

WORKING PAPER
NR 32.

HOW CAN FINANCIAL SYSTEM SPUR GROWTH IN TRANSITION ECONOMIES?

Dzmitry Kruk

October 2006





This paper was prepared within the Economic Policy Institutes Network program.

Economic Policy Institutes Network is a regional project supported by UNDP Regional Center In Bratislava. The project aims to support development of economic policy institutes (EPIs) in the countries in transition, with particular emphasis on low and middle income countries. The principal goal of the initiative is to develop capacity of economic policy institutes so as to provide these countries with independent, sophisticated voices in policy issues. For more information, please visit www.epinetwork.org

The analysis and policy recommendations of this working paper do not necessarily reflect the views of the UN Development Programme, its Executive Board or UN member states. This paper is an independent publication commissioned by UNDP. It is the result of a collaborative effort by a team of consultants.

How can financial system spur growth in transition economies?



TABLE OF CONTENTS

Introduction	4
1. Literature review	7
2. Financial intermediation as a factor of growth	16
3. Financial system and channels of monetary transmission	28
4. Financial system and its influence on the economic development in Belarus	33
5. Conclusions	37
References	38

How can financial system spur growth in transition economies?



INTRODUCTION

In last decades the issues of interrelation between real output dynamics and financial intermediation became a core question for a number of researchers. These two categories were combined into joint analyses by Schumpeter, who emphasized financial intermediation as a factor of “creative destruction”, i.e. the factor of economic development. But nevertheless later this interrelation was discussed in different contexts, actually sometimes dealing with separate branches of economic research. A wide interpretation of the results of these works are possible, especially as majority of these studies are based on different methodological grounds and actually being focused on different research questions within the framework of finance and growth. For instance, Eschenbach (2004) provides deep review of theoretical and empirical results of the papers that consider finance and economic development as a dichotomy. It supposes stressing different theoretical schools such as “pioneers of finance and growth”, a financial liberalization or McKinnon and Shaw school, neostructuralist and market imperfection approaches. The last direction considered is one that views finance within endogenous growth methodology. This classification reflects the development within the dichotomy between finance and growth, but more precisely it reflects the development in mainstream economics schools. Nevertheless Eschenbach tries to keep the long-term growth agenda in relation with finance by not taking in one row researches that deal with finance and its impact on economic activity in the short-term. But at the same time not all the schools given deal with the same subject and keep straightly long-term agenda. Say, the emphasized McKinnon and Shaw school includes much of actually short-term analyses, but is considered as an integral part of the finance and growth theory. Therefore we argue that relation between finance and output dynamics should not be limited only by long-term agenda of economic growth. Several studies (for example Loayza and Rancieri, 2004) give grounds for analyzing the short-term dynamics of output variables as consequences of the financial intermediation as well. Moreover contradictions between two strands of the theory are possible. For instance, Loayza and Rancieri (2004) start with hypothesis that financial depth measured by private domestic credit or liquid liabilities might be the engine of growth in the long-term, while the same indicators are the best predictors of crises and related economic downturns in the short-term. So there are grounds for investigating the relations of finance and growth¹ in both theoretical strands of long- and short term. Hence in our opinion a broader classification of the researches dealing with finance and real sector dynamics is more reasonable. We consider the researches dealing with finance and economic development divided by two groups, each dealing with one of two broad directions in macroeconomics. First, it is a theory of long-term economic growth and second is the short-term one. This classification is more apparent and appropriate for stressing different methodological approaches and combining the results of the researches that may not be connected at a first glance. For instance the second group does not only include researches that test direct impact of domestic credit expansion on the dynamics of the output in the short-term (like for

¹ As we argue for broader analysis of interrelations between finance and real sector, the term “growth” may not be fully applicable into the all parts of further analysis as it is associated with long-term growth, not being connected with short-term fluctuations of the output. Hence for keeping this distinction we will use the term “economic growth” just in the long-term agenda, while using the term “economic development” in broader context that combines both long- and short-term issues. Possible variety of approaches to indicators that measure finance will be given below.

How can financial system spur growth in transition economies?



instance in Kaminsky and Reinhart, 1999). In our opinion literature that deals with the development of the financial systems, its structure also contributes much into the theory of relations between finance and economic development.

Main research question of the literature belonging to the first group is searching for the sources of growth, which is actually motivation for the papers. This macroeconomic theory has been developed substantially during last fifty years since launching famous neo-classical Solow model of exogenous growth. But despite significant progress in the theory of economic growth and focus on endogenous growth models nowadays, the methodology and the logic of these researches is relatively stable. In literature devoted to this problem we can stress the following directions: (i) neo-classical approach that uses production function and based on separating growth by the elements of the production function (capital, labour, total factor productivity (TFP) and other elements dependent on the assumptions that are made about the production function); (ii) political economy of growth that suggests dependence of the economic growth on a number of political and institutional variables. Combining these two approaches may lead to another interpretation such as stressing the channels of growth. It means that the separated growth by the elements of the production function should be equal to growth separated by political and institutional variables. Hence each element of growth such as capital, labour, human capital etc., could be regressed by these variables, which supposed to represent the direction of impact of institutional variables through this or that element of the production function. But nevertheless due to the “growth and long-term agenda” this direction focuses on growth by means of separating its sources either through the production function or through regressing on institutional variables. This methodology in some cases leads to emphasizing financial intermediation as indirect element included in production function (in the models of endogenous growth) or as a significant regressor in growth’s political economy approach. Within this direction a research question in brief might be formulated as follows: whether financial intermediation is a factor of economic growth or not. At the same time this approach does not fully represent interrelation between finance and its impact on real sector dynamics just due to the long-term agenda and thus somehow representing an existing gap between economics of long- and short-term.

Another approach is initially focused on the financial intermediation and types of financial system. Hence this type of research assumes measuring the effectiveness of financial system from the point of view of its impact on this or that aspect of economic development. Within this direction researchers are going to explore for which aspects of real sector financial systems’ development can be meaningful. Moreover it deals with comparing the efficiency and effectiveness of different types of financial systems for economic growth and development. Frequently this type of research is dealing with rather narrow aspects of finance and development: comparing the efficiency of different type of financial systems’ impact on chosen economic parameter, financial systems’ impact on the effectiveness of monetary transmission channels, financial system as a source of recessions in the economy, etc. These researches may be associated with “more short-term” agenda, as mainly being focused on the finance and short or medium-term economic dynamics. Making a distinction just on the criterion of the length of the period does not fully reflect a classification being introduced. More urgent is another methodological distinction. In the first case we are fully inside the long-term theory trying to

How can financial system spur growth in transition economies?



investigate either finance is a factor of economic growth or not, while in the second one we can stress *different* impacts of financial system on real sector that in the long-term may be also expressed in impact on economic growth. Moreover the second approach gives more freedom for investigating the impact of the financial system's peculiarities through comparing different types of it on the same variables.

Thus we can state duality in researches dealing with financial systems' aspects and its affect on economic development. Moreover due to differences in long-term and short-term analyses the question of "best" policy measures in the sphere of financial architecture and generally the expediency of economic policy in this regard is not evident. Hence the goal of this paper is twofold. First, we are going to introduce thorough analyses of interrelation between finance and real sector dynamics, combining these relations both in short and long-term. More precisely we aim at stressing (i) which factors in the economy are affected by the financial system in the short-term and its meaning for the economic policy; (ii) whether financial system, its volume and type can affect long-term economic growth. Second, we are going to test the applicability of policy measures within financial sector and compare consequences of these measures in both cases if applicable. The analysis in the paper is more related to transition context, while the problems considered are more vital just for transition countries. The empirical part of the paper is mostly focused on Belarus, trying to give policy recommendations in the Belarusian context.

The structure of the paper is as follows. In the first section we make a literature review stressing main theoretical and empirical results in both directions of researches. The second section is dealing with long-term agenda and possible interpretations of the financial intermediary as a factor of economic growth. The third section is dedicated to the short term analyses and impact of the financial structure on the monetary transmission mechanism in a national economy. The fourth section deals with empirical results for Belarus. Here we assess Belarusian financial system and its impact on the Belarusian monetary transmission mechanism and long-term economic dynamics. Afterward the main conclusions of the paper are provided.

How can financial system spur growth in transition economies?



1. LITERATURE REVIEW

Firstly we focus on the first group of the literature that deals with finance and long-term growth. The historical overview of the progress in this sphere is provided in Eschenbach (2004). It starts with Schumpeter who stated that a developed financial system creates “growth-enhancing effects in productivity”, due to the Schumpeterian principle of “creative destruction”. In 1960s the dependence between finance came into the focus of a number of researchers who considered financial system and more precisely banking system as “economic backwardness”. Meanwhile the “pioneers of finance and growth” mainly based on the Schumpeterian view of dependence they also put their consideration to the direction of causality between finance and growth. For instance, Patrick stressed “demand following” and “supply leading” patterns that are imputed to be peculiar to the different stages of economic development. In the first case exogenously growing economy is supposed to demand more financial resources and thus facilitating to the increasing depth of the financial system. Otherwise the second pattern assumes that financial system due to channeling resources “from small savers to large investors” facilitates economic growth. Furthermore these stages are assumed to substitute each other at the different stages of economic development. The supply-leading pattern is supposed to dominate at the early stages of the national economy development, while the demand-following is more peculiar to the developed economies. Another valuable conclusion of the “pioneers” is due to Goldsmith, who tried to point out theoretical grounds explaining the existence of channels through which the growth is enhanced by finance. Goldsmith argued that it may be due to either efficiency of the financial system or due to its volume, although stating the less important role of the latter. Furthermore he empirically tested the positive relationship between finance (it was measured as relation of overall financial assets to the output) and growth using cross-section data, which resulted to be significant. The next school pointed out in Eschenbach (2004) is McKinnon and Shaw school, which as stated above, focus mainly on criticizing the policy of “financial repression”. This policy is considered as harmful because affecting the decrease in the volume of funds available for investments. Furthermore it can lead to deflation, while the latter can reduce growth as “households are induced to hold unproductive inflation hedges instead of financing productive investments through deposits”. Next schools considered are neostructuralists who criticize financial deregulation through macroeconomic analysis using disorganized or curb markets that may be a case for emerging economies, and so called market imperfection school that deal with microeconomic analysis and show that high market interest rates can attract bad borrowers and too risky investment projects. These schools are in touch with specific finance and growth issues, having contributed to its development. The last theoretical school considered is one investigating finance and growth within the endogenous growth theory.

Getting closer to the growth context we can emphasize a number of issues that determined a shift from neoclassical pattern to the endogenous growth context. First, it is ambiguity in regard to the theoretical assumption about the exogenous technological progress. Second, it is conclusions concerning either absolute or conditional convergence of the economic growth that are given by the neoclassical growth models, which contradicted to the empirical results. Endogenous growth models originated from the

How can financial system spur growth in transition economies?



research by Romer (1986), which introduced the learning-by-doing effect into the production function, which determined the endogenous character of technological progress and led to the increasing returns of the production function of the economy as a whole, while it still can be constant returns for the individual firms. Later the assumptions made about the production function developed, which led to its various specifications. But as shown by Rebello (1991) all these models can be united in one type of models, later called AK-models. The main results demonstrated by these models is a possibility of a positive long-run economic growth (in Solow model it was only possible for real worker with a pace of technological progress, while for effective worker is considered to be zero) and possible absence of conditional convergence. Summarizing these models we can stress two ways of making technical progress endogenous. First, it's letting increasing returns on scale in the production function. Second, it's modeling the firms' incentives to improve the technologies. Comparison of empirical results between standard neoclassical approach and endogenous growth approach shows that the first case may be considered as an individual case for more general endogenous theory. For instance Chubrik (2002) shows that testing the assumption about increasing returns to scale is necessary, otherwise providing theoretically non-consistent results of assessments. Moreover if the theoretical production function with increasing returns were empirically assessed with constant ones, it would lead to overestimating of the TFP, which is more than peculiar for the traditional neoclassical models. In this case "the growth is explained by the error in the regression which is associated with the TFP". Similar conclusions are made by Easterly and Levine (2001), who emphasize five stylized facts of economic growth. They show that factor accumulation is persistent, while growth is not persistent and the growth path demonstrates variations between countries. Thus they argue that "residuals rather than factor accumulation account for most of the income and growth differences across nations". These facts do not support the models with diminishing returns, constant returns to scale and that emphasize the role of factor accumulation. Thus there is different economic mechanism of growth between these two types of models: in neoclassical models with diminishing returns and constant return to scale the growth is driven by the TFP, while in AK-models it is driven by endogenous factors such as positive externalities (like in Romer, 1986) or incentives of the firms to increase the technologies. Nevertheless one can make a parallel between neoclassical TFP and the increasing returns in the production function in the AK-models, which should correspond statistically to each other. But certainly this statistical contiguity is secondary to the difference in the economic sense between these approaches to growth. AK-models and other types of the endogenous growth models allow implementing economic processes based on the economic agents' behavior into the production function, thus explaining growth by the economic nature and not by external (exogenous) factors. The latter is crucial for the context of finance and economic growth, which allows suggesting and empirically investigating interrelation between financial system and long-run growth.

