

parameters (e. g. volatility of the assets, reconfiguration of the debt in each period). We believe that important messages can be distilled in the simple setting here and that can be obscured by introducing additional parameters.

Financial networks' study and understanding has become extremely important since the global financial meltdown in 2007–2009 when the interconnectedness of institutions has surfaced as one of the major culprits for the magnitude of the distress. This paper aims at providing a new approach, based on a concept already in use in other domains such as physics and computer science, to describe and better understand the net-works of institutions and their global properties. We draw some parallels and contrasts with other approaches to this field.

We introduced the theory of Directed Cyclical Graphs to the study of Financial Networks. We believe that such tool provides a good model of such networks as it takes into account the directionality of influence and the existence of cycles in real world cases. The framework presented here allows for normative queries about how manipulating exogenously the network will propagate through it. Moreover, the contagion effects of one or more entities in default are easily inspectable in terms of joint probability tables. The results are transparent (no black boxes!) and can be easily examined through visual tools and graphs of probability distributions.

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RISK, CONCENTRATION AND EFFICIENCY IN TRANSITION ECONOMIES: COMPARATIVE ANALYSIS

Over the last more than two decades the financial systems of the former USSR as well Central and Eastern European (CEE) countries have undergone substantial reforms and their impact of overall economy is now established in the literature. The research investigating the risk taking behavior of banks in former Soviet countries are limited. Considering that banks behave differently under different institutional settings the results obtained for developed and developing countries may not apply to the transition ones.

Therefore the contribution of the research is threefold: 1) comparison the risk taking behavior of banks in two different groups of transition over the two different periods, that is during the stable (pre-crisis – 2000–2006) as well as during the financially turbulent (2007–2012) periods. The first group includes Czech Republic, Estonia, Hungary, Latvia, Lithuania and

Poland and the second group includes Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Tajikistan, Ukraine and Uzbekistan; 2) research the impact of technical efficiency on banks' risk taking behavior. In the paper Z score is used as the measure for bank risk and equals to return on assets (ROA) plus equity-asset ratio (EAR) divided by standard deviation of return on assets. Since Z score indicates the distance to insolvency a higher Z score implies that a bank is less risky; 3) research relationship between risk as well as competition (Herfindahl – Hirschman Index is used to describe the banking concentration in the transition countries) and technical efficiency (stochastic frontier method is used; profit efficiency is superior as it simultaneously considers both revenue maximisation and cost minimisation. Profit efficiency of banks measures how well a bank is maximising its profits with respect to a benchmark (a best practice) of a banking industry).

Research data include only those banks which have at least three year financial statements available in Bankscope for the period 2000–2012. Thus it includes the data for 254 banks and all bank relevant data are taken from Bankscope. Additionally, the data for the macroeconomic variables are obtained from World Bank's Development Indicators 2013.

Thus during the stable period (2000–2006) the banks with higher concentration and technical efficiency take less risks in both groups of countries, however, during the turbulent period (2007–2012) only the banks (with higher concentration and technical efficiency) in early transition countries tend to take higher risks. Moreover, the lagged value of the loan loss provision increases the level of taking risks only in the group of early transition during the financial turbulent period (2007–2012).

Additionally, the ownership structure impacts on the risk taking behaviour only in the countries of late transition during the period 2000–2006, that is the banks with foreign and private ownership take less risks. This may be due to the performance differences among the banks in late transition countries for the period 2000–2006, but ownership does not impact during the period 2007–2012. Moreover, the results in Table 6 indicate the presence of non-linear relationship between the technical efficiency and the risk taking behavior in the countries of late transition for the period 2007–2012.

The results support the view of 'competition-stability' (solves the problems related to moral hazard and adverse selection so influencing a banking sector stability) during the stable period (2000–2006) for both groups of transition countries. However, the results for the group of early transition economies support the view of 'competition-fragility' (increased competition reduces the franchise value of banks thus providing incentives to take higher risks) over the period of turbulence (2006–2012).