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by

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Abstract

The hypothesis that financial development promotes economic growth enjoys significant empirical support from empirical evidence drawn from both developed and developing countries alike. However, analogous empirical evidence is still lacking for economies in transition. This paper analyses the effects of financial intermediation on the growth of real GDP by employing data for 27 countries over the period of 1989-2004. Using an endogenous growth model and panel data analysis techniques, we estimate regressions with various proxies for financial sector development. We find (i) that tertiary educational institutions enrolment is better proxy for human capital development in post-communist countries than the more frequently used secondary-school enrolment; (ii) that in contrast to some recent empirical studies of developed and developing economies, the outcomes for transitional economies depend on the choice of the proxy for financial development. In the regressions where proxies place emphasis on the "institutional" development of financial intermediaries, we find a robust positive link between financial development and economic growth for transitional economies. By contrast, if financial development is represented by liquid liability measures, the results are inconclusive.

Key Words: economic growth, financial development, transition

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INTRODUCTION

Financial systems are an integral part of modern economic systems. The structure, level of sophistication and relative importance of financial institutions differs considerably across countries around the world. However, since money is obviously intrinsic to almost all economic relationships, financial intermediation plays a critical role in economic activity.

A substantial theoretical literature exists on putative links between the degree of financial development and the rate of economic growth (see, for instance, Bagehot, 1991 (1873); Schumpeter, 1936 (1911); Bhatt, 1989; Merton and Bodie 1995; and Levine, 1997). Moreover, this conceptual literature has been augmented by a growing body of empirical work that has sought to test whether a finance-growth nexus could be established in either developed or developing countries (see, for example, Goldsmith, 1969; McKinnon, 1973; Jung, 1986; King and Levine 1993a, 1993b; Neusser and Kugler, 1998; Odedokun, 1996; Ram, 1999; Levine et al. 2000; Benhabib and Spiegel, 2000; Lensink, 2001; and Calderon and Liu, 2003). In general, empirical evidence is equivocal on the positive link between financial development and economic growth. However, most economists seem to support the argument that the development of the financial sector is an important prerequisite for economic growth.

Principal among existing econometric studies is the seminal paper by King and Levine (1993a), which is in the tradition of cross-country empirical studies of economic growth. Using four different financial development indicators that were based on data for a number of different countries covering the period 1960-1989, they found that higher levels of financial development are significantly and

robustly correlated with faster current and future rates of economic growth, physical capital accumulation, and economic efficiency improvements.

With the collapse of command economies in the Eastern block during the late 1980s, and the peculiarities of their economic transformation towards market economies, it thus seems important to assess the validity of extant theory on finance and growth in the context of transitional economies.

However, various difficulties present themselves. For instance, the transition process is a comparatively recent phenomenon. Accordingly, until recently econometric techniques did not allow any serious investigation of the problem due to the insufficient number of available observations. Nevertheless some work has been undertaken. In particular, two recent studies of post-communist countries warrant mention. In the first place, Dawson (2003) used fixed and random effects panel estimation techniques to examine the purported link between financial development and economic growth in 13 Central and Eastern European countries over the period 1994-1999. A second paper by Gillman and Harris (2004) re-estimated the Dawson neoclassical model for the same countries, but for the longer time period 1990-2002. The 'liquid liabilities to GDP' ratio was used as a proxy for financial development in both papers. In contrast to the conventional wisdom, these studies did not find a positive significant relationship between financial development and economic growth. The question therefore arises as to whether the transition countries are so peculiar that the general theory becomes inapplicable to them or are there other reasons to explain such counter-intuitive results. Accordingly, he present paper examines whether there is a positive relationship between financial development and economic growth in transitional economies. In contrast to Dawson (2003), and Gillman and Harris (2004), this paper uses a larger

and more up-to-date data panel, as well as a more comprehensive selection of financial development proxies to investigate the hypothesized finance-growth link.

The paper itself is divided into five main sections. Section 2 discusses the choice of variables for modelling, definitions and data sources. Moreover, it provides the reader with relevant summary statistics. Section 3 considers the choice of models for the experiments as well as the methodology employed. Section 4 presents the major findings from the regression exercises. The research outcomes and their possible policy implications are discussed in section 5. The paper ends with some brief concluding comments in section 6.

