THE CONCEPT AND DETERMINANTS OF SYSTEMIC RISK- AN OVERVIEW

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Abstract: Systemic risk is a fundamental concept for studying the level of financial instability and the possible ways of counteracting this phenomenon.
In order to define the systemic risk within the financial systems, it is necessary to clarify some concepts that contribute to the outline of the systemic risk profile and to analyse its main components: the shock and the propagation mechanisms. Also, the concept of systemic risk must take into account its two dimensions: temporal, ie procyclicality, and structural, that is, the risk distribution in the system.
Recent developments demonstrate the actuality of the systemic risk concept and in the same time, the gaps that persist in its approach. Therefore, defining the determinant elements, establishing the implications that the systemic risk generates within the financial system represent the prerequisites of effective measures in order to prevent and annihilate the consequences this can generate at the level of institutions, sectors or even economies as a whole.

JEL classification: F30, G20, O16

Key words: systemic risk, financial crisis, determinant factors, effects

1. INTRODUCTION

The systemic risk analysis is a starting point for understanding financial crises and, in the same time, an important financial and monetary policy indicator that can ensure the stability of financial systems. Recent developments in the world economy, the financial crisis phenomena bring back and underline the importance of the systemic risk concept.

Globalization of markets and economic integration, deepen the interdependencies between the economies, which determines an unprecedented expansion of the credit considering the internationalization of the businesses and also the increase of the deficit of resources and credit needs for the transnational companies. Also, the variety of forms of financial intermediation has expanded, which determined an increase of financial risks.

The concept of propagation, in a narrow sense, is based on the systemic risk concept, which concerns institutions, markets or even economic systems. On a wide sense, the concept also includes systematic shocks that can affect large institutions or financial markets in the same time. However, not all systemic events occured in financial evolutions must necessarily be inefficient. For instance, some financial crises can only eliminate inefficient players from the system.

In order to counter the threats of destabilization of financial systems, the systemic risk justifies the adoption of preventive measures, such as: financial regulations, prudential supervision rules and a stable macroeconomic environment. If possible problems cannot be prevented "ex ante", then the "ex post" measures that take the form of crisis management become more and more justifiable.

In recent years, the concerns about the stability of international and national financial systems have arisen quite frequently. In a relatively unstable environment of international financial markets, the occurrence of crises has still a high degree of probability and the degree of propagation between institutions, regions or countries can be very fast.

2. THE CONCEPT OF SYSTEMIC RISK

The concept of systemic risk is a fundamental concept for studying the degree of financial instability and the possible ways of responding to these challenges. Therefore, it is required an analysis of the elements of systemic risk and their integration into a coherent concept that is the basis of prudential financial-monetary decisions that can finally ensure the stability of financial systems.

The European Central Bank defines the systemic risk as the risk caused by simultaneous bankruptcies of several financial institutions or the failure of the entire financial system as a result of the interconnections between the financial institutions (ECB, 2019).

The systemic risk is perceived as the risk affecting a considerable number of financial institutions and markets in a powerful way, severely distorting the good functioning of the financial system (De Bandt& Hartmann, 2002), with possible adverse effects for the real economy.

Therefore, specific for the systemic risk is the phenomenon of bank contagion, the systemic events propagating extremely fast from one institution to the others financial institutions. The severity of the losses depends on the way of propagation of the shocks, through different channels and on different markets: the banking market, the capital market, the market for interbank payment systems, as well as the transactions with different financial instruments (Mutu, 2012).

The notion of systemic crisis reflects the situation in which the banking and corporate sector of a country face major difficulties in paying contracts on time and the impact of the problems arising in one or more banks on the whole economy is significant: disruption of the payment systems, decrease of loans volume, collapsing the value of assets, deteriorating the macroeconomic indicators, stopping economic growth (Dardac and Giba, 2010).

There are studies that analyze the determinants of systemic risk, but the opinions of specialists are divided regarding the impact of these variables. Thus, the most important determinants for the systemic risk are the followings: bank size (Laeven and Valencia., 2008; Dermine and Schoenmaker, 2010), securitization (Battaglia & Gallo, 2013), interconnection of financial institutions (Allen and Gale, 2010), banking competition (Anginer &al., 2014), financial innovations (Caccioli et al., 2009), liberalization and globalization (Dragomir, 2006; Ghosh, 2016).

The key elements of the definition of systemic risk are the followings: the initial shock and the transmission mechanism. According to financial theory, the shocks can be identified at the individual level or at the overall level (systematic).

The individual (particular) shock is the one that initially affects a single entity or only a price of a market asset, while systemic shocks affect the entire economy, for example, all financial institutions at the same time An example of an individual shock may be the failure of a single banks as a result of internal fraud, while the depreciation of the national currency, the sharp increase of inflation and the economic cycles are considered systemic shocks.

Of course, there are a multitude of intermediate types of shocks (for example, regional, sectoral, etc.) between the two extreme types: individual and systematic shocks. Individual shocks that do not spread widely can be "insured" as long as an investor can protect against them through diversification, while in the case of systematic shock this possibility is non-existent.

The second key element considered in systemic events is the mechanism by which the shocks propagate from one financial institution to another, from one market to another. This is, in fact, the essence of the systemic risk concept.

Regarding the type of systemic event caused by a systemic shock, the mechanism involves a macroeconomic propagation that suppose interactions between the real and financial variables. Obviously, the occurrence of shocks and their propagation is quite uncertain. Thus, the importance of systemic risk is based on two aspects: the severity of systemic events and the degree of probability that they will occur. Systemic crises are events with a low probability but once the crisis starts, its consequences can be critical.

This put into discussion another element of systemic risk: the impact of systemic events taking place in the financial sector on the real sector. It can be distinguished a 'horizontal' approach to the systemic risk concept, in which the focus is only on events in the financial sector (ie, the failure of a financial intermediary) and a 'vertical' approach of the systemic risk concept when the impact of a systemic event on the real sector is taken as a standard for assessing the difficulty of such an event.

In order to define the systemic risk within the financial systems, it is necessary to analyze the systemic events within a financial system (table no. 1).

Table no. 1 Systemic events within a financial system

Type of shock	Singular systemic events (affecting only one institution or market)		Multiple systemic events (affecting multiple institutions or markets)	
	Weak effect	Powerful effect (institution bankruptcy or market failure)	Weak effect	Powerful effect (institution bankruptcy or market failure)
The low intensity shock - the individual shock	√	propagation	√	propagation leading to a system crisis
Limited systematic shock	√	propagation	√	propagation leading to a system crisis
Unlimited systematic shock			√	system crisis

Note: "√" indicates that the combination defined by the column intersection represents a systemic event

It is defined as a "systemic event", in a narrow sense, that event which, in the case of the bankruptcy of a financial institution or the collapse of financial markets (for example, a general prices decrease) leads to adverse effects on other financial institutions or financial markets. Essential in the case of a low intensity shock that propagates, is the effect of "domino" from one institution to another or from one market to another.

A systemic event, in the narrow sense, it is considered to be strong if the affected institutions fail or even bancruptcy due to the initial shock despite the measures taken "ex ante". The shock is considered to be low or high intensity depending on the effects it generates (Dardac and Moinescu, 2007).

Systemic events, in a broad sense, include besides the events described above, the simultaneous adverse effects on a high number of financial institutions or financial markets