

## SYSTEMIC RISK IN BANKING

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**ABSTRACT:** Bank failure is the result of a deficient risk management in banking leading the bank to a stage of bankruptcy, which means that the insolvent bank is going to be closed by the banking authority. In general, the banking sector is viewed as more vulnerable to contagion than other industries since banks are viewed as more susceptible to failures. The failure of a specific bank may trigger a chain reaction of bank failures and generate negative externalities for the whole banking system. Systemic risk means an externality whereby the failure of a single institution may lead to the failure of other institutions and to the breakdown of the entire system. Systemic risk is one of the main reasons why banks are regulated and supervised. In addition, systemic financial events may induce undesirable negative real effects, such as substantial reductions in output and employment.

### СИСТЕМЕН РИСК В БАНКОВОТО ДЕЛО

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**РЕЗЮМЕ:** Фалитът на банките е резултат от недобро, рисково управление, водещи банката до банкрут, което означава, че несъстоятелната банка ще бъде закрыта от банковата власт. Като цяло, банковия сектор се смята много по-уязвим към провал за разлика от другите сектори на индустрията, тъй като банките се разглеждат по-податливи на фалит. Несъстоятелността на дадена банка може да предизвика верижна реакция от банкови фалити и да се отрази негативно за цялата банкова система. Отстрани системния риск означава действие, съгласно което фалитът на една институция може да доведе до фалит на други институции и да срине цялата банкова система. Системният риск е една от основни причини банките да бъдат направлявани и контролирани. В допълнение може да се каже, че системните финансови събития могат да причинят такива нежелани последици, като съществено намаляване на производствената продукция и увеличаване на безработицата.

Market economy requires a strong banking system that enables funds redistribution. Nowadays, banking is referred to as a service industry rather than a profession. Therefore, a bank can be associated with a financial service conglomerate able to provide basic financial services and properly function within the economic, political, legal and international environment that determines its profit and expansion opportunities, interest rates, exchange rates and the particular resources a bank needs.

The efficiency of the banking system and financial markets represents a determinant factor for sustainable development. Thus, banks are essential for any modern economy, not only because of their turnovers but also because they provide a number of important functions for the national economy, being the main financier.

At present, the role and place of the banking system in the economy are closely connected with their attribute of main financial intermediaries in the relation savings-investments that has a determining importance in economic growth. At the same time, banks play the role of monetary intermediaries having as basic characteristic the capacity of transforming non-monetary assets into money, simultaneously representing the main transferring channel in implementing the monetary policy of the central bank.

In terms of global economy, the increasing role of the banking system in the economy is obvious taking into consideration the fact that, as informatics and communicational systems are developing, we can assist at the arise of a financial network system world-wide composed of regional and national banking systems.

In general, the banking system is considered as more vulnerable to contagion than other industries since banks are viewed as more susceptible to failures taking into consideration the fact that banks are special for several reasons:

- banks are vulnerable to runs due to fractional reserve banking, thus, in the case of high withdrawals the banks may not be able to fulfill deposit obligations;
- banks have a low capital-to-assets ratio;
- banks are highly interconnected through direct exposures in the interbank money market, the large-value payment and security settlement systems.

These characteristics of the banking business give reasons for concerns about systemic risk in banking.

Bank failure is the result of a deficient risk management in banking leading the bank to a stage of bankruptcy, which means that the insolvent bank is going to be closed by the banking authority.

The failure of a specific bank may trigger a chain reaction of bank failures and generate negative externalities for the whole banking system. Further more, it may have negative consequences not just for other banks in the same country, but may also result in breakdowns of banks in other countries. In addition, systemic financial events may induce undesirable negative real effects, such as substantial reductions in output and employment.

Bank failures are widely perceived to have greater adverse effects on the economy and thus are considered more important than the failure of other types of business firms. In part, bank failures are viewed to be more damaging than other failures because of a fear that they may spread in domino fashion throughout the banking system, felling solvent as well as insolvent banks.

Thus, the failure of an individual bank introduces the possibility of systemic risk that exist in almost every country at almost every point in time regardless of the existing economic or political structure. As a result, bank failures have been and continue to be a major public policy concern in all countries and a major reason that banks are regulated more rigorously than other firms.

There is however no uniform definition of systemic risk in the literature. In general, systemic risk means "the risk or probability of breakdowns in an entire system, as opposed to breakdowns in individual parts or components". In other words, systemic risk can be defined as an externality whereby the failure of a single institution may lead to the failure of other institutions and to the breakdown of the entire system.

