerate economic

[‡] Credit to the private sector to GDP are the most widely used indicators to measure financial depth, i.e. the extent to which resources are intermediated across time periods and agents via the banking system.

growth. The source of the cited data are Transition Reports published by the EBRD. Deposit and lending rates are unavailable for identical periods for each country. The overall size of the margin, however, should not be affected significantly by lending/deposit periods and should not affect the empirical analysis results. Data that were not published in the Transition Reports were sourced from the data published by national economies' banks and statistics agencies.

Data for the cited indicators were sourced from IMF's International Financial Statistics and World Bank Development Indicators. Use of Domestic credit to private sector and Interest rate margin as variables allowed us to compare results to previous studies such as that by Kiovu (2002).

In order to control other factors affecting the economic growth, a certain number of control variables were used. Macroeconomic stability, as the first control variable, was approximated as the inflation rate – consumer price index. In line with the results of a number of studies (De Melo et al. 1996, Havrylyshyn et al. 1998, Berg et al. 1999), we expect higher inflation to have a negative influence on economic growth. The source for this variable is the World Development Indicators database. Data for independent variables that were missing in the WDI base were complemented with those published by National Statistical Offices in the sample countries.

The second control variable was the Transition index (TI), which consists of ten indices published by EBRD. These indices measure Large scale privatisation, Small scale privatisation, Enterprise restructuring, Price liberalisation, Trade & Forex system, Competition Policy, Banking reform & interest rate liberalisation, Securities markets & non-bank financial institutions, Overall infrastructure reform and Telecommunications. For each country, we have taken a simple average of these indices for each year. The expected sign for this variable is positive.

Liberalization of trade could be closely related to economic growth. The share of exports and imports in the observed countries to GDP was used as the degree of openness. The expected sign of coefficient with this variable is positive.

Besides the described variables, the study controlled the effect of FDI on economic growth. For this purpose, we used indicators of the share of FDI inflow in GDP and the number of foreign banks in the observed countries. Sources for these data included EBRD Transition Report and Vienna Institute for International Economic Studies (WIIW) database for 2006.

In this study, we estimated fixed-effects models (FEM). This type of model is basically an Ordinary Least Squares (OLS) regression that includes a dummy variable for each country to account for country-specific effects (LSDV model). The OLS method is optimal if error processes have the same variance (homoscedasticity) and all of the error processes are independent of each other. Nevertheless, the panel data are typically plagued by complicated error processes (Beck & Katz, 1995):

- panel heteroscedasticity (i.e. variances of the error processes differ from country to country);
- contemporaneous correlation (i.e. large errors for country i at time t will often be associated with large errors for country j at time t); and,
- serial correlation (i.e. errors for each country show temporal dependence (autocorrelation)).

We therefore used tests for checking on the presence of heteroscedasticity and autocorrelation. First, a modified Wald test for groupwise heteroskedasticity in fixed effect regression model reveals the presence of heteroscedasticity, which, while leaving coefficient estimates unbiased, can significantly influence standard errors and therefore affect hypothesis testing. In addition to heteroscedasticity, the estimates using FEM model are also affected by serial correlation. In particular, a Wooldridge test for autocorrelation in panel data rejects the null of first order serial correlation. Suppose that autocorrelation is eliminated from the data, but panel heteroscedasticity and contemporaneous correlation is still present. In this case, OLS yields consistent estimates, but OLS is not optimal: in other words, other estimators exist that are more efficient. But a much more serious problem is that OLS standard errors are unreliable. Since one usually assumes that panel data inherit this complicated error processes, Generalised Least Squares (GLS) methods that account for panel heteroscedasticity and contemporaneous correlation are often used instead. Nevertheless, Beck and Katz (Beck & Katz, 1995 and 1996) showed that these approaches significantly underestimate the variability of the estimated coefficients, especially if the sample size is small. In this study, we followed the suggestions of Beck and Katz and estimated OLS model (with countries dummy variables) with panel-corrected standard errors (PCSE) that account for panel heteroscedasticity and contemporaneous correlation to assure reliable standard errors.

We thus estimate the following regression:

$$\text{GROWTH}_{it} = \beta_{0,i} + \beta_1 \text{FINANCE} + \beta_2 (\text{CONDITIONINGSET}) + \varepsilon_{it}$$

where the dependent variable, GROWTH, equals real GDP per capita growth rate, β_0 is constant, FINANCE equals either INT or DCTPS/DCBS and CONDITIONINGSET represents a vector of conditioning information that controls for other factors associated with economic growth. The error term is ε_{it} . Empirical analysis was conducted for period 1999-2006. Since our panel data set is quite small, we have to keep an eye on the degrees of freedom when specifying the models, giving the priority to specifications with a smaller number of explanatory variables

4. Results

Results from the panel estimations are presented in Table 1.

Table 1: Panel regression results

	1	2	3	4	5	6	7	8	9	10
DCTPS		0,12 (0,11)		0,15 (0,10)		0,10 (0,09)		0,14 (0,12)		0,21* (0,12)
DCBS	0,47** (0,20)		0,47** (0,21)		0,49*** (0,17)		0,66*** (0,26)		0,74*** (0,26)	
INF	- 0,07** (0,03)	- 0,08** (0,03)	- 0,08** (0,03)	- 0,09*** (0,03)	- 0,08*** (0,03)	- 0,08*** (0,03)	-0,06* (0,03)	- 0,08** (0,03)	-0,07** (0,03)	- 0,09*** (0,03)
OP	0,96 (0,68)	1,23** (0,58)	1,59 (0,96)	1,90** (0,87)	0,80 (0,58)	1,15** (0,50)	0,84 (0,68)	1,21** (0,57)	1,76* (0,96)	2,06** (0,87)
INT	-0,06 (0,22)	-0,04 (0,22)	0,125 (0,23)	0,15 (0,24)	-0,11 (0,18)	-0,08 (0,20)	-0,23 (0,22)	-0,09 (0,24)	-0,02 (0,23)	0,09 (0,25)
TI			-3,19 (2,46)	-3,58 (2,44)					-4,97* (2,70)	-4,60* (2,53)
FDI/GDP ratio					0,17 (0,14)	0,13 (0,14)				
No. foreign banks							0,03* (0,01)	0,01 (0,01)	0,04*** (0,01)	0,23* (0,01)
R-sq	0,42	0,39	0,44	0,41	0,56	0,49	0,42	0,39	0,48	0,42
Prob>F	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Number of obs.	44	44	44	44	44	44	44	44	44	44