The pioneers in this methodology were Greenwood and Jovanovich (1990) who launched a model where both financial intermediation and economic growth to be endogenously determined. Actually the financial intermediation is supposed to affect the growth process through evaluating the investment projects, selecting more profitable ones and thus allowing higher rate of return to be earned on capital. Returning to previous terminology and discussion of the ways of making the growth endogenous,

How can financial system spur growth in transition economies?



actually they go through the way of modeling technological progress. The found growth and financial intermediation to be “inextricably linked”. First, the growth is suggested to provide sources (“wherewithal”) for the financial system of the economy, while the second in turn allows high growth through the described channel of making investments more efficient. Model developed by Greenwood and Jovanovich also stresses this relation on different stages of growth. At “poor” stages when the financial system cannot efficiently execute the evaluation of investment projects, the growth is poor. Afterwards, when financial system is becoming more extensive it enables more rapid growth, while when the economy “matures” and financial system is developed and income distribution is stable the growth rates are stable and high.

A model launched by Bencivenga and Smith (1991) also bases on the externalities in production effects in the manner of Romer, but from the point of view of finance it focuses on its another function as a source of growth. This approach introduces financial sector (only banks in this model) by means of the methodology with overlapping generations that was previously used for modeling saving process in growth models. It assumes three-period-lived overlapping generations. Facing with uncertainty in regard to their future agents have alternatives of investing in either illiquid productive capital, or in liquid but unproductive assets. Old agents are supposed to be “entrepreneurs” being the owners of the productive capital, while the latter is combined with labour of the younger generation. There is a probability in the model that investments may be liquidated in “inopportune” moment, which determines the place for banks as financial intermediaries. Their function is providing the liquidity needed and through regulating its price. Thus the presence of intermediaries in the model increases its growth rate.

A current stage in researches between finance and long-term growth was initiated by King and Levine (1993, a, b). In their first work King and Levine (1993 a) contribute into the theory of finance and growth mostly by empirical research, that proves significant relation between finance and growth. On the one hand they put into theoretical basis endogenous kind of growth, making a place for financial intermediaries through three functions that facilitate growth: evaluating investment projects, easing risk-management and lowering overall risk in the economy, lowering the costs of capital accumulation. In regard to these functions financial intermediaries are supposed to facilitate technological progress in the Schumpeterian way. Taking in mind these theoretical considerations they move to the empirical research, but however shifting to the neoclassical approach. The idea is as follows, if having the endogenous theoretical mechanism that is supposed to be true, assessments through neoclassical production function should give results, where this endogenous technological progress should be consistent with capital accumulation and total factor productivity in neoclassical model (they do not take TFP in usual way, King and Levine consider the efficiency indicator that is the difference between total growth and the factor of capital accumulation). Furthermore they use the so called channels of growth approach, assessing the contribution of financial intermediation variables (as institutional variables) into the capital accumulation and efficiency. A vital issue is selecting the variables characterizing the level and depth of financial intermediation. King and Levine suggest the following indicators: traditional measure of financial depth, i.e. the ratio of overall liquid liabilities of the financial system to GDP; the ratio of deposit money banks financial assets to total financial assets

How can financial system spur growth in transition economies?



(deposit money banks plus central banks), which is supposed to show the importance of deposit banks in allocating of resources in comparison to the central banks; the ratio of total claims on private non-financial sector to total domestic credit, which is supposed to demonstrate the proportion in which banking system is allocating resources to productive investments (i.e. to the private sector); the ratio of the credit to private sector to the GDP. Using these variables as measures of financial intermediation for the panel of 119 countries during the 30 years period through the methodology given above they provide empirical evidence that finance promote growth (in their research promoting through accumulation of capital was stronger rather through the efficiency of economy). Moreover, finance “does not only follow economic activity... we find that financial development is a good predictor of growth in the next 10 to 30 years”.

The second work by King and Levine (1993 b) has more theoretical contribution, where they develop a Schumpeterian model of endogenous growth. In this model entrepreneurs are considered as agents who can undertake risky research projects that could be successful with a given probability, but for this they need an additional labour input. Another sector is financial intermediaries who can screen entrepreneurs and whose income depends on the market value of the entrepreneur, the probability of success and a needed labour input for screening. If the project by the entrepreneur is successful there is a probability of market innovation that will give a monopolistic power to it, thus increasing its present market value. The production function for the economy as a whole depends of the labour input, while the production function for the financial intermediaries also depends on the probability of market innovations, i.e. the technological progress. The equation of long-run growth got in this model is positively related with the efficiency of the research sector, with the efficiency of the financial sector that makes financing of the research more cost-effective, “lowering the costs of organizing research and increasing monopoly rents to intermediation.” They also found negative effect of taxes on the financial sector in regard to the long-term growth. This research considerably broadened theoretical understanding of the channels through which financial system can promote long-run growth. Furthermore it gives more robustness to empirical research that argued for interrelation between finance and growth, using the indicators of financial intermediation as institutional variables for growth.

The further development of this issue took place in the manner of King and Levine, where the more focused questions took place. For instance, the researches took place both at aggregate macro level as well as at the micro firm level, both providing empirical evidence of linkage between finance and growth. Different econometric techniques were used in these studies and the summary of them is provided in Annex 1.

A number of later studies (for instance Levine, 2002) focused on differences between theories of financial intermediation between different types of financial systems and verify these approaches in respect to the economic growth. Levine (2002) points out two common approaches, the so called bank-based view and market-based view. The first one puts arguments in favor of banks that are supposed to promote growth more efficiently, while the second one is vice versa. Furthermore the approach by La Porta et al. (1998) that suggests distinguishing financial systems not on the criterion of being either bank-based or market-based, but on the criterion of legal enforcement mechanisms and financial

How can financial system spur growth in transition economies?



service view that supposes no difference between banks and markets but significance of overall financial development are also considered. The motivation of Levine (2002) is to find empirical support to one of these views and find out which kind of financial system is more advantageous for growth promoting. Levine deals with cross-country regressions for 48 countries in 1980-1995 period. The specification of the regressions is rather simple, having much in common with King and Levine (1993 a).

$$G = a'X + bS + cF + U \quad (1),$$

$$G = a'X + bS * L + cF + U \quad (2)$$

Where G is a real per capita GDP growth, X is a set of conditional variables, i.e. standard growth determinants; S – is a measure of the structure of financial system, where larger values of S are associated with more market-based financial system, and smaller values with more bank-based financial system. F illustrates overall financial sector development, L -legal system development, U – residual term in the equation. The equation (1) allows to test either bank-based, market-based, or financial services view, while (2) is specified for testing law and finance view. The results of the research shows that neither bank-based view, nor market-based cannot be empirically proven, while the financial service view finds its confirmation. It means that the overall development of the financial system does matter. Furthermore there is evidence that the component of financial development explained by legal system is positively correlated with long-run growth. These results seemed to diminish the discussion about banks versus markets within investigating the interdependence of finance and growth. But later results by Tadesse (2002), gave a reasonable grounds that discussion about markets and banks can survive if talking about different stages of economic development. In his research Tadesse (2002) through the methodology like in Levine (2002) split countries by groups of developed and underdeveloped. Afterwards he shows that coefficients of financial intermediation (as a regressor of long-term growth) for developed countries are different for bank-based and market-based systems and markets here are much more efficient, while the picture for underdeveloped countries is constantly reverse. Thus banks are supposed to be more efficient at the early stages of the development, while markets do at the mature stages.

Few more recent studies use the same methodology and actually are motivated by the same range of questions, such as: (i) difference between types of financial system, i.e. either markets or banks are better for higher economic growth; (ii) different patterns of growth on the various stages of economic development, i.e. different types of financial systems that matter depending on the economy's level of income, or different channels of growth (factor accumulation, efficiency improvements) that are associated with the function of financial intermediation. There are actually not so much new theoretical conclusions of unexplored dependencies between finance and growth. In these researches authors use more perfect econometric techniques in order to provide more robust evidences of dependencies. For instance Beck and Levine (2004) investigate the impact of stock markets and banks on long-run growth by means of generalized-method-of moments for dynamic panels. They again prove positive impact of both stock markets and banks in respect to the output growth, but herewith they demonstrate that this linkage cannot originate from mistakes in specification of modeling and omitted variables. Caporale et

How can financial system spur growth in transition economies?



al. (2003) deal with investigating the channels through which stock markets spur economic growth, using endogenous growth agenda and VAR methodology for four developing countries (Chile, Korea, Malaysia and Philippines). Their analysis gives them grounds to detect investment productivity as a channel through which stock markets influence economic growth. Rioja and Valev (2004) compare the countries with different level of income and using the generalized-method-of moments also show that in more developed countries finance affect growth mainly through the increase in productivity, while in less developed countries the capital accumulation is the dominating factor. Nevertheless financial system is a factor enhancing growth for both developed and underdeveloped countries. Thus we can summarize that literature in this question mainly has a consensus regarding main theoretical directions of the interrelation of finance and long-run growth. Briefly we can formulate it as follows: (i) more extensive and more efficient financial system is positively related with economic growth; (ii) taken as a whole financial system should be the factor of economic growth and dividing it either by the bank-based system or by market-based system is not meaningful; (iii) on the different stages of economic development there could be different patterns of growth, i.e. the growth in underdeveloped countries is more associated with factor accumulation, while the growth in developed countries is more associated with growth in efficiency and productivity; (iv) these channels of growth might be associated with more efficient growth promoting by banks in less developed countries and more efficient growth promoted by markets in developed countries. In our opinion the further pattern of development in this direction is using more secure econometric techniques for finding out more specific relations between types of financial system and various stages of economic development.