Systemic risk refers to the risk or probability of breakdowns in an entire system, as opposed to breakdowns in individual parts or components, and is evidenced by correlation among most or all the parts. Thus, systemic risk in banking is evidenced by high correlation and clustering of bank failures in a single country, in a number of countries, or throughout the world. Systemic risk also may occur in other parts of the financial sector, for example, in securities markets as evidenced by simultaneous declines in the prices of a large number of securities in one or more markets in a single country or across countries.

There are two ways in which systemic risk can occur in the banking market. First, a macro shock can simultaneously have adverse effects on several banks. Such a macro shock can either be a cyclical downturn or other aggregate shocks such as interest rate or exchange rate shocks or a stock market crash.

Second, systemic risk can occur as a result of contagion in the banking market, for example an initial shock causes one bank to fail which subsequently leads to the failure of other banks.

Such contagion in banking can work through two channels:

- *the exposure channel* - results from real exposures in the interbank market and/or in payment systems; thus, insolvency problems of one bank can trigger a chain reaction leading to other bank failures; this channel refers to the so called "domino effect";

- *the information channel* - refers to ways through which bad news from one bank lead to the conclusion in the market that other banks are also in trouble, leading to adjustments of contracts with other partners or to contagious withdrawals (bank runs); a central concept of this channel is that depositors and also other counterparties have only imperfect information about the type of shocks hitting a bank and the real exposures to other banks.

A large scale breakdown of financial intermediation causes huge economic and social costs. Banking crises have not only shown that banks often take excessive risks, but that risk taking differs across banks. Some banks engage in more risks than their capital can bear in case the downside potential of the risks fully materializes, in which case these banks need to be intervened or even closed down. Others are more prudent and would be able to weather a banking crisis.

Both the chain-reaction and the common-shock concepts of systemic risk involve speedy contagion and require some actual or perceived direct or indirect connection among the parties at risk. Banks are connected directly through interbank deposits, loans, and payment-system clearings and indirectly through serving the same or similar deposit or loan markets. In addition, to the extent that banks operate across national borders, they link the countries in which they operate. Thus, an adverse shock that generates losses at one bank large enough to drive it into insolvency may transmit the shock to other banks along the transmission chain.

Moreover, adverse shocks in the financial sector appear to be transmitted more rapidly than similar shocks in other sectors. Both theory and evidence suggest that the probability, strength, and breadth of any contagious systemic risk are greater for banking, the larger and more significant is the bank experiencing the initial shock. It follows that the transmission and danger of systemic risk are likely to differ depending on the strength of the initial shock and on the characteristics of the bank initially affected.

Common-shock systemic risk, particularly in the short term, appears to be more frequent than chain-reaction systemic risk. Systemic risk, when it does occur, appears both to be rational and to be confined primarily to "insolvent" institutions and not randomly to affect solvent banks fatally.

With respect to banks, an analysis regarding bank failures in the Romanian banking system shows that the Romanian banking system was confronted with a number of bankruptcies beginning with 1994 involving several significant financial institutions. There are a number of reasons that determined Romanian banks to become insolvent, but statistics indicate that most of the bankruptcies were caused by the inferior quality of bank assets.

Analysts consider that granting non-performing credits represented the main cause of the banking crisis passed by Romania during 1995-1999. These credits exceeded own bank capital more than ten times, reaching extremely high levels in 1998 and 1999. Adverse effects experienced by the Romanian banks from the failure of a large financial institution generated severe losses.

Thus, in a short period of time, the Romanian banking system had to face several bankruptcies involving important financial institutions. In fact, the problems begun in 1994 with Dacia Felix Bank and Credit Bank followed by Columna Bank, Albina Bank, Bankcoop, Bancorex, International Religion Bank, Discount Romanian Bank, Turkish-Romanian Bank, Investment and Development Bank for which the National Bank of Romania withdraws the licences (table 1).

This large scale breakdown of financial intermediation causes huge economic and social costs in the Romanian economy. The crises of the Romanian banking system have not only shown that banks often take excessive risks, but that risk taking differs across banks. Some banks engage in more risks than their capital can bear in case the downside potential

Table 1.

*Bank failures in the Romanian banking system*

Bank	Licence withdraw	Observations
Credit Bank	18.04.1997	Bankruptcy procedure beginning (09.11.2000)
Albina Bank	13.05.1999	Bankruptcy procedure beginning (25.05.1999)
Bancorex	31.07.1999	Merger with the Romanian Commercial Bank (30.07.1999)
Columna Bank	22.06.2000	Bankruptcy procedure beginning (18.03.2003)
Bankcoop	08.02.2000	Bankruptcy procedure beginning (08.02.2000)
International Religion Bank	10.07.2000	Bankruptcy procedure beginning (10.07.2000)
Dacia Felix Bank (Eurombank from 17.07.2001)	20.03.2001-20.06.2001	Recovery and bankruptcy procedure closer (14.06.2001)
Discount Romanian Bank	28.02.2002	Bankruptcy procedure beginning (19.04.2002)
Investment and Development Bank	29.03.2002	Activity break-up by dissolve (11.03.2002)
Turkish-Romanian Bank	30.04.2002	Bankruptcy procedure beginning (03.07.2002)

Table 2.