Source: Authors' calculations

Note: Asterisks indicate variables whose coefficients are significant at the 10%(*), 5%(**), and 1% (***) level, respectively. All regressions include a constant and country dummies (not reported in the table).

There is no precise counterpart to R^2 in the generalised regression model. The R^2 from the transformed model is purely descriptive (see Greene 1999:467).

Turning first to the results for the control variables, we note that, in most models, the variables display the correct sign and that coefficients cannot change significantly. This shows us the stability of the model. Of control variables, it should be noted that regression coefficient with INF has the expected negative sign and the statistical significance at the 1%, 5% and 10% in different models. Thus, results lead to the conclusion that the inflation effect, i.e. macroeconomic stability has an influence on generating higher economic growth rates. In case of the INF variable, the obtained coefficients also have the same value. The second control variable, OPENNESS, has the expected positive sign although its significance is different. It is interesting to note that the OPENNESS variable is statistically significant mostly in models that include the DCTPS variable. The third control variable TI does not have the expected positive sign, and is significant only in models that include the proxy variable on the number of foreign banks. The obtained result for this variable can be explained by small within standard deviations, which suggests that

coefficient for TI may not be as well identified as the others (Baum, 2006, 223). Proxy variables for FDI did not prove significant in explaining economic activity in the observed transition period, which is surprising since some studies revealed its significantly positive effect on the transition economies recovery. Certainly, we may assume that the size of FDI is significantly correlated with the achieved structural reforms, and that FDI inflow due to fluctuation is not a good indicator which, coupled with the short data series, probably explains such a result in the empirical analysis. This corresponds with the result obtained by Havrylyshyn, Izvorski and van Rooden (1998), who also did not find that the link between FDI and growth is important. On the other hand, the foreign bank penetration ratio, which captures financial sector evolutions which are more qualitative, exerts a positive impact on growth.

In all models, domestic credit to private sector is expectedly positive but not significantly (except in model 12). The second variable that approximates the quantitative banking sector development, DCBS, has a significant impact on economic growth. With respect to qualitative banking sector development, the INT variable has the expected negative sign in most models, but is not statistically significant.

Based on the obtained results, it can be concluded that quantitative development of the banking sector affects the economic growth in the observed period, since variable DCBS proved statistically significant. Due to the use of different indicators for the qualitative banking sector development, DCTPS and DCBS, a possible explanation for the obtained results can be found in the credit supply to different target groups (the private and the public sector), which can have a different effect on economic growth. Thus, domestic credit, which includes private credit as well as credit to central government, was more important for growth than private credit. The obtained result corresponds with conclusions by Fink et al. (2004). In line with Breyer et al. (2004), credit to the public sector may be growth-enhancing as well, because foreign banks finance budget and current account deficits. This creates a certain mutual dependency of the public and the financial sector. In turn, the interest of foreign banks in an efficient, sound, regulated, and stable financial sector is aroused in order to mitigate country risk and promote economic development (Eller et al., 2005). Besides, the increasing credit supply frequently does not suffice to affect investment and achieve higher rates of economic growth. Countries can even have high investment rates but achieve low economic growth rates, such is the case in the former Soviet Union. In such cases, the capital was simply not allocated in an efficient way in terms of the sector the loan was placed in (Eller et al., 2005).

Contrary to quantitative development, the qualitative banking sector development in SEE countries did not prove significant for economic growth. A

possible explanation may be found in the fact interest rate margins were and still are higher (compared to EU and CEE financial markets), and that the increase in credit volume is probably not due to decreasing interest spreads. Thus, the obtained results are not in line with the results of studies such as those by Koivu (2004), who found evidence that increasing financial sector efficiency measured by interest margins has growth-enhancing effects on CEE economies in transition. Admittedly, available time series may be still too short to uncover such an impact, since the reduction in interest rate margins had been faster in the first period of transition.

5. Conclusion

The paper examined the link between the banking sector and real GDP growth in SEE transition economies. We used a OLS (with countries dummy variables) with panel-corrected standard errors (PCSE) that account for panel heteroscedasticity and contemporaneous correlation to assure reliable standard errors and data from 6 transition countries for the period 1995-2006. We used variables to measure the level of qualitative and quantitative effectiveness of financial sector development. Two variables were used as proxy variables for quantitative development of the banking sector: Domestic credit to private sector (% of GDP) and Domestic credit provided by banking sector (% of GDP). On the other hand, the qualitative indicator used was the margin between deposit and lending interest rates.

Overall, the results suggest that quantitative development of banking sector affects the economic growth in the observed period, since variable DCBS proved statistically significant. However, the second variable, DCPTS, did not prove to be significant in the observed period. The most plausible explanation can be found in credit supply to different target groups (the private and the public sector), which can have a different effect on economic growth .

With respect to the results obtained for the qualitative banking sector development, the INT variable did not prove significant for economic growth. A possible explanation may be found in the fact that interest rate margins were and still are higher compared to EU and CEE financial markets, and that the increase in credit volume is probably not significantly due to decreasing interest spreads.

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