DEFINITIONS, DATA AND SUMMARY STATISTICS

Definitions

Since no existing financial system development indicators can fully and accurately capture the complexity and sophistication of the role of financial intermediaries, it is unwise to rely on a single financial development indicator. Accordingly, we will use four proxies for the financial system development in order to examine the various dimensions of the financial sector.

Firstly, following Dawson (2003) and Gillman and Harris (2004), this paper uses the popular indicator of liquid liabilities (i.e. monetary aggregate M2) to GDP ratio, which measures the size of formal financial intermediary sector relative to economic activity. Following King and Levine (1993a), we will refer to this variable as LLY.

The second financial system development proxy that we use was initially suggested by King and Levine (1993a). This proxy is termed BANK indicating the ratio of commercial bank assets divided by commercial bank plus central bank assets. The rationale behind this measure resides in the belief that commercial

banks are better at identifying viable economic projects since they are likely to have an effective system of mobilising savings, information acquisition, risk management and corporate control. A serious drawback of this indicator is that it is impossible to identify how effective banks actually are in practice. For example, in some transitional countries commercial banks may be under government control and forced to pursue official policies. An additional problem with this indicator is that banks represented only part (though often a significant part) of total financial services providers. Notwithstanding these shortcomings, King and Levine (1993a) commended this proxy as an additional measure of financial intermediary development.

The third and fourth proxies for financial system development were also suggested by King and Levine (1993a). We thus use their original abbreviations (PRIVATE and PRIVY). These proxies are designed to reflect the direction of the distribution of financial resources by the financial sector. Credits issued to private enterprises are separated from credits allocated to state-owned companies. The rationale behind these measures are (i) private enterprises are more likely to use financial resources efficiently since they face tighter budget constraints than state-owned companies; and (ii) financial intermediaries are likely to have more freedom (i.e. less likelihood of government intervention) in applying "best-risk" management practices when issuing credits to private firms rather than to state-owned companies. PRIVATE is calculated by dividing claims on the non-financial private sector by total domestic credit (excluding credit to money banks). PRIVY is a ratio of claims on the non-financial private sector to gross domestic product (GDP). King and Levine (1993a) also suggested possible shortcomings with these indicators. For instance, both proxies may represent the overall size of private borrowing but not necessarily the level of the financial services.

The measure of real GDP growth will be used as a dependent variable. Following the Dawson (2003) and Gillman and Harris (2004) studies, the natural logarithm form of the real GDP growth is used. The name GY is assigned to this measure and it is calculated using the following formula:

$$GY_t = (\ln GDP_t - \ln GDP_{t-1}) \times 100\%$$

From the neoclassical and endogenous growth theories, it is known that the fundamental variables affecting economic growth are physical capital, labour and human capital (in case of endogenous theory). Therefore, proxies for each of those variables had to be selected. The most popular measure of physical capital growth (used by Dawson, 2003; Gillman and Harris, 2004; and Levine et al. 2000) is the ratio of domestic investments to GDP. The common abbreviation for this indicator of INV is used in the present research. Another important 'ingredient' of growth models is labour. Growth of the labour force variable in this modelling will be used. This is a significant improvement in comparison to many earlier studies where raw population growth was used as a proxy for labour force growth. Like GDP growth, labour force growth will be expressed in natural logarithm form (GL) and calculated as follows:

$$GL_t = (\ln L_t - \ln L_{t-1}) \times 100\%$$

Endogenous growth models imply that technological progress is internally generated through human capital. Proxies for human capital are thus necessary. The popular proxy for human capital development (partly because of its ready availability) is secondary school enrolment as calculated by the World Bank. This indicator is included under the name SEC. However, the chief problem with this variable is that technological progress is usually driven by the people with more "in-depth" education and knowledge than simply secondary school graduates.

Indeed, in former communist countries of Eastern Europe (united in the Council of Mutual Economic Assistance (CMEA)), secondary school education was compulsory and vigorously enforced. The percentage of secondary school graduates was thus similar in all CMEA countries and close to 100%. It follows that variability of growth patterns is likely to be poorly explained by this variable. To solve this problem, we introduced the tertiary education enrolment ratio also calculated by the World Bank and named it TER.