A push to rather new direction in the interrelation of finance and economic development in our opinion was initiated by the study of Loayza and Ranciere (2004), which actually is adherent of the studies considered above. Recognizing previous results and long-run growth promoting character of the financial system it puts it consideration on possible negative impact that financial system can undertake on the output dynamics in the short-term. Loayza and Ranciere (2004) do not argue that traditional approach to growth is wrong, but they do argue that analyzing only long-term agenda can lead to ignoring some effects that financial system can undertake on the output dynamics in the short-run. For demonstrating it they exploit the model developed by Gaytan and Ranciere (2004), which finds that in emerging countries bank do not fully insure themselves against banks' runs. "This is because in these countries the opportunity cost of full insurance, given by the marginal rate of return to investment, is too high. As countries develop and capital productivity decreases, it becomes optimal for banks to be fully covered against crises. Therefore the model predicts that in the short run after financial liberalization, there is the chance that emerging countries will face financial crises, switch from non-crises to crises equilibrium, and thus experience volatility of credit and low output growth." Another theoretical ground for such banking behavior can be explained by the argumentation of Dell'Arricia and Marquez (2004), who suppose that banks prefer not to grant loans to those agents that were rejected in other banks. But if financial liberalization takes place, there too many untested projects and banks do not have incentives to screen each of applicants and too rapid credit expansion may take place. These two mechanisms is explanation of possible negative impact of the financial system on the output dynamics in the short-term in emerging countries for Loayza and Ranciere (2004). Furthermore

How can financial system spur growth in transition economies?



they argue that in the long-term analysis using country data averaged for 5-10 years is likely to combine these long-run and short-run effects. For testing their hypothesis Loayza and Ranciere (2004) specify an autoregression with distributed lags (ARDL) model, which in the error-correction form contains short-run autoregressive component of the per capita GDP and of the set of conditional variables among which the financial intermediation is included, and long-run component, which is the analogue of the models of long-run growth considered earlier. Thus the models of long-run growth become an individual case of the model of this type. The results by Loayza and Ranciere (2004) after assessing regressions for the panel of 75 countries during 1960-2000 are consistent with their initial hypothesis. More precisely they found that previous studies were consistent in regard to the long-run growth, but in the short run financial fragility can be an obstacle for the positive relation between financial intermediation and economic growth. Hence, in the short run financial intermediaries due to generally fragile financial system can stimulate recessions in the output dynamics.

In the context of our discussion the methodology proposed by Loayza and Ranciere (2004) is valuable in two ways. First, it enriches the finance and economic development analyses with a possibility of considering short-run shocks originated from the financial system. Second, the idea of two strands (long-run and short-run) in impact of financial structure on economic development is valuable itself, as it allows for searching deeper interrelation between the two categories and selecting other criteria that are affected by the financial system in the real sector. Here we can turn out the question of how the growth is affected by the financial system, to the question how the financial affect the real sector dynamics and through which parameters. In our context here we can find a bridge to another strand of the studies mainly dealing with logic of financial system development and the preconditions that financial architecture creates for the real sector and economic policy. We return to this theoretical bridge in more details later (see Section 3) and herewith we shift to the literature dealing financial structure development and identification of monetary transmission.

Here we do not start with very origins of these studies, as we are more interested of the impact of financial structure on the transmission of the impulses to the real sector of the economy and as the discussion on the monetary transmission mechanism (MTM) channels and its identification is relatively recent in economic literature².

Cecchetti (1999) helps to provide the bridge between two strands in the literature dealing with the role of the financial systems. He shows that modern approach to the MTM assign a central role to the financial structure. He argues about this relation, by searching evidence between different types of financial architecture and responses to the innovations in the monetary policy. Here he shows that countries with many small banks, less healthy banking systems and poorer direct capital access display a greater sensitivity to policy changes than do countries with big, healthy banks and well-developed capital markets. Hence, here we can state another impact of the financial system its structure and effectiveness: it implies this or that kind of response into the economic policy, due to the different mechanisms working through the financial system. Thus we can suppose already here that financial system (its volume and efficiency) may not only affect the growth in long-term, determine negative

² The chronology in discussion on the MTM can be seen for example in Moiseev (2002) or Cecchetti (1999).

How can financial system spur growth in transition economies?



impact in short-term, but also determine different economic connections and policy reactions in the short term. This peculiarity of the financial system architecture is discussed in Eijffinger (2001), where he shows that different financial structure in the Euro area determine different dominating types of financial assets and liabilities between economic agents. Furthermore it leads to the different reactions by the agents in the Euro area to the same measures of the monetary policy by the ECB. Hence, the conclusion by the Eijffinger (2001) is that “the structure of the financial markets may affect the monetary transmission mechanism in the short to medium run. However, in the (very) long-run, European financial market structure will be in turn influenced by policy-making of the ECB and its track records on price stability.”

More focused study that deals with impact of financial structure on the way that interest rate channels functions in the economy is Mojon (2000). He investigates the effect of differences in the financial structure of the European monetary union (EMU) and its impact on the difference in response to policy measures by the ECB. He found that heterogeneity of national bank retail markets in the Euro area is reflected in pass-through of the money market rates (MMR) to banks’ credit and deposit rates. As an indicator of this pass-through the response after three months of the bank retail rate to a 100 basis point permanent increase in the MMR was analyzed. As a result it was found that during ten years that cover a complete interest rate cycle, the pass-through has been different both across countries and across markets. Short-term rates are supposed to react faster, rather than mortgages or deposit rates. This demonstrates the impact of financial architecture difference on the reaction to policy measures.

The conclusions of these studies reveal the importance of learning the impact of financial structure on the design of monetary transmission channels. Identifying the MTM and collation to the financial structure in this case can give valuable results in regard to the research of thorough interrelation between finance and economic development. Unfortunately both questions (links between financial structure and the design of MTM and identifying MTM) are not fully covered in regard to the transition countries, which is a core of out interest. Although the logics of the MTM functioning and its development is more or less covered by different econometric techniques, the question of its linkage to the financial structure and applicability of economic policy in this regard is far from being evident.

The researches in regard to the identity of the MTM in transition countries intensified during last couple of years. Rather thorough outlook of these researches and its methodology may be seen for instance in Ganev et al. (2002). The authors of these studies show that for the majority transition countries there are problems for identifying significant links in the MTM. In some countries there are weak links at the first stage of transmission mechanism (pass-through from policy variables to the intermediate variables), but none of the countries demonstrate significant correlations ate the second stage of transmission (pass-through from the intermediate variables to the output variables). This fact is explained by the complexity of the transition context and weak and fragile financial systems.

As far as linkage between financial structure and the MTM is concerned in the transition context, we have found the only work dealing with this question, It is Kiviet et al. (2003), who come to the conclusions that are close to those in Cecchetti (1999). They argue that less healthier banking system and small banks are associated with lower sacrifice ratio. But mostly it states the problems of the

How can financial system spur growth in transition economies?



analysis in transition contexts, such as non-reliable data, low possibility for comparison between countries, etc.

Thus in the context of the current discussion of literature our approach to analyzing of financial structure may be considered as supplementing the idea of Loayza and Ranciere (2004) of investigating two strands of financial system on economic development. Second, as it going to consider the linkage of financial structure and the identifying of the MTM channels in Belarus as a representative of transition countries, it may enrich just this agenda in transition context, where is a space for research.

How can financial system spur growth in transition economies?



2. FINANCIAL INTERMEDIATION AS A FACTOR OF GROWTH

We have seen above that there is a number of empirical evidence of positive interrelation between finance and long-term growth. But in most cases the methodology used in these studies is regressing the long-term growth by the variable of financial intermediation as an institutional one. At the same time not all of these studies provide theoretical explanation of how the financial intermediation can facilitate long-run economic growth. In many cases there is a link to the model developed by King and Levine (1993 b), which is considered to enable using different econometric techniques, but having the same economic meaning like in Levine (2002). But herewith an aptitude to the theory of economic growth may be emphasized. It means that if we deal with King and Levine model, the theoretical mechanism of how finance influence economic growth might be evident, but one can take in mind other approaches to the economic growth and consequent to it involvement of the financial activity as a factor of growth. If that a case, say the exogenous type of growth model or AK-type is more appropriate for current analysis (for instance just because of access to data that allows using only this or that methodology or we have enough grounds to treat it as the more truthful one to the economic reality), we cannot prove theoretical existence of positive relationship between finance and growth even if we have a significant econometric one. Furthermore, without considering and clarifying theoretical approaches of how finance promotes growth we cannot make a shift to transition countries that are our target, even having knowledge about the peculiarities of their financial sector. Thus we begin with the theoretical exploration of the place of finance in different types of growth models. Next, we compare these results with King and Levine type of growth model. Since we have such results we can argue about peculiarities of the transitional financial systems and their impact on growth.

2.1. IS THERE A PLACE FOR FINANCE IN EXOGENOUS AND AK-TYPE MODELS OF GROWTH?

Levine (2002) have stressed the following most basic channels of how the financial system can promote economic growth.

Assessing potential investment opportunities and thus exerting corporate control.

Enhancing liquidity and easing savings mobilization.

Facilitating risk management and thus reducing risks in the economy.

In projection to the bank-based view this general classification may be broadened a bit to as follows: (i) acquiring information about firms and managers and thereby improving capital allocation and corporate governance; (ii) mobilizing capital and thereby exploiting economies of scale; (iii) managing cross-sectional, intertemporal and liquidity risks and thereby enhancing investment efficiency economic growth. The question here is how we can project these channels of growth originated by the financial system to the methodology and tools used in the growth theory. Instinctively we can initially associate these channels with faster capital accumulation and higher technical progress in either exogenous or AK-type models. But for deeper analysis it is better to take a look at these channels in more formal way.

How can financial system spur growth in transition economies?



First we take into consideration AK-type of model, which as shown in Rebello (1991) allows analyzing either different types of endogenous growth or exogenous growth. The production function in this case, dynamics of capital is assumed to be as follows:

$$Y_t = AK_t \quad (3)$$

$$\dot{K}_t = I_t - \delta K_t \quad (4)$$

Further, instead of using original Rebello's analysis that modeled investments depending on the current stock of capital K_t and $(1-\phi_t)$, where ϕ_t is denoted as a fraction of capital used for the consumption production in two-sector economy. Keeping the same meaning we can modify it a bit, like in Thiel (2001). Thus we can assume the stock of capital to be equal to the share of savings in GDP, and instead of ϕ_t that denotes two-sector agenda, we can use a parameter δ that is referred to one sector economy, and $(1-\delta)$ denotes the share of loss in savings when channeling savings to investments. In this case investments will be as follows:

$$I_t = \delta s Y_t \quad (5)$$

In this case the dynamic equilibrium for the growth rate of capital and output will tend to $g = \delta s A - \delta$ (6). Hence this approach by Thiel (2001) helps us in stressing three general channels of economic growth consequent to financial intermediation through the methodology of economic growth. First, it is the parameter δ that mirrors the share of "lost" savings when matching them to loans and investments, which mainly denotes the efficiency of the financial sector and somehow correlates with the second channel in Levine's classification. The better risk management takes place in the banking (financial) system taken as a whole, the more efficient it is and the more competition is inside it. Hence the less is the loss of the resources. The second parameter that might be influenced by the financial system is a rate of savings. It may be assumed that larger and more efficient financial system may affect positively on the savings ratio. And the last issue is measure of capital productivity or otherwise it may be interpreted as a technological progress ratio A . An assumption may be done that a more efficient financial system might raise the productivity of capital through managing risks and fulfilling corporate control by means of screening and selecting most potentially successful projects. Further we consider how the financial system may influence the growth rate of the economy through these possible channels in more details.

2.1.1. The loss ratio (1- δ)

Even pioneers of finance and growth theory emphasized that in this dichotomy both the volume and the efficiency of the financial system may be meaningful the rate of growth. In this context the loss ratio is fully associated with the efficiency of the financial system, its transaction costs. In the banking system few measures of the efficiency is possible: (i) by means of the relationship of overhead expenses to the outstanding assets; (ii) the assets outstanding per employee. Another approach that is partially consequent to the previous ones is measuring interest spread between lending and borrowing rates. The

³ The dot is used to note the time derivation, i.e. $\dot{K}_t = dK/dt$



theory of banking and finance shows that in case of competition in the banking system, banks limit the interest margin to the lowest possible level. But in case if banks have competitive advantages, i.e. when economy faces a lack of alternative sources of finance, they increase interest margin, thus increasing their own profits but at the same time they reduce the share of funds borrowed that afterwards are channeled to investments. Furthermore interest margin may be reduced due to implementing for instance more efficient risk evaluating techniques or other bank technologies that may reduce overhead costs. Thus we may summarize by stressing two additional channels through which more efficient financial intermediation might spur growth: such measurement of financial efficiency as interest spread (margin) is a converging measurement of efficiency: (i) connected with cost-reducing technologies; (ii) connected with measure of competitiveness in the banking and overall financial system. In its turn this changes of efficiency of the financial system may directly influence the long-term rate of economic growth.