*The evolution of prudential indicators for the Romanian banking system*

Indicator	2000	2001	2002	2003	2004	2005	2006
Solvability ratio	23,79	28,80	25,04	21,09	20,64	21,07	17,34
Own capital ratio	8,62	12,11	11,61	10,89	8,93	9,18	8,32
General risk rate	38,67	39,73	42,90	50,57	46,95	47,61	52,81
Interbank investments and credit / Total assets	37,08	38,62	38,75	32,77	33,58	29,50	36,00
Credit granted to clients / Total assets	30,50	32,02	35,90	48,24	45,64	46,60	53,22
Overdue credit / Total credit	0,65	0,72	0,43	0,31	0,28	0,26	0,20
Total overdue claims / Total assets	0,29	0,32	0,23	0,22	0,18	0,15	0,15
Total overdue claims / Own capital	3,32	2,66	1,97	2,04	2,07	1,36	1,64
Total overdue claims / Attracted and borrowed sources	0,32	0,38	0,27	0,26	0,20	0,18	0,19
Credit risk rate	3,83	2,54	1,10	3,37	2,87	2,61	2,81
Liquidity indicator (since July 2001)	-	1,30	1,37	3,03	2,28	2,59	2,30

of the risks fully materializes, in which case these banks need to be intervened or even closed down.

After a long chain of bank failures that affected the entire Romanian banking system during 1995-1999, the state of the banking system had improved as a result of several actions taken by the National Bank of Romania. Taking into consideration the fact that prudential indicators have long been a valuable tool for assessing the safety and soundness of a banking system, it is obvious that the improvement in our banking system after so many failures is eloquently illustrated by the evolution of the main prudential indicators that characterized the Romanian banking system during 2000-2006 (table 2, figure 1 and 2).

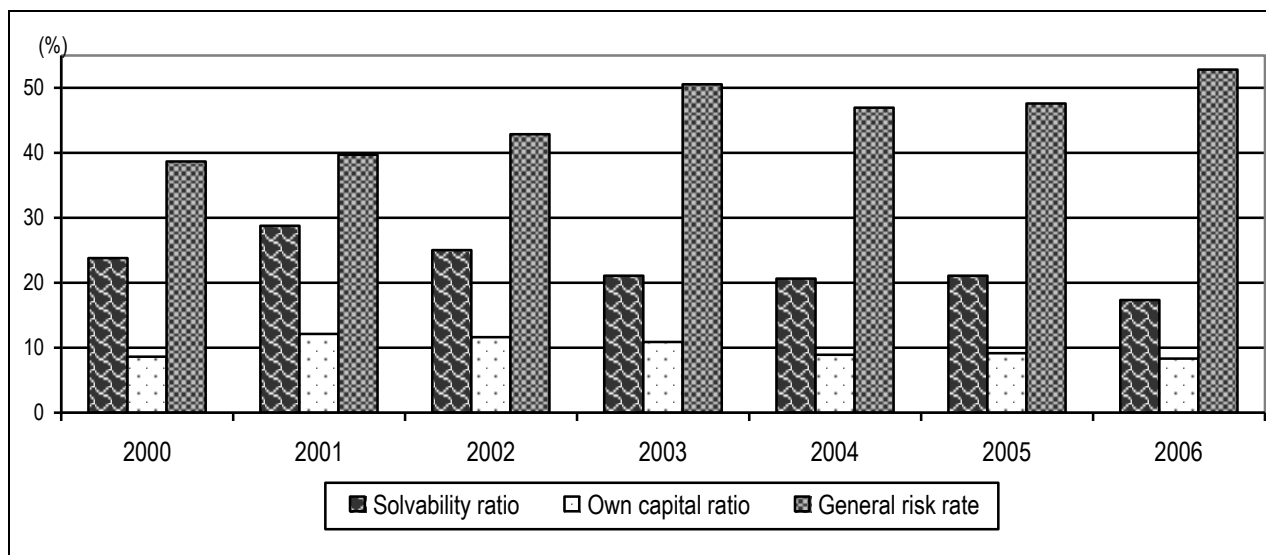


Fig.1. The evolution of several prudential indicators for the Romanian banking system during 2000-2006