Data

An important aim of the present study is to identify relationships between the financial development and economic growth in transition economies based on the widest sample possible. Data on 27 countries in transition was collected representing regions of Eastern and South Eastern Europe, Caucasus, Central Asia and East Asia. These included: Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Czech Republic, Former Yugoslav Republic (FYR) of Macedonia, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Ukraine, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, China, Mongolia and Vietnam. Unfortunately, data for Serbia, Montenegro, Turkmenistan and Uzbekistan are inadequate for inclusion in present study. The sample period is chosen to be the largest possible, 1989-2004.

The data used for the research are from International Financial Statistics (IFS) On-line (for financial proxies) and World Development Indicators (WDI) On-line (for all other measures) databases. The methodology as to how each of the above indicators was calculated, as well as the source from which they were obtained, generally conform to the King and Levine (1993a) study.

Summary statistics

Since the aim of this study has been to include the largest possible number of observations, the sample is not restricted to a balanced panel. The sample size for each country varies and equals a number of years where observations for all variables are available. Unfortunately, human capital proxies have a significantly lower number of observations than other variables, which is reflected in a relatively small number of time-series in comparison with a number of cross-sections in the panel.

The descriptive statistics over the whole sample is summarised in Table 1.

Table 1: Descriptive statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
GY	0.584	10.661	-59.600	62.004
INV	24.607	8.220	-0.691	59.771
GL	0.465	1.237	-5.647	3.899
BANK	75.324	20.428	15.476	100.000
LLY	31.138	26.594	0.019	175.840
PRIVATE	70.037	29.615	0.000	175.497
PRIVY	25.475	25.776	0.000	142.127
TER	34.917	17.280	1.981	72.547
SEC	85.989	12.775	32.223	110.797

As Table 1 illustrates, sample countries experienced extreme volatility in GDP growth rates. The mean value of real GDP growth is just 0.584% and its standard deviation exceeds 10%. Azerbaijan, Bulgaria, FYR Macedonia, Kyrgyzstan, Latvia, Moldova, Mongolia, Romania, Russia, Tajikistan and Ukraine have experienced average negative real GDP growth. In contrast, China and Vietnam enjoyed impressive growth over the period. Investment ratios are relatively stable, averaging almost 25% over the sample period. Average labour growth was

negligible in the whole sample with negative rates in some countries. Finance proxies are rather dispersed among the sample countries. Education levels are generally high in the CMEA countries and lower in the Asian countries of China and Vietnam.

MODEL AND METHODOLOGY

Odedokun (1996: 122) argued that 'virtually all the existing empirical studies on the role of finance on economic growth have no framework with standard theoretical underpinning'. To avoid this shortcoming, the conventional endogenous growth model is used in which financial development constitutes an input. The functional form of the model is as follows:

$$Y_{it} = f(L_{it}, K_{it}, H_{it}, F_{it})$$

where Y is economic growth, L is labour force, H is human capital and F is a measure of the level of financial development.

With two proxies for human development (i.e. tertiary enrolment (TER) and secondary school enrolment (SEC)), two sets of models are distinguished.

The first set of models has GY as a dependent variable and TER as a proxy for human development and has the following form: $GY = f(INV, GL, TER, F)$, where F is one of financial development proxies, including BANK, LLY, PRIVATE and PRIVY.

The second set of models has GY as a dependent variable and SEC as a proxy for the human development and has the following functional form: $GY = f(INV, GL, SEC, F)$.

It is expected that all independent variables will emerge positive and significant from the estimations.

The general regression model for panel can be expressed as follows:

$$Y_{it} = \alpha_i + \gamma_t + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + u_{it}$$

where Y_{it} is country i's ($i = 1,\ldots, N$) real GDP growth in year t ($t = \tau_i,\ldots, T_i$); X_{1it} is the proxy for the physical capital, i.e. INV variable; X_{2it} is the labour growth GL; X_{3it} is a proxy for human capital, being either SEC or TER; X_{4it} is one of the four proxies for the financial development; α_i is an unobserved country effects; and γ_t is an unobserved time effects.

Two approaches are applied to estimate the above equation: fixed and random effects estimations. If the assumption is that intercept varies across countries or time and correlated with explanatory variables, then the fixed effects model is used. The fixed effects model takes α_i to be country-specific constant term in the regression model or/and γ_i to be period-specific constant term. To capture differences in the intercept, the differential intercept dummy technique is used. The fixed effects model is thus often referred in the literature as the least-squares dummy variable model. The fixed-effect model is useful since it is easy to apply and allows the unobservable individual (cross-sectional) effects to be correlated with the given variables. However, it can be expensive in terms of the loss of degrees of freedom when there is a significant number of cross-sectional units.