2.1.2. The savings ratio s

Discussion about the possibilities of either more efficient or deeper financial system to increase the rate of savings in the economy is not evident. On the one hand higher real yields may be an incentive for a household to save more, increasing intertemporal substitution. But however another hypothesis may be argued, i.e. that the current consumption may be increased, while higher rate of return might provide the constant future consumption in absolute terms. Moreover recent theories of savings and consumption are not univocal, remaining space for both approaches. Through this we will ignore this possible channel of influence of the financial system on growth through the savings ratio.

2.1.3 The productivity of capital ratio A

Here is the place for those channels stressed in Levine (2002). Ultimately all these channels are connected with increasing the productivity of capital and as seen from the model the growth rate in the economy.

Screening the potential investment projects facilitate to selecting most successful ones and thus improving the capital productivity in the entire economic system. This channel seems to be the most powerful one, because exerting corporate control significantly affects the allocation of resources in the economy. Just this channel was emphasized and incorporated to the growth model by Greenwood and Jovanovich (1990).

Provision of liquidity as a function of the financial intermediation also should be positively connected with growth agenda. As for this channel it is more connected with the depth of the financial system in our classification, while the loss of provided liquidity connected with inefficiency we refer to those channels connected with the loss ratio. There were also studies aimed at emphasizing this channel, for instance Bencivenga and Smith (1991).

Such function as easing risk-management, on the one hand decrease overall risks in the economy. But on the other hand it enables investors through the procedures of hedging and pooling risks to invest funds into riskier and hence potentially more profitable projects as well. Availability of this channel mainly associated with the stock market, while it assumes public access to information, higher

How can financial system spur growth in transition economies?



standards of information disclosing and corporate governance, which form preconditions for risk hedging. Thereby this channel might be meaningful for the countries with market-based financial system, or at least in countries where the stock market has a significant share of the financial system. To our knowledge there is no thorough works of modeling this channel in the growth agenda, but nevertheless it should be taken in mind in theoretical discussion.

However stressing the channels of the financial intermediation that influence on the rate of economic growth in the context of the AK-models leads us to the conclusion that the function of financial intermediation may be treated as indirectly included into the growth models through the parameters of loss ratio $(1-\delta)$ and capital productivity A . Hence regressing the growth rate of the output on the variables that measure either efficiency or depth of the financial system. But as the previous discussion took place in the context of AK-model, this conclusion is consistent with this type of models.

Projecting these results to the exogenous models may be simplified such categories by Sala-i-Martin (1990) as return on consumption (RC) and return on investments (RI), which evidently demonstrates differences between AK-models and exogenous models. RC is derived as an interest rate consequent to the problem of maximization of household utility in the time period considered. RI is derived as an interest rate the producers face with due to the conditions of production (production function). As shown in Sala-i-Martin (1990) the simplest way of deriving dynamic equilibrium of the output growth rate is equating these conditions of agents' behavior. From the task of maximizing utility like (6) on the time continuum the condition for return on consumption is derived (7):

$$U = \int_0^{\infty} e^{-\rho t} \frac{C_t^{1-\sigma}}{1-\sigma} dt \quad (7),$$

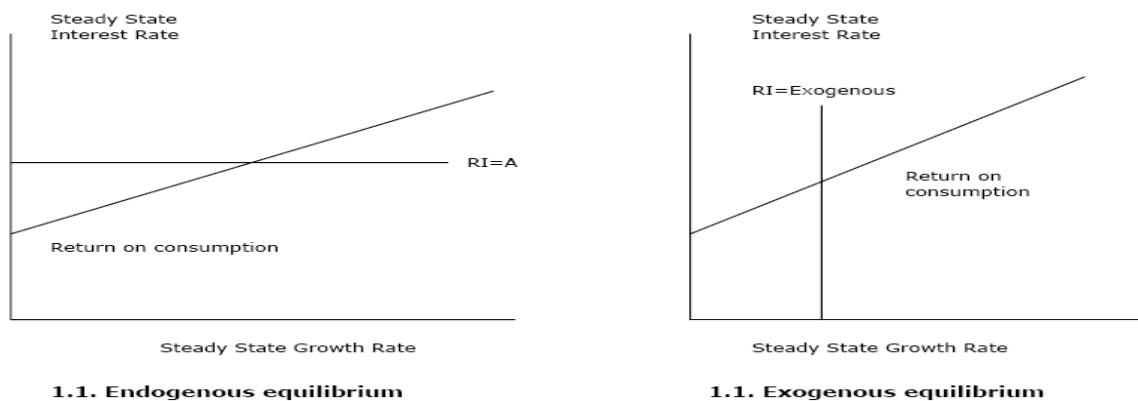
$$r=RC=\rho+ \sigma*\gamma \quad (8)$$

where ρ – is a discount rate, $1/\sigma$ – elasticity of intertemporal substitution, γ – growth rate of the economy. This side of the model is constant for both exogenous and endogenous types of models. The difference is consequent to the behavior of the producers, whose RI is derived from the production function. As shown in Rebello (1991) by means of his equation of capital motion, behavior of the firms is fully dependent on the assumed kind of the production function. In the simplest way of AK-model, this return to investment will be $RI=A$, while in exogenous models it is derived independently from the model, i.e. exogenously. Hence the dynamic equilibrium graphically may be demonstrated as in Chart 1.

How can financial system spur growth in transition economies?



Chart 1. Exogenous and Endogenous Growth Agenda



Source: Sala-i-Martin (1990).

As seen from Chart 1, exogenous growth agenda supposes accordingly autonomous technological progress A , which is a key parameter affected by the financial intermediation. Thereby we cannot say about the possibility of modeling the sector of financial intermediation with assumptions of the exogenous growth models. In theoretical structure of this model only the impact through the loss ratio is possible. But nevertheless, the exogenously derived capital productivity already includes the impact of financial intermediation. Hence, financial intermediation not being a proper factor of growth in the exogenous model itself, it may be considered as a growth determinant in the institutional variables approach. Thus the overall conclusion from the analysis based on the growth theory is as follows. A number of channels through which financial intermediation (both its efficiency and depth) may influence economic growth may be stressed. Three of them are connected with facilitating the capital productivity A that actually coincide with Levine's channels, i.e. (i) screening and selecting most profitable projects; (ii) provision of liquidity; (iii) easing risk management and risk-sharing. Besides, two more channels associated with efficiency of the banking system may be stressed: (iv) cost reduction and hence reduction of the loss-ratio; (v) increase of the competition level and this reduction of the loss ratio. This channels allows using the indicators of the financial intermediation as institutional variables of growth. Furthermore such a conclusion is consistent with either exogenous or endogenous growth theory.

2.2. FINANCIAL SECTOR IN GROWTH MODELS IN EXPLICIT WAY

In more explicit way we can see the impact of majority of growth channels stressed through analyzing the King and Levine model (1993 b). Here we use a bit changed representation of this model like presented in Trew (2004). The demand side in this model is presented in the same way as shown above, i.e. by maximizing the utility function in the time continuum of the single consumption good C :

$$U(C_t) = \begin{cases} \frac{C_t^{1-\sigma}}{1-\sigma}, & \sigma > 0, \sigma \neq 1; \\ \ln C_t, & \sigma = 1 \end{cases} \quad (9)$$

How can financial system spur growth in transition economies?



The same shape (7) it acquires through discounting the utility function. Hence the expected value of the discounted utility is:

$$V = E \left[\sum_0^{\infty} \frac{1}{(1 + \rho)^t} U(C_t) \right] \quad (10),$$

where ρ is again a discount rate that is considered to be more than zero, i.e. $\rho > 0$. The economy here is considered to be two-sectors economy with an intermediate good ω that is used for the production of the single consumption good C . The intermediate good is considered to be produced monopolistically by the most technologically advanced intermediate at the interval $0 \leq \omega \leq 1$, which fixes the number of intermediate goods, but allows the growth of its quality. Hence the production functions for the intermediate and final goods look like as follows:

$$y_t(\omega) = A_t(\omega) * n_t(\omega) \quad (11),$$

$$C = \exp \left\{ \int_0^1 \log[z(\omega)] d\omega \right\} \quad (12),$$

where A_t – technological progress, the only factor of production (labour) n_t is considered in this model, and $z(\omega)$ is the input of the intermediate good demanded. In this form the equation (12) is equal to the production function of Cobb-Douglas with constant returns to scale in the time continuum. If we have the price in ω sector of $p(\omega)$, then the input demanded will be $z(\omega) = y_t(\omega) / p(\omega)$. The technological progress is considered to be climbing by steps $\Lambda > 1$, beginning at time $t=0$ with $A_t=1$. Hence after j -innovation the rate of technological progress will be $A_t = \Lambda^j$. The production function (11) then is changed to $y_t(\omega) = \Lambda^j * n_t(\omega)$. Introducing the wage rate w_t we can derive the unit labour cost $w_t * n_t / y_t = w_t / \Lambda^j$, which shows that the technological progress here is cost reducing. The monopoly in the production of intermediate good leads to the price setting as a mark up of Λ over the nearest rival producer. Hence, the price $p_t = w_t \Lambda / A_t$. Then we can derive a profit condition that is supposed to be distributed as the dividend $\delta_t(\omega) = p_t(\omega) y_t(\omega) - w_t n_t(\omega)$. After combining with the condition of price setting condition we derive:

$$\delta_t(\omega) = m w_t n_t \quad (13),$$

where $m = (\Lambda - 1)$. This equation will define the behavior of producers in profit terms, but it is not enough for defining their intertemporal behavior. We mean that for defining the steady-state dynamic growth we must as previously know about the consumer's behavior and production behavior, i.e. defining both the return on consumption and return on investments. While (9) and (10) are enough for defining the RC, knowing the profit condition is not enough for defining the RI and thus closing the model. Just here is the place for the financial intermediaries.

First, we put in the model the first channel through which banking (financial) system influence on the real output, i.e. screening entrepreneurs and their potential projects, selecting potentially most successful projects and financing them. Thus we connect the role of financial intermediaries with the rate of technological problems. We suppose that intermediary screen e potential entrepreneurs, with a probability α of individual entrepreneur being either good or bad. As we have assumed the labour to be the only factor in the production function, then the costs of screening individual potential entrepreneur

How can financial system spur growth in transition economies?



is measured by means of f units of labour. In case if the potential project is evaluated to be good then x units of labour will be invested in this project. Thus the financial intermediary will decide to screen the entrepreneur if the volume of investments will exceed the costs of screening and the financing the entrepreneur. This leads to the screening condition:

$$x > f + \alpha x \quad (14)$$

In the model a positive amount of screening is assumed to be the equilibrium one, while it is not obvious and if that a case it oblige the intermediaries to finance the entrepreneurs without screening. If marking the immediately realized market value of the entrepreneur as q , the income of the intermediary from screening will be $(q-wf)$ with a probability α , and $(-wf)$ with a probability $(1-\alpha)$. Then the expected value of profit from screening e entrepreneurs is:

$$E[\text{profit}] = e[\alpha*(q-wf) + (1-\alpha)*(-wf)] \quad (15)$$

If assuming the competitive environment among financial intermediaries, then this expected value of profit should tend to zero. In this case we derive the entrepreneurs' selection condition by King and Levine:

$$\alpha q = wf \quad (16)$$

The key step is financing the entrepreneurs that is considered to lead to the market innovation with the probability π . If the project succeeds and the market innovation has been implemented than additional income is received by the entrepreneur. In period t this accrued value from the market innovation is v_t , the discount factor is marked as $\beta < 1$. Then the present value of the market innovation at period t that will be used in period $t+1$ is $\pi\beta v_{t+1}$. As above with screening the net income (net innovation rate) from financing $q = \pi\beta v_{t+1} - wx$. If adding the tax rate τ , this equation is changed to:

$$q = (1-\tau)\pi\beta v_{t+1} - wx \quad (17)$$

The equation (17) may be treated as funding condition. But the equilibrium on the entire financial market will take place in case if the value of screening, i.e. selection condition complies with the assessed present value of the innovation rate. It means that condition of selecting entrepreneur in current terms (profit assessed when selecting the entrepreneur) should give the same return in absolute terms (i.e. the present value) as the innovation rent does. Thus (16) should be equal to (17). Hence:

$$w \frac{f + \alpha x}{\alpha(1-\tau)} = \pi\beta v_{t+1} \iff wa(\tau) = \pi\beta v_{t+1} \quad (18),$$

where $a(\tau) = [(f/\alpha) + x]/(1-\tau)$, which denotes the impact of these variables on the present value of the income flow. The case $\tau=0$ denotes the requirements of labour inputs into the project if there no any distortions, i.e. the so called actual labour requirement.