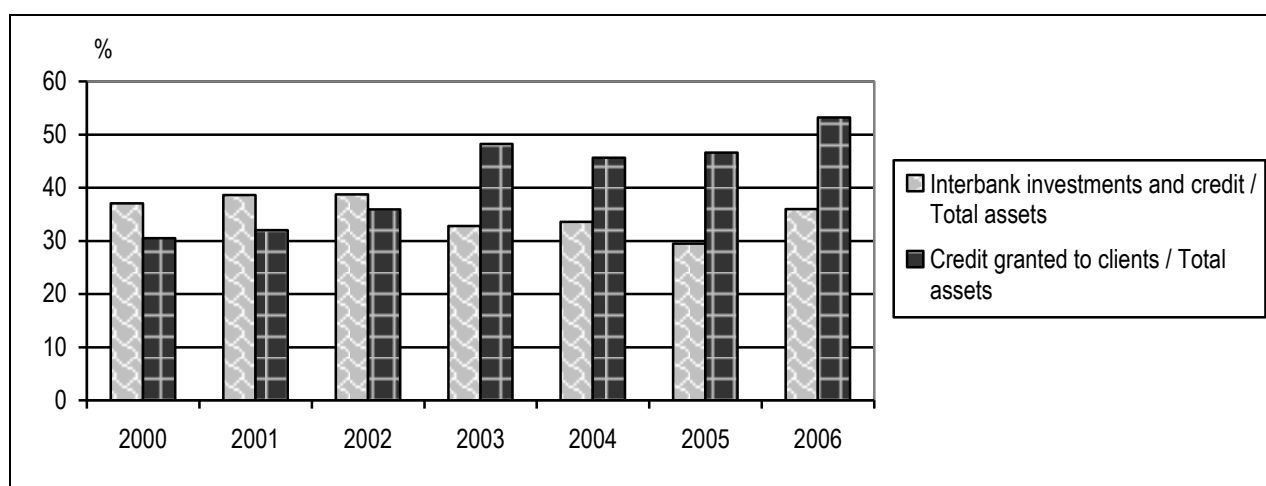


Fig.2. The evolution of several prudential indicators for the Romanian banking system during 2000-2006

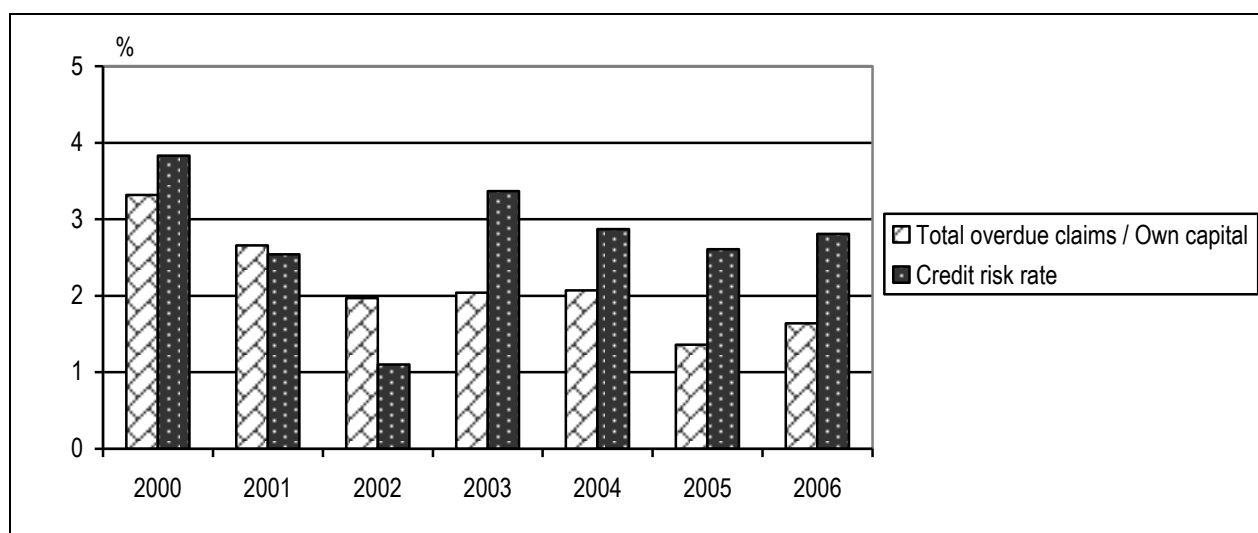


Fig.3. The evolution of several prudential indicators for the Romanian banking system during 2000-2006

The banking industry is generally seen as unique in the sense that the importance of a sound banking system has probably led to more regulatory interference in this industry than in any other. Various policy measures have been initiated

to improve stability in banking by ensuring an appropriate combination of official and market discipline for banks. It has also been a widely held view that official discipline that is implemented by supervision and regulation should, ultimately,

be directed towards achieving the overall stability of the banking system.

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