An alternative option is to assume that the individual effects are strictly uncorrelated with the regressors. The model then will have the individual specific constant terms randomly distributed across cross-sectional units. In the fixed-

effects model, each cross-sectional unit has its own intercept value. In contrast, in the random-effects model, the intercept β_1 represents the mean value of all the cross-sectional intercepts; and the individual cross-sectional error component ε_i represents random deviation of the individual cross-sectional intercept from this mean. ε_i is an unobservable variable (Gujarati, 2003). The benefit of this model form is that it significantly reduces the number of parameters to estimate. The cost is this rather rigid assumption, which may result in inconsistent estimates when violated.

Which one of fixed-effects or random-effects models is superior? One way of approaching the question is to examine underlying assumptions of the two models. If it is assumed that the error component ε_i and the regressors X are uncorrelated, then the random-effect model is appropriate, otherwise the fixed-effect model is preferred. Hausman (1978) developed a formal test to help to choose between these two models. The Hausman test is used to check for orthogonality of the random-effects and the regressors. The underlying idea for the test is that in case of no correlation hypothesis, both OLS in the LSDV model and GLS are consistent, but OLS is inefficient. In contrast, under the alternative hypothesis, OLS is consistent, but GLS is not. As a result, under the null hypothesis, there should not be a systematic difference between the two estimates, and the test can be based on their difference.

For each economic model, the following econometric procedure is applied:

1) The econometric analysis starts with a number of diagnostic tests. The panel is examined for the presence of the unit-root using Im, Pesaran and Shin test. For the explanatory variables with the unit-root correcting procedures are applied.

2) Tests are then conducted to detect heteroskedasticity and autocorrelation. Any problems can be rectified by using White robust estimators.
3) The presence of cross-sectional fixed effects is tested. The panel regression using the OLS method and cross-sectional fixed-effects model is run. The restrictive *F*-test is used to test if cross-sectional effects are significant.
4) Each model is tested using cross-sectional fixed-effects and cross-sectional random-effects model techniques. The Hausman test is run to detect a preferred model among these two.
5) If, a cross-sectional fixed-effects model is favoured, then the presence of time-effects is tested. The restrictive *F*-test is applied to reveal if time-effects are significant.

Following this procedure the preferred model is uncovered for each combination of variables.

RESULTS

Diagnostic tests

The Im, Pesaran and Shin panel unit-root test indicates that four variables show the non-stationarity problem. The null hypothesis of the unit-root is strongly rejected (at 99%) for the variables of GY, INV, GL, BANK and LLY. However, the null hypothesis cannot be rejected for the variables of PRIVATE, PRIVY, TER and SEC.

To solve the problem of the non-stationarity in problematic variables, first differences of the variables are taken. Mathematically the transformation is expressed as follows:

$$Z_{it} = X_{it} - X_{it-1}$$

The new data series are constructed for each variable. As a result, these acquire the new names of DPRIVATE, DPRIVY, DTER and DSEC accordingly. The unit-root tests are re-run for the new variables. The null hypothesis of the unit-root is now rejected for all variables. Output of the Im, Pesaran and Shin test is reported in Table 2.

Table 2: Im, Pesaran and Shin unit root test output

Variable	Statistics	Prob
	Null: Unit root	
GY	-3.537	0.000
INV	-4.206	0.000
GL	-8.532	0.000
BANK	-4.309	0.000
LLY	-4.056	0.000
PRIVATE	0.375	0.646
PRIVY	2.436	0.993
TER	1.340	0.910
SEC	4.069	1.000
DPRIVATE	-13.989	0.000
DPRIVY	-8.831	0.000
DTER	-4E+152	0.000
DSEC	-1E+153	0.000

The problem of heteroskedasticity and autocorrelation is found in all estimations; White robust estimators thus are applied.

Modelling

Since we have two different proxies for the human capital, two sets of models are tested. First set of models include GY as the dependent variable, INV is the proxy for physical capital, GL is the measure of labour growth, DTER is a proxy of human capital and the proxies for the financial development. The set consists of four models, where BANK, LLY, DPRIVATE, and DPRIVY are used as finance proxies, one at the time.