What we are having at the current stage is two main functions of the financial intermediaries in the economy: evaluation and selecting the projects that is introduced in the model by equation (16); financing the entrepreneurs, i.e. provision liquidity and pooling of funds condition that is introduced by the equation (17). The last thing needed from the financial market is a diversification of risks condition that should denote intertemporal allocation of funds due to the changing value of the entrepreneurs that

How can financial system spur growth in transition economies?



is consequent to the implemented market innovation. The idea of creative destruction supposed that the implemented innovation of one entrepreneur in the market scope will take place at the expense of the current branch leader. In the model this intertemporal diversification of risks is done through the stock market condition that is connected with incentives to hold the stock of the entrepreneur in the current period under the probability of market innovation in the $t+1$ period. The current value of holding stock is the market value in this period v_t less profit in the form of dividends in this period δ_t . As introduced above the probability of market innovation is π , but for deriving the incentives of holding the stock in period $t+1$ we need the probability of innovation at the whole market where e entrepreneurs are participating. Hence we mark this probability as $\Pi = \pi e$. Thus preference for holding stock in period $t+1$ is a discounted market value in period $t+1$ with probability inverse to the probability of market innovation:

$$(1-\Pi) \beta v_{t+1} = v_t - \delta_t \quad (19)$$

From (19) we can derive the stock market growth rate:

$$\frac{v_{t+1}}{v_t} = \Pi v_t - \delta_t + r_t v_t \quad (20)$$

With a constant interest rate r , the stock market will grow with the same rate γ as the economy grows. Hence $v_{t+1}/v_t = \gamma v$. Then (20) is identical to:

$$v = \frac{\delta}{r - \gamma + \Pi} \quad (21)$$

The next step is projecting the innovations by entrepreneurs to the technological progress A . We assume that if the innovation was implemented, i.e. that the event with probability Π have occurred, then $A_{t+1} = A_t(\omega)\Lambda$. Otherwise $A_{t+1} = A_t(\omega)$ and the probability of this result is $(1-\Pi)$. Thus from the expected value of the technological progress in period $t+1$ we can derive its growth rate which should be equal to the growth rate of the economy γ :

$$\frac{dA}{A} = \Pi(\Lambda - 1) \quad (22)$$

where $(\Lambda-1)$ is compound productivity growth, i.e. the parameter λ as in King and Levine. The maximum feasible growth $\Pi(\Lambda-1) = \mu^4$ is possible when all the labour is allocated into the innovative and intermediary activities.

Now there are enough conditions to derive the return on investment in this model. It is derived through the equations (13), (18), (20), (21), (22) for the $a(\tau)$, where $\lambda = 1 - \Lambda$ as in King and Levine:

$$a(\tau) = \frac{\pi m n}{r - \gamma \left[\frac{\lambda - 1}{\lambda} \right]} \quad (23)$$

⁴ It will be equal to $\mu = N\lambda\pi/a(o)$ if dividing the labour power between production of intermediary good n , and those in the labour and research $a(o)$.

How can financial system spur growth in transition economies?



And using the μ , we can rewrite on relate on the RI rate:

$$r = \left[1 - \frac{1}{\lambda} - \frac{m}{\lambda}(1-\tau) \right] \gamma + \left[\frac{m}{\lambda}(1-\tau) \right] \mu \quad (24).$$

Thus here we can close the model equaling the return on consumption (9) and (10) and return on investments (24) which gives a steady-state growth rate in King and Levine model:

$$\gamma = \frac{\left[\frac{m}{\lambda}(1-\tau) \right] \mu - \rho}{\rho + \frac{1}{\lambda} + \frac{m}{\lambda}(1-\tau)} \quad (25)$$

Main conclusions from (25) are as follows. The growth rate is inversely related the intertemporal patience ρ and positively related to the maximum feasible growth. The latter is crucial in our discussion, as proves the hypothesis that financial intermediation promotes growth by increasing its own efficiency. In this model it may occur due to the decreases in f , i.e. in decreasing the costs of financial intermediation, while the probability of innovation, size of the step in the quality ladder, quality of the entrepreneurs' pool, costs of the research project are not connected with quality or depth of financial intermediation. In this context King and Levine show how the financial sector may be implemented into the "growth-creating process", but the model does not show the impact of growth in the case if these functions are not fulfilled by the financial sector. Through this the direct impact of financial sector indicators here is not so meaningful in sense that markets and banks seem not to have so much possibilities to affect growth rate within the model. Another conclusion from the model is explicit negative effect of the taxation of the financial sector.

2.3. FINANCE AND GROWTH AGENDA IN TRANSITION COUNTRIES

As discussed in Kruk and Daneyko (2006) financial system in transition countries has a rather general path of development. Three stages in this path may be stressed:

1. Development and domination of banking system as the main financial intermediary
2. The increase of the stock market role
3. Consolidation of the financial system

On the first stage banking sector has advantages connected with respectively low costs of financial control and risk management due to the positive economy of scale. Due to this banks maintain the information advantage and in the structure of the financial system they have a priority in regard to markets in the conditions of the asymmetric information. Furthermore provision of liquidity is also simpler for banks due to the rather cheap possibilities of borrowing. The shift to the next stage is occurring due to the rising competitiveness of the non-financial sector and its requirements of more innovations. The latter is an incentive for entrepreneurs for a higher extent of information disclosing and more adequate corporate control. Thus the asymmetry in information is being decreased and the financial system is tending to the second stage. Gradually the advantages of both components of financial system compensate each other and the system achieves the stance if equilibrium.

How can financial system spur growth in transition economies?



Here we can emphasize a number of stylized facts in regard to the stages of development. The following features might be peculiar to the first stage:

1. Low quality of the entrepreneurs pool and low probability of innovations. According to the basic ideas of the development path in competitiveness, the first period of competition it is competition due to the production factors. Entrepreneurs compete to each other by means of price, quality and volume of labour and capital, which form competitive advantages herewith. Hence their interest in the innovations and exerting corporate control might be rather low. Furthermore on this stage a situation of soft budget constraints often take place, which also undermines the quality of the entrepreneurs pool and the intention to innovations.
2. Distortions in banks' screening and selecting proper projects behavior. In case of low quality of entrepreneurs pool banks may be reluctant to screening procedures, while it requires excessive resources. Furthermore on this stage influence of government may be rather substantial and through this a significant part of the resources may be allocated under the government's priorities, which undermines selection incentives for banks and thus leads to inefficient allocation of resources. Furthermore this situation may be strengthened if the government has a significant share in the banking system, which is a case in a range of transitions on this stage, and influence the allocation of resources (creating soft budget constraints regime) directly.
3. Different access to capital by different entrepreneurs. This fact is consequent to the previous one and soft budget constraints. Furthermore even if the latter problem is mitigated, then banking system being the only substantial financial intermediary has incentives to exploit the economy on scale through focusing on the relatively big enterprises, being reluctant to crediting SME due to larger overhead costs per unit of credit.
4. Low level of competition in the financial sector. While the banking system in transition countries initially derives from the state banks in directive economy, the banking system might be monopolized by these banks especially on early stages. Furthermore if keeping this environment and maintaining state monopoly in the banking system, other sources (for instance foreign capital) of capital are limited, as potential investors cannot invest in state banks, while foundation of new intermediaries may be too costly in this environment without possibilities for competition with large state banks, due to the state policy.
5. Limited possibilities of attracting liabilities and in provision liquidity. On the one hand there is almost no alternatives for savings rather than bank deposits, but nevertheless some difficulties might take place, for instance due to the generally low demand for national currency and thus preference of holding savings in foreign currency outside banking system. Moreover as discussed above there may be obstacles for increasing the capitalization of the banking system on the first stage. This stylized fact is not constant during the period. Initially the deficit in liquidity required may be not so meaningful, but when being closer to the second stage of the development path this problem might strengthen.
6. Low level of intertemporal risk managing. While the entrepreneurs are in major competing to each other due to the production factors, the incentives for innovations and longer term projects is relatively low. Hence the banking system executes the function of provision liquidity, but mainly making the loans short-termed. Thus financial system avoid intertemporal risk management, which undermines the channel of growth connected with risk sharing in the economy.

How can financial system spur growth in transition economies?



These stylized facts may be projected into the second stage of the financial system development path. Mainly these features are changing creating more proper atmosphere for competition, and risk management procedures. Moreover the entrepreneurs shifting to another stage of competition are raising their interest to innovations, which also raises the role of financial system in screening and selection of the projects. Thus we may suppose that the role of financial system on the second stage is something between the first stage and consolidated financial system, while the properties of the latter and its affect on growth have been discussed above. Hence, the sphere of interest for us is the first stage of the development path and implications it obliges on the impact of finance on long-term growth in comparison to this benchmark relationship.

2.3.1 Changes in the loss ratio (1- δ)

Two channels of financial system impact belonging to this group are stressed by us: costs reduction by banks and increase in the level of competition. The incentives to implement cost reduction technologies might be lower, due to stylized fact (2). If there is almost no necessity for adequate screening and selecting procedures, then banks might not be interested in reducing the costs of these procedures. Furthermore in the situation of soft budget constraints banks' excessive costs in its turn may be covered in some way. Due to implementation of such schemes (see for example Kruk and Cramon-Taubadel (2004)) incentives even for increase in banks' costs may be created.

While the fact (4) in our classification notes that low level of competition is peculiar for the banking system, we can state about weakening the corresponding channel in the transitional financial system in comparison to the benchmark one. Both these effects may be measured indirectly through the value of the interest spread. Thus we can summarize that during the first stage the impact of the financial system on growth is substantially weakened in comparison to standard financial system. In figures it might be as follows: the larger the interest spread in the economy (or another measure), the weaker the impact of the financial system efficiency of the growth rate of the economy.

In the terminology of King and Levine model that distortions imply dramatic shifts in parameter f (costs of screening), which may lead to the absence of the positive amount of a number of screening enterprises, i.e. a negative equilibrium in (14). Furthermore the condition (16) is also undermined or the equilibrium may take place only at very large q , which means dealing with larger entrepreneurs. Hence the following structure of the equilibrium at the financial market is substantially distorted. Furthermore, even if the equilibrium may be achieved under these distortions, the indicator of maximum feasible growth will be substantially less than in the benchmark model, while it is connected with the efficiency of the financial system.

2.3.2 Changes in productivity of capital A

The list of stylized facts, (2) and (6) shows that on the first stage of transition under the circumstances listed, two main channels (selecting most efficient projects and risk managing) of finance impact on growth may be dramatically undermined. The consequences here are much stronger if that a case. If that a case the impact on the productivity of capital might not be simply weakened, but might be absent at all. Hence in the extreme case the financial system might lose its growth promoting qualities, as the logic of this relationship is distorted.

How can financial system spur growth in transition economies?



As for the third channel (provision of liquidity) which then exists under conditions in stylized facts (2) and (5) we may suppose that it keeps on the impact on growth, as this channel is mostly connected with the depth of the financial system rather than with the efficiency in allocating resources. But the question here is a power of this channel already in the benchmark model. From instinctive discussion we may suppose that this channel is not the most powerful one, which thus should be tested empirically.

In terminology of King and Levine in this case we may affirm the inconsistency of conditions (16), (17) and (19) with transition reality, as selecting and financing of projects and matching the future value through risk assessments is inconsistent with facts (2) and (5). Thus either the alternative behavior of financial intermediaries should be depicted in this model, or the model may be treated as inconsistent with transitional environment.

Few implications to this model that may be partially associated with transitional dynamics are listed in Trew (2004). He focused on implications connected with moral hazard in entrepreneurial decisions and adverse selection problem, which may be associated with a situation of soft budget constraints. The first his conclusion is possibility of the situation when subsidies to researches will actually reduce the growth rate, due to the moral hazard “created by the entrepreneurs’ limited liability constraint... to increase long-run growth it may be not assumed that a subsidy to research will generate higher growth. The optimal level of tax on research in this economy is thus non-zero and positive, a marked change from the conclusions of King and Levine”. The next problems discussed here is the problem of adverse selections, which preconditions are bit similar to the stylized fact (1). It is supposed that the intermediary can never be absolutely sure that a potential entrepreneur has an ability to manage a research project, but this uncertainty may be reduced by additional costs on screening process. The conclusion on growth rate is similar here to the benchmark King and Levine model, but “in addition the growth rate is increasing in the cost-effectiveness of the screening technology”. From here we can assume that if additional screening procedures are found to be effective to solve the problem of low quality in the pool of entrepreneurs, then the implementing the cost-reducing technologies may be meaningful. But the latter seems more realistic when being closer to the second stage of the development path, when the facts (1) and (2) are not at their extreme stances.

From the discussion above we can conclude that the impact of finance on growth might be weakened at the first stage of the financial system development path. Mainly the depth parameters are meaningful at this stage, which characterizes the provision of liquidity channel. This influence might be strengthened at the second stage, when a couple of channels should be actualized or strengthen its impact. Furthermore structural policies such as facilitating to the competition level in the banking system, eliminating of soft budget constraints comply with stimulating the shift from the first stage to the second one of the development path, which might be treated as growth-consistent policies.

How can financial system spur growth in transition economies?



3. FINANCIAL SYSTEM AND CHANNELS OF MONETARY TRANSMISSION

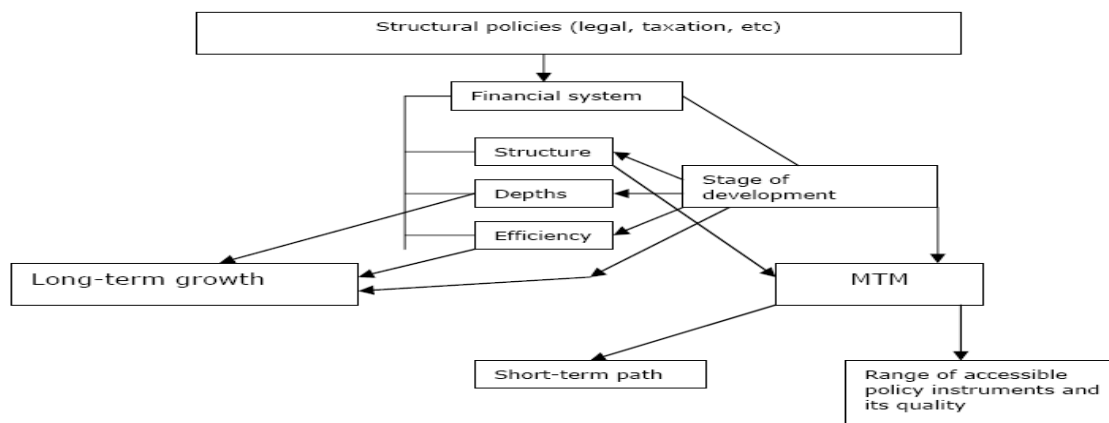
The discussion above was devoted to the relationship between finance and long-term economic growth. But as we argued the interrelation between financial system and economic development may differ in either short-term or long-term. The idea that financial system despite promoting growth in long-term may be a source of fluctuations and recessions in the short-term was presented by Loayza and Ranciere (2004). But in our opinion this relationship may be broadened. One can argue that the type (structure) of the financial system is a core reason for this or that type of the monetary transmission mechanism. According to the wide-spread definition the monetary transmission mechanism is a system of variables that denote how the changes in monetary policy impact intermediary economic variables (retail interest rates, assets price, etc.) and afterwards the variables of the real sector, such as output (through the components of the final demand) and prices (output variables). Usually two steps in transmission are emphasized: (i) the first one is connected with a pass-through effect from policy variables to intermediary variables; the second one, from intermediate variables to the output variables. Different chains of variables that denote economic relationships among the variables considered are treated as channels of monetary transmission.

The question now is why we emphasize the monetary transmission mechanism in the analysis of relationship between finance and growth. We follow the logic that monetary transmission mechanism determines the extent of effectiveness of the monetary policy measures in the short-term. It means that affect on output variables through different channels of monetary transmission may differ substantially in two qualities: either the power of impact or the lag of impact. Say the increase in money supply by one percentage point may lead to the change of a half of percentage point in twelve months if the dominating channel in the economy is A, or the same impulse may lead to the two percentage points change in GDP in six months if the channel B is dominating. This difference may be meaningful in two directions: (i) depending on the monetary policy transmission mechanism (MTM) different paths of policy reactions may take place, while one of them may be considered to be more efficient or effective for the economy; (ii) this difference may be meaningful for the monetary authorities in respect to the strategy of their policies. Furthermore we may suppose that monetary authorities may prefer an explicit type of MTM, say for instance, with the most possible impact power in the less possible time period (i.e. the possibility of making the maximum desired effect on output and prices in the shortest time, by means of a constant policy measure). But the type of MTM is mainly determined by the financial structure, while the type of the latter may be stimulated by authorities at least by means of legal financial basis.

How can financial system spur growth in transition economies?



Chart 2. Relationships between financial system and economic development



Then we can make a conclusion that a short-term path of the economy, the range of accessible policy measures depends on such attribute of the financial system as its structure. Moreover, the latter depends on the policy measures aimed at financial system, i.e. short-term path of the economy and the range of tools accessible in the short-term depend on the structural economic policy. Combining with the discussion above, we can summarize relationships between financial system and economic development, and the applicability of economic policies to this relationship (see Chart 2).

Thus in our context we interested in differences in the MTM implied by the financial structure; in possible measures of effectiveness or efficiency of different MTM channels, i.e. on what criterions we can say if any that the individual MTM channel is either “good” or “bad”; and at last about correspondence of policy measures directed at financial system (its structure, depths and efficiency) in regard to the long-term growth and short-term dynamics.

3.1. MTM CHANNELS AND DIFFERENT STRUCTURES OF THE FINANCIAL SYSTEM

Majority of modern classifications of the MTM channels are based on Mishkin (1996). A bit broader classification of these channels is presented in Table 1. From this classification we may see that there should be difference in channels originated by the bank-based financial system and market-based ones. It seems to be rather evident due to the agents and their assets composition. Certainly if the households and firms mainly hold their assets in stocks and stocks are also dominating in the liability side of firms, then the adjusting procedures will take place in the economy through the assets channels. The same is true for credit channels within the economy with a bank-based financial system and dominance of banking financial tools in assets and liabilities of the economic agents.

How can financial system spur growth in transition economies?



Table 1. Groups of the MTM channels

Interest rate channels				Assets price channels		Credit channels		Exchange rate channel
Keynesian M ⁵	Substitution effect in consumption M	Inflation expectations M	Income and cash-flow M	Wealth M	Tobin's q M	Narrow credit channel M	Broad credit channel M	Exchange rate channel M
Real interest rate	Real interest rate	Expected inflation	Real interest rate	Change in assets price	Change in assets price	Banks' deposits or excessive reserves	Change in assets price	Real interest rate
	Intertemporal arbitrage	Nominal interest rate	Reallocation of wealth between borrowers and lenders	The level of economic agents' wealth	Tobin's-q	Supply of banks' loans	Reduction of moral hazard and adverse selection	Real exchange rate
I⁶	C	C	C	C	I	I	C	NX
	I	I	I				I	

Source: Mishkin (1996), Moiseev (2002), own elaboration.

Some questions may take place in regard to the group of interest rate channels. In our opinion the effectiveness of pass-through and adjusting of economy to shock through this MTM channel is not fully dependent from the type of the financial system like bank-based or market based one. Say, Kallaur et al. (2005) after testing the effectiveness of the MTM channels in Belarus argue that interest rate channels are more peculiar to the market-based systems. While, for instance, Bernanke and Gertler (1995) did not find any overwhelming results in identifying this channel in the market-based system.

The same conclusion may be partially applied to the exchange rate channel. In regard to this channel of MTM financial structure will have secondary impact, through demand to foreign currency by the economic agents and their propensity to diversify portfolio risks by holding a part of their assets in foreign currency. But from this point of view either domination of markets or banks is not so vital, as, for instance, involvement of the country into the external trade and international capital movements.

As shown in Eijffinger (2001) the peculiarities of the financial system within its one type, i.e. differences between countries in which financial systems are both considered to be say bank-based. In this case the design of MTM will not differ so much from the point of view of effective channels. In both cases credit channels tend to dominate, ceteris paribus, but the pass-through effect over both steps of transmission may differ substantially between the same channels in different countries. One factor that may be relevant is the extent to which private sector credit is on adjustable interest basis. The quicker the interest rates on loans to the private sector will be adjusted, the more a policy-induced

⁵ M denotes change (either decrease or increase) in monetary policy, more often associated with change in money supply.

⁶ Here are the components of the final demand are noted: C, I, NX.

How can financial system spur growth in transition economies?



change of interest rates will affect aggregate demand. Thus Eijffinger (2001) by providing data on the share of adjustable interest rates⁷ in the financial system of the EU countries explains differences in interest rate channels.

Thus we can state that financial structure is a core factor that influence the design of the MTM in a country and hence its reaction and scheme of adaptation to shocks. We can say that these channels are similar from the point of view of the range of tools of impact accessible to the monetary authorities. At the same time the power of MTM (impact on output variables and the period of this impact) channels may differ even in case of the same channels under various other conditions, say adjustable interest rates, etc.

3.2. CRITERIONS FOR COMPARISON OF THE MTM CHANNELS AND APPLICATION TO TRANSITION COUNTRIES

The latter conclusions do not give us enough confidence to compare such attributes of the MTM channels as the power of impact on the output variables and the period of such an impact, *ceteris paribus*. But nevertheless there grounds to compare the power of these channels in respect to stressed stages of the financial system development. Cecchetti (1999) argues that larger and healthier banks will be able to adjust to the policy-induced reserve changes more easily than smaller and less healthy banks. It is therefore expected that countries with less concentrated and less healthy banking systems will be more sensitive to monetary policy actions. Normatively we can assume those channels that neutralize shocks in monetary policy as “better” channels, while those that directly transmit shocks to the real sector as “worse”. At the same time from the point of view of possibility of monetary authorities to neutralize shocks just an opposite evaluation is more reasonable. However a criterion of stronger relationships between variables may be argued as a rather universal for judging about MTM. The idea is that in weak financial system, despite constant structure of the financial system agents might change their behavior because of other factors, and thus the pass-through effect on both stages of transmission is weak and unstable. From Chart 2 we can see that such a criterion as strongly significant relationships between MTM variables will lead to more predictable short-term dynamics and more explicit number of tools accessible for monetary authorities. While the criterion of either large or small impulse response we can keep as secondary and unambiguous.