Applying steps (3) to (5) above, the preferred model for each combination of variables is identified. The results of the testing for the preferred models are reported in Table 3.

Table 3: Estimation output for the set of models 1

Dependent variable	GY			
Variable	Fixed CS effect model	Fixed CS and T effect model	Random CS effect model	Fixed CS and T effect model
	1	2	3	4
INV	0.226	0.248	0.109	0.252
	(0.023)	(0.065)	(0.348)	(0.050)
GL	-0.120	0.229	0.193	0.110
	(0.530)	(0.342)	(0.260)	(0.714)
BANK	0.130			
	(0.017)			
LLY		-0.087		
		(0.055)		
DPRIVATE			0.090	
			(0.001)	
DPRIVY				0.154
				(0.003)
DTER	0.219	0.308	0.164	0.260
	(0.138)	(0.027)	(0.029)	(0.073)
Constant	-11.564	0.552	1.268	-2.382
	(0.067)	(0.813)	(0.734)	(0.418)
R^2	0.655	0.695	0.175	0.706
Adjusted R^2	0.505	(0.542)	(0.140)	(0.559)
F-test for cross-sectional effect	6.316	5.198	4.607	4.638
	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Hausman	21.410	11.220	6.500	9.250
	(0.000)	(0.024)	(0.165)	(0.055)
F-test for time-effect	0.899	1.693		2.057
	(>0.10)	(<0.10)		(<0.05)

Note: First numbers are coefficients and numbers in brackets are p-values.

The preferred models are the fixed cross-sectional and time effects for the models with LLY and DPRIVATE variables used as finance proxies. The fixed cross-sectional effects model is selected in the case when BANK is included as a

financial development variable. The random cross-sectional effect model is chosen for the model with DPRIVATE used as a finance proxy.

The estimations provide interesting results for the financial development proxies. Surprisingly, LLY variable are negative and significant at 90%. However, other finance proxies came out as expected (i.e. positive and significant). BANK is significant at 95%; DPRIVATE and DPRIVY are significant at 99%.

Furthermore, the investment variable proved to be positive and significant in three out of four estimations, when 90% is chosen as a critical value; and two out four estimations, when 95% is used. The coefficient for the INV variable does not vary much in these four experiments, which indicates robustness of the estimations. The labour force variable lacked significance in all estimations, whereas the human capital proxy (DTER) emerged positive and significant at 90% in all but one estimation (and significant at 95% in two estimations). The coefficient for TER does not substantially vary across the estimations, which also indicates robustness of the results. The constant is insignificant in all but one estimation, which is a positive signal for the correct specification of the model.

All fixed-effects models produced very high R^2 and adjusted R^2 for the panel data analysis. The random-effects model outcomes for R^2 and adjusted R^2 are lower, but still reasonable for the panel data modelling.

For the next step, the second set of models is tested, where GY is a dependent variable and DSEC is a human capital proxy. The set includes four models, one for each finance proxy, being BANK, LLY, DPRIVATE and DPRIVY. The results of the testing for the preferred models are reported in Table 4.

Table 4: Estimation output for the set of models 2

Dependent variable	*GY*			
Variable	Fixed CS effect model	Fixed CS effect model	Random CS effect model	Random CS effect model
	1	2	3	4
INV	0.204	0.254	0.091	0.105
	(0.004)	(0.003)	(0.386)	(0.191)
GL	-0.202	-0.179	0.089	0.115
	(0.246)	(0.487)	(0.486)	(0.217)
BANK	0.126			
	(0.016)			
LLY		0.122		
		(0.031)		
DPRIVATE			0.087	
			(0.002)	
DPRIVY				0.156
				(0.000)
DSEC	0.011	0.010	0.009	0.009
	(0.372)	(0.431)	(0.274)	(0.360)
Constant	-10.076	-5.403	2.242	2.034
	(0.072)	(0.162)	(0.476)	(0.426)
R^2	0.655	0.617	0.149	0.088
Adjusted R^2	0.508	0.455	0.111	*0.048*
F-test for cross-sectional effect	6.392	5.416	4.768	4.797
	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Hausman	17.180	8.300	3.980	6.860
	(0.002)	(0.081)	(0.409)	(0.144)
F-test for time-effect	0.734	1.140		
	(>0.10)	(>0.11)		

Note: First numbers are coefficients and numbers in brackets are p-values.