Thus both criterions seem to be connected with the stage of the development path and thus we can see their dynamics in transition countries. Ganev et al (2002) having analyzed assessments of the MTM in transition and based on the own assessments showed that for the majority of transition countries there are weak, but significant relationships on the first stage of transmission. But there is almost no evidence of significant relationships on the second stage of transmission, which thus denotes the low level of the first criterion in regard to transition countries. It means that there is no stable financial environment, not satisfactory level of economy development, etc. From this point of view the best impact of the financial structure is its stabilizing or in our context higher position in the development path. The latter will allow for the MTM to be more explicit. Thus, as seen from Chart 2, such a development of the financial

⁷ This share differ, depending on other factor rather than financial structure.



system will also be consistent with growth facilitating effects, as growth over the development path lead to the increased efficiency and depth of the financial system.

We can also use the second criterion in monetary authority view in regard to consistency with long-run growth stimulating policy. In case of monetary authorities being interested in easy transmitting of policy impulses (for neutralizing external shocks introduced to the financial system) they might be interested in freezing the stance of the financial system on its development path, more precisely on the lower level of the first stage. According to Cecchetti (1999) this can create preconditions for less smoothed pass-through effects, as the level of banking system development will be not enough to neutralize these shocks by means of reserves. At the same time such measures will contradict to the long-term growth promoting policy. In this case structural policies might be directed at limiting the role of stock market, low competitive level in the banking system. From the entrepreneurs' side a soft budget constraint mechanism may be induced into the system, which mitigates the requirements of the borrowers for the alternative sources of capital, risk hedging instruments, etc. Thus the financial system is frozen at the first stage due to structural policies.

How can financial system spur growth in transition economies?



4. FINANCIAL SYSTEM AND ITS INFLUENCE ON THE ECONOMIC DEVELOPMENT IN BELARUS

4.1. BELARUSIAN FINANCIAL SYSTEM

As shown in Daneyko and Kruk (2005) Belarusian financial system is purely frozen on the first stage of the development path. First, it may be treated as a pure bank-based system, while the stock-market is extremely low and there are few measures that prevent its development. Second, characteristics complying with stylized facts (2)-(6) are peculiar to the Belarusian banking system. As Daneyko and Kruk (2005) argue four groups (clusters) of banking activity may be emphasized: state quasi-fiscal banks, other authorized banks, private and small banks. The activity by banks is rigidly segmented according this division and almost no competition among clusters is possible. Furthermore there are a number of structural policies measures that facilitate and shape this kind of equilibrium in the financial sector:

- Direct replenishment of authorized funds of these banks through consolidated expenditure;
- Gap between actual reserves on non-performing loans and normative indicator in authorized banks;
- Underfulfilment of reserve requirements by these banks;
- Heightened norm of risk in quasi-fiscal banks on one borrower in comparison to other banks.
- Implicit state guarantees on insurance of households' deposits in Belarusbank and Belagroprombank (these two banks are treated as quasi-fiscal) in whole volume of the deposit, regardless of the currency of nomination; and other.
- Granting loans by state quasi-fiscal banks on the direct government orders. Frequently the maturities of such loans are artificially lengthened, according to the government investment programs.
- Artificial limitation of the interest spread.

Moreover, partially soft budget constraint mechanism is implemented that keeps a rather low level of the entrepreneurs' pool (for more details see Kruk and Cramon-Taubadel (2004)), which complies with the stylized fact (1).

As discussed above such stance of the financial system is evident during the first stages of the transition process as a whole. But in case of Belarus list of economic policies measures above support our hypothesis that this stance has been frozen artificially. The explanation for this policy orientation we see: (i) in deep connection of the Belarusian banking system with state economic policy and subordination to the real sector priority (in more details see Kruk (2005)), (ii) due to the first reason, there is a trade-off between structural policies in the financial sector in regard to short- and long-term. In other words, our hypothesis is as follows. Belarusian banking system having given conditions of co-existence with the Belarusian real sector cannot, but focuses on the possibilities of maximum impact on the short-term economic dynamics as their priority, while treating long-term dynamics as a secondary

How can financial system spur growth in transition economies?



one. In terminology of Section 3.2, it is choosing the second criterion of MTM quality from the monetary authority view as a best one. From this priority there is a trade-off between best measures of structural policies, features of the financial system from the point of view of long-term growth and short-term dynamics. If this assumption tends to be truthful, then the design of the Belarusian MTM should comply with following conditions: weak relationships in MTM variables and instable relationships, domination of the credit channels and exchange rate channel (due to high degree of openness of the Belarusian economy) in the MTM. At the same time there might be very weak assistance to growth by the financial sector.

4.2. THE DESIGN OF THE BELARUSIAN TRANSMISSION MECHANISM

In Kruk (2006) it is argued that VAR methodology for assessing the whole channels of MTM it is not fully proper, especially in transition countries. As when including in VAR the variables of both steps of transmission, the economical sense of this analysis is close to the monetarist analysis or monetarist channel of MTM, which assumes the economy as black box and ignores the specifications of each channel. In our case individual testing of each transmission stage seems more reasonable.

The main conclusions from Kruk (2006) are as follows:

4.2.1. Narrow credit channel

Mechanisms of increases in money supply by the National bank of Belarus (NBB) lead to the adequate increase of cash in circulation in the structure of reserve money without lags. Thus this channels characterizes both the behavior of banks and agents of the real sector (mainly households). Under this condition, in order to test the first step of transmission it is reasonable to test impulse response of money multiplier (rmm) on the increase in reserve money (mb). For more pure effect the ruble (national currency) part of the reserve money (rmb) increase and correspondent multiplier (rmb) may be used. The correspondent impulse response functions are presented in Annex 2.1. For stressing the role of banks instead of money multipliers the relation of ruble deposits to reserve money and ruble reserve money are tested (see Annex 2.2). Changes in money multiplier are Granger cause for changes in money multiplier, which demonstrates the connection of variables within this MTM channels. But in both cases the relationships are very weak, though being bit stronger in second case. The main conclusion is that there are weak and unstable relations within this channel. Moreover own behavior of banks is not so vital, as IRF shows that it does not provide the growth in multiplier. Moreover banks are reluctant enough and for a rather long period they react to changes in money supply by maintaining excessive liquidity. Furthermore there are no significant identification of this channel on the second step of transmission.

4.2.2. Exchange rate channel

For identifying this channel a VAR with monetary authorities' exchange rate (mbex_r) and market exchange rate (ex_r) was analyzed (see Annex 2.3). Granger test shows that exchange rate of the monetary authorities is a cause for market interest rate. Moreover there are rather strong relationships in the analyzed VAR. Thus this channel is treated as the most significant that allows NBB to transmit the desired impulses in the economy. Hence this channel is mostly identical and governmental in the Belarusian economy. Furthermore due to structural relationships we may instinctively assume the significance of this channel at the second stage of transmission.

How can financial system spur growth in transition economies?



4.3.3. Other channels

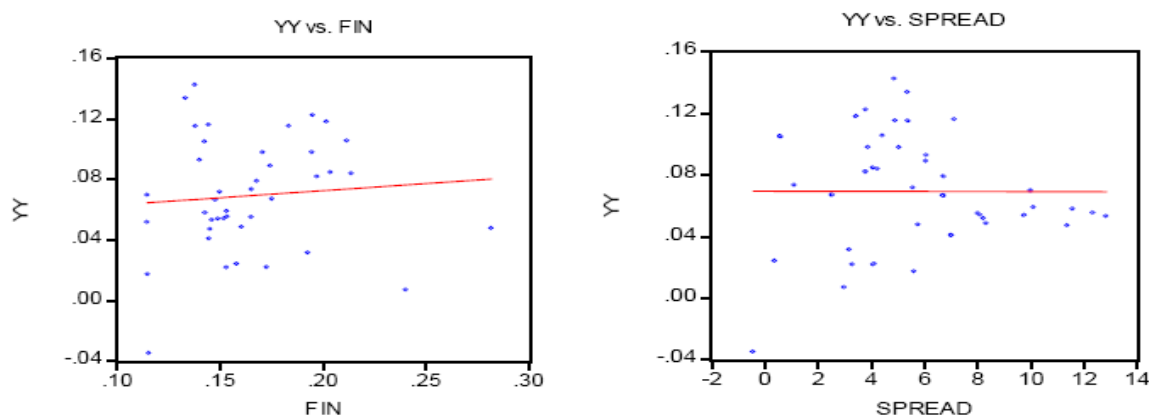
By means of VAR methodology there is no evidence of the interest rate channel functioning on either steps of transmission. Moreover there is no theoretical grounds and consequently statistical data for testing other channels of the MTM and they considered to be absent from the Belarusian MTM.

4.3. BELARUSIAN FINANCIAL SYSTEM AND GROWTH RATE OF THE ECONOMY

From Section 3 there might be at least two theoretically proper ways of testing the impact of the financial system on the growth rate of the Belarusian economy. The first one is connected with those one proposed by Levine (2002), i.e. the specifications in the form (1) and (2). As shown in Section 2 we have enough theoretical grounds to use such regressions. Another way that may be used is assessing the Belarusian production function and separating from it other factors rather than capital and labour. This variable may be treated as a measure of technological progress, which then might be regressed on the variables of financial intermediation. If in any case there positive and significant relations, it should prove positive impact of the Belarusian financial system on the growth ratio.

The first way of assessment shows even the more disappointing results then it is formulated in our hypothesis. Between the indicators of financial activity we have chosen the most universal ones (for more details see Levine (2002)). The ratio of financial depths is measured by the share of loans to real sector in GDP (fin). The measure of efficiency is derived as an interest rate spread between real interest rates on loans and deposits. These variables were assessed as independent ones for GDP growth (year on year, marked as yy). All the calculations took place in quarterly data for the period 1-q 1996 – 1-q 2006. Even without making regression of type (1) we face insignificance of both these variables as factors of GDP growth, while regressions show extremely low t-statistics for both indicators even in absence of other conditional variables. This insignificance is evident in scatters of GDP growth on each variable (see Charts 3). The same conclusions are if trying to modify either independent variables (total assets of banks to GDP, M3 to GDP etc.) or dependent variable (GDP growth per capita, GDP growth per employee, etc.).

Chart 3. Scatter plots between growth rate and indicators of financial depth and efficiency



Source: own elaboration.

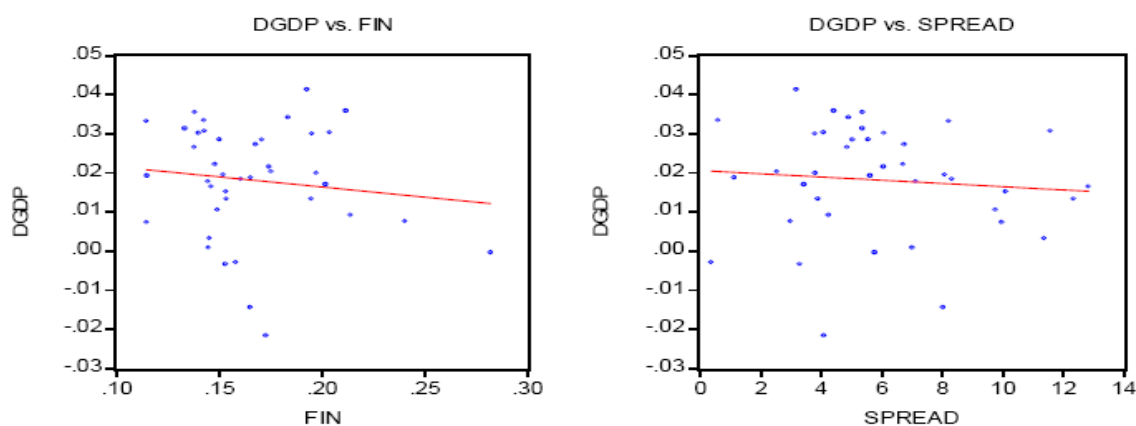
How can financial system spur growth in transition economies?