The fixed cross-sectional effects model is preferred in the cases where BANK and LLY are included as financial development variables. The random cross-sectional effect model is chosen when the variables of DPRIVATE and DPRIVY are used as finance proxies.

The estimation provided similar results for the financial proxies as in the set of models 1 with one notable exception: The LLY variable came out positive and significant (at 95%). As in previous estimations, DPRIVATE and DPRIVY came

out significant at 99% and with a large positive coefficient. BANK has a large positive coefficient and is significant at 95%.

The investment variable proved to be positive and significant at 95% in two out of four estimations. In two occasions, when DPRIVATE and DPRIVY are used as financial development variables, INV is insignificant. On those two occasions, where INV is significant, it has similar coefficients with the estimations shown in set 1. The labour force variable lacked significance in all estimations yet again. However, this time, it also came out negative on two occasions. The set of models 2 differs from set of model 1 only by the human capital proxy. The secondary school enrolment variable replaced the tertiary enrolment variable. In all estimations so far, DSEC came out positive but insignificant. The constant is insignificant in all but one estimation, which is a positive signal for the correct specification of the models.

All fixed-effects models produced very high R^2 and adjusted R^2 for panel data analysis. The random-effects model outcomes for R^2 and adjusted R^2 are substantially lower, but still reasonable for panel data modelling.

After analysing each set of experiments separately, the outcomes for financial proxies in all estimations can be examined in Table 5 below.

Table 5: Estimates of financial development proxies

Variable	Coefficient (Probability)	Coefficient (Probability)
	1	2
BANK	0.130	0.126
	(0.017)	(0.016)
LLY	-0.087	0.122
	(0.055)	(0.031)
DPRIVATE	0.090	0.087
	(0.001)	(0.002)
DPRIVY	0.154	0.156
	(0.003)	(0.000)

It becomes evident that different variables show different results in the estimations. In the first instance, very good and robust results for the variables BANK, DPRIVATE and DPRIVY are noted. All three variables are significant and have a high and positive coefficient in all estimations. These results are generally in line with outcomes of the estimations in the seminal King and Levine (1993a) and Levine et al. (2000) articles.

The outcome for the LLY variable is inconclusive. On one occasion, it is significant at 94% and negative. On another occasion, it is significant at 97% but positive. On both occasions, the coefficient values are high. Accordingly, the LLY estimates are not robust and do not either support or reject a link between financial sector development and economic growth. These results generally confirm the findings of both the Dawson (2003) and Gillman and Harris (2004) papers.

DISCUSSION

Our empirical analysis of the linkage between financial development and economic growth in transition economies within an endogenous growth framework produced the following important results:

1) The reasoning behind introduction of TER as a proxy for human capital development in transition economies provided in section 2.1 proved to be correct. As expected, it was found that tertiary education enrolment is a better measure of human capital in transition economies than the popular secondary-school enrolment measure. DTER appeared to be positive and significant at the 90% level in three out of four cases, and in another case was marginally insignificant, whereas DSEC is insignificant in all occasions.

2) The results for physical capital proxy are generally in line with conventional wisdom. The investment ratio came out positive on all occasions and significant in majority cases.
3) The labour force variable proved to be insignificant in all occasions and in some cases showed a negative coefficient. The relative unimportance of the labour variable could have been predicted in the transition economies. The main reason is that transformational process caused unemployment in the post-communist economies where it virtually had been non-existent before. In the economies with high unemployment rates, small fluctuations in the labour force would have been likely to have had little relevance for economic growth. Indeed, in some cases the excessive unemployed labour might have been a burden on governmental finances as a result of additional unemployment benefit payments.
4) The findings on the financial development-economic growth nexus have been of primary interest for this study. On the one hand, the results are largely in line with previous studies on developed and developing economies, confirming the link between financial development and economic development. On the other hand, in contrast to King and Levine (1993a), the current study found that the results are dependent on the choice of the proxies used for financial development. The good example is the LLY, also known as the 'financial depth' variable. Our study did not suggest that it has a robust positive relationship with GDP growth. However, it does not contradict the findings of two recent studies on transition economies (e.g. Dawson (2003) and Gillman and Harris (2004)). This may mean that the choice of LLY as a proxy for the financial development is either not a good choice or there is another interpretation of the negative relationship between liquid liabilities and GDP growth measures.

In the first instance, we consider why the LLY might be not a good financial proxy. LLY is ratio of M2 to GDP. According to the standard quantitative theory of money, the identity of $MV=PT$ holds, where M is money supply, V is a velocity of circulation, P is a price level and T is transactions.

The majority of the transition countries have experienced high levels of inflation over the sample period as shown in Table 6 below. With undeveloped financial markets, some governments have resorted to inflationary financing to solve budget deficit problems by increasing the money supply. As a result, increases in the M2 ratio might not necessarily imply an improvement in the efficiency of financial intermediaries. The negative effect of inflation on an economy has been documented by Ghosh and Philips (1998), Barro (2001), Judson and Orphanides (1996), and Gillman and Harris (2004), as well as Khan and Senhadji (2001). As a result, it is not surprising that in the present study LLY has exhibited a negative coefficient in one out of two occasions.

Table 6: Inflation rate statistics

	Inflation (%) in 1989-2004	Inflation (%) in 1999-2002
Mean	188.5681	15.58438
Median	13.68043	5.752851
Maximum	15442.3	316.7933
Minimum	-17.0568	-2.193254
Std. Dev.	906.7903	37.23418

In the second place, Gillman and Harris (2004) provided an alternative explanation. They argued that the substitution from short-term liquid instruments into longer term less liquid instruments takes place as the business cycle heats up and economic growth rate rises. Therefore, a negative M2 to GDP ratio may indicate a positive effect of financial development on economic growth. These arguments might be valid if the sample countries had developed financial sectors.

However, the majority of transition economies do not possess this luxury. It is thus doubtful that such a substitutional effect is significant in transition countries.

The mayor achievement of the present study has been the establishment of robust evidence on the positive relationship between the majority of conventional financial development measures and economic growth. The proportion of domestic lending directed to the non-financial private sector, as well as the related ratio of lending to non-financial private sector to GDP, consistently showed a positive link with economic growth. The evidence suggests that countries with a 1% higher rate of PRIVATE are likely to have almost 0.09% improvement in the GDP growth rate and those with a 1% higher PRIVY ratio may experience 0.155% better growth. The share of total lending coming from the commercial banking sector has also shown an excellent positive relationship with economic growth. The coefficient is very stable averaging around 0.128% growth for each percent of the ratio increase. All three measures tended to emphasise 'institutional' arrangements in the financial sectors of the respective countries. This provides strong good contrast with the pure monetary nature of the LLY measure. This finding carries an important policy implication. Policy makers should emphasise financial institution building in their strategies rather than simply target monetary aggregates.

However, it is still important to include a variety of proxies in order to be able to capture different aspects of financial development. Indeed, as we argued in the section 2.1, there is no perfect proxy for financial development. Estimation results for all finance variables should thus be jointly analysed within a larger picture.

CONCLUDING REMARKS

Using modern panel data analysis techniques, this paper presents strong evidence that financial development is positively and significantly related to economic

growth in transition economies. This generally has conformed to the theory and empirical evidence in developed and developing economies. However, in contrast to some earlier studies, it has shown that the choice of a proxy for financial development is a crucial issue in the modelling exercise. Since every proxy has its shortcomings, these should be kept in mind in the analysis to avoid possible misinterpretation. In the case of transition economies, which do not have developed financial markets and which experienced high levels of inflation, the LLY variable is not a good proxy for financial development.

Econometric evidence has also suggested that in the countries of near 100% literacy ratios (as the case of the former CMEA members); secondary school enrolment ratio is not as good an indicator of human capital as the tertiary enrolment ratio. In countries that experienced dramatic increases in unemployment levels, the size of the labour force is not a good predictor of economic growth. An investigation of the rates of investment did not result in any surprises either. Higher investment rates are positively related with economic growth, though not significant in all estimations.

By way of a final caveat, we conclude by noting that the present study has the following shortcomings: (i) The issue of the direction of causality was not addressed; (ii) the data employed for the analysis were not completely satisfactory; and (iii) due to the problem of data availability in regard of the human capital measure, the study sample was comparatively small.

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