Within the same approach of testing, we can use another measure of growth as the first difference of logarithms of seasonally adjusted GDP (noted as *dgdp*, this absolute difference in logarithms is close to relative difference of initial indicator, moreover the first difference of GDP logarithm is stationary as well). This technique has almost the same economic sense, but a bit different accounting of seasonal dynamics. It also denotes extremely low and insignificant dependence of economic growth on the financial system depth and efficiency. For more convenient vision this interrelation is also presented as a scatter plots between variables (see Chart 4).

Unfortunately the second way of assessments is not overwhelming, as there is either significant trend in logarithms, which might mean autonomous growth from year to year independent on economic factors, or the negative relationship with labour. Thus more advanced techniques of the production function assessment may be needed for deriving proper results. But nevertheless due to the first method we can state that Belarusian financial system's impact on the output growth is insignificant. According to the above hypothesis mainly it might occur due to the priority of short-term goals by monetary authorities and subordination of the financial sector to the real one in Belarusian realities.

Chart 4. Scatter plots between 1st difference of logarithms of GDP and indicators of financial depth and efficiency



How can financial system spur growth in transition economies?



5. CONCLUSIONS

We have considered the interrelation between finance and economic development, stressing that financial system may be meaningful for the real sector not only in the long-run, but in the short-run as well. A relationship between finance (the depth of financial system and its efficiency) is crucial for the growth rate of the economy. This conclusion is consistent with the theory of economic growth, both with exogenous models and AK-type of endogenous models. Moreover the role of financial intermediaries is explicitly seen from King and Levine model. This makes possible for assessing dependence between growth rate and financial intermediation indicators by means of econometric methods using financial intermediation variables as institutional ones. But even in the long-run this relationship is not ambiguous, as weakening this impact is possible in transition countries, especially at the early stages of transition. Moreover in the short-run the financial intermediation may be not only a factor of recession as mentioned in Loayza and Ranciere (2004) but it also determines the structure and design of the monetary transmission mechanism in a country. The latter is crucial while different assessments of the desirable MTM structure are possible. In majority of cases the short-run policies are subjected to the accessible MTM and thus growth promoting functions of the financial structure are valid or at least they are not distorted by the short-run goals. Hence short-run and long-run “environment” are co-existing separately not being treated by common policy measures that may have different results to each one. But there may be a case when the desirable structure of MTM is treated as priority and through this structural policies measures are used, which undermines or keep at very low level the role of financial system as a growth accelerator. This trade-off between long-run and short-run policies seems to be more peculiar to transition countries under certain preconditions. Assessing Belarusian policy tasks and the impact of growth by the Belarusian financial system we came to the conclusion that such a trade-off is taking place in Belarus. Through this Belarusian financial system is artificially kept at the low level of the development paths, which undermines few functions peculiar to financial system as a factor of long-run economic growth.

How can financial system spur growth in transition economies?



REFERENCES

- Amel D., Barnes C., Panetta F., Salleo C. (2004) Consolidation and efficiency in the financial sector: A review of the international evidence, *Journal of Banking & Finance* 28 (2004) 2493–2519
- Baier S., Dwyer Jr. G., Tamura R. (2002), How Important Are Capital and Total Factor Productivity for Economic Growth?, Federal Reserve Bank of Atlanta Working Paper 2002-2a
- Bean C., Larsen J., Nikolov K. (2002), Financial Frictions and the monetary transmission mechanism: theory, evidence and policy implications, European Central Bank Working Paper No. 113
- Beck T., Levine R. (2004), Stock markets, banks, and growth: Panel evidence, *Journal of Banking & Finance* 28 (2004) 423–442
- Beck T, Levine R., and Loayza N. (2000), Finance and the Sources of Growth, *Journal of Financial Economics*, 58, 261-300.
- Bencivenga V., Smith B. (1991), Financial intermediation and endogenous growth, *The Review of Economic Studies*, 58, 195-209.
- Bernanke B., Gertler M. (1995), Inside the black box: the credit channel of monetary policy transmission, *Journal of Economic Perspectives*, 9, 27-48.
- Campos N, Coricelli F. (2002) Growth in Transition: What We Know, What We Don't, and What We Should, William Davidson WP No. 470.
- Caporale G., Howells P., Soliman A. (2003), Endogenous growth models and stock-market development: evidence from four countries, University of England, School of Economics Discussion Paper, No. 0302.
- Cavalcanti Ferreira P., Issler J., de Abreu Pessoa S. (2002), Testing Production Functions Used in Empirical Growth Studies, Graduate School of Economics – EPGE Getulio Vargas Foundation
- Cecchetti S. (1999), Legal structure, financial structure, and the monetary policy transmission mechanism, NBER Working Paper, No. 7151.
- Chubrik A (2002), Return to scale of the production function and total factor productivity: example of Poland and Belarus, *Ecowest*, 2, 252-275 (in Russian).
- Daneyko P., Kruk D. (2005), Reforming the banking system of Belarus, *Problems of Economic Transition*, 48, 68-95.
- Dell'Ariccia G., Marquez R. (2004), Information and bank credit allocation, *Journal of Financial Economics*, 72, 185-214.
- Dolar V., Meh C. (2002) Financial Structure and Economic Growth: A Non-Technical Survey, Bank of Canada, Working Paper No. 24

How can financial system spur growth in transition economies?



- Easterly W., Levine R., (2001), It is not factor accumulation: stylized facts and growth model, Central Bank of Chile Working Paper No. 164.
- Eijffinger S. (2001), The conduct of monetary policy and an evaluation of the economic situation in Europe – 1st quarter 2001, Briefing Paper for the European Parliament.
- Ergungor E. (2004) Market- vs. bank-based financial systems: Do rights and regulations really matter? *Journal of Banking & Finance* 28 (2004) 2869–2887
- Eschenbach F. (2004), Finance and Growth: A Survey of the Theoretical and Empirical Literature, Tinbergen Institute Discussion Paper No. 039/2.
- Ganev G., Molnar K., Rybinski K., Wozniak P. (2002), Transmission mechanisms of monetary policy in Central and Eastern Europe, CASE report No. 52.
- Gaytan A., Ranciere R. (2004), Banks, liquidity crises and economic growth, Econometric Society North American Summer Meeting, No. 399.
- Golinelli R., Rovelli R. (2005), Monetary policy transmission, interest rate rules and inflation targeting in three transition countries, *Journal of Banking & Finance* 29 (2005) 183–201
- Greenwood J., Jovanovic B. (1990), Financial development, growth and distribution of income, *The Journal of Political Economy*, 98, 1076-1107.
- Kalaur P., Komkov V., Chernookiy V. (2005), The mechanism of transmission of monetary policy in the economy of Belarus, *Belarusian Economic Journal*, 3 (in Russian).
- Kaminsky G., Reinhart C. (1999), The twin crises: the causes of banking and balance-of-payments problems, *The American Economic Review*, 89, 473-500.
- Kiviet B., Elbourne A., de Haan J. (2003), Financial structure and monetary policy transmission in transition countries, Working paper, www.eco.rug.nl/medewerk/sterken/download/transition.pdf.
- Koivu T. (2002), Do efficient banking sectors accelerate economic growth in transition countries?, BOFIT discussion paper, No. 14.
- King R., Levine R. (1993 a), Finance and growth: Schumpeter might be right, *The Quarterly Journal of Economics*, 108, 717-737.
- King R., Levine R., (1993 b), Finance, entrepreneurship, and growth: theory and evidence. *Journal of Monetary Economics*, 32, 513-542.
- Krivorotov D. (2005), Transmission mechanism of monetary policy, *Belarusian Economic Journal*, 2 (in Russian).
- Kruk, Cramon-Taubadel (2004), Measures to improve the access of agricultural enterprises to capital, IPM Research Center Policy Paper.
- Kruk (2005), Stance and perspectives for reforming the Belarusian banking sector, IPM Research Center Discussion Paper (in Russian).

How can financial system spur growth in transition economies?



- Kruk (2006), Identification of the monetary transmission channels in Belarus, *Ecowest* (forthcoming, in Russian).
- Kruk D., Daneyko P. (2006), Approaches to reforming the Ukrainian stock market, Discussion paper.
- La Porta R., Lopez-de-Silanes F., Shleifer A., Vishny R (1998), Law and finance, NBER Working Paper, No. 5661
- Lensink R., Sterken E. (2002), Monetary transmission and bank competition in the EMU, *Journal of Banking & Finance* 26, 2065–2075.
- Levine R., Zervos S. (1996), Stock markets, banks and economic growth, World bank Working Paper, No. 1690.
- Levine R. (1997), Financial development and economic growth: views and agenda, *Journal of Economic Literature*, 35, 688-726.
- Levine R. (2002), Bank-based or market-based financial systems: which is better, *Journal of Financial Intermediation* 11, 398–428
- Levine R., Loayza N., Beck T. (2002), Financial Intermediation and Growth: Causality and Causes, *Journal of Monetary Economics*, 46, 31-77.
- Loayza N., Ranciere R. (2004), Financial development, financial fragility, and growth, World bank, Policy Research Working Paper Series, No. 3431.
- Mishkin F. (1996), The channels of monetary transmission: lessons for monetary policy, NBER Working Paper, No. 5464.
- Mishkin F. (1995), Symposium on monetary transmission mechanism, *Journal of Economic Perspectives*, 9, 3-10.
- Mojon B. (2000), Financial structure and the interest rate channel of ECB monetary policy, European Central Bank Working Paper, No. 40.
- Morales F. (2000), Financial Intermediation in a Model of Growth Through Creative Destruction, Universidad Autónoma de Barcelona and Universidad de Murcia, Working Paper
- Obstfeld M., Rogoff K. (1995), The mirage of fixed exchange rate, *Journal of Economic Perspectives*, 9, 73-96.
- Rioja F., Valev N. (2004), Finance and the sources of growth at various stages of economic development, *Economic Enquiry*, 42, 127-140.
- Rebello S. (1991), Long-run policy analysis and long-run growth, *The Journal of Political Economy*, 99, 500-521.
- Romer P. (1986), Increasing returns and long-run growth, 94, 1002-1037.
- Sala-i-Martin X. (1990), Lecture notes on economic growth (II): five prototype models of economic growth, NBER Working Paper, No. 3564.

How can financial system spur growth in transition economies?



- Sala-i-Martin X. (2002), 15 years of new growth: what we have learnt? Columbia University Department of Economics Discussion Paper, No. 0102-47.
- Smidkova K. (2002), The transmission mechanism of monetary policy at the beginning of the third millennium, Czech Journal of Economics and Finance
- Tadesse S. (2002), Financial architecture and economic performance: international evidence, Journal of Financial Intermediation, 11, 429-454.
- Taylor J. (1995), The monetary transmission mechanism: an empirical framework, Journal of Economic Perspectives, 9, 11-26.
- Thiel M. (2001), Finance and economic growth – a review of theory and available evidence, Commission of the EC, European Economy – Economic Papers, No. 158.
- Trabelsi M. (2002), Finance and Growth : Empirical Evidence from Developing Countries, 1960-1990, Universite de Montrea, Working Paper No. 13.
- Trew (2004), Endogenous growth and welfare with asymmetric information in financial intermediation, University of Warwick, MSc Dissertation in Economics.
- Moiseev S. (2002), Transmission mechanism of monetary policy, Journal of Finance and Credit, 18, 38-51, (in Russian).
- Wong W. (2001), The Channels of Economic Growth: A Channel Decomposition Exercise, National University of Singapore Working Paper, No. 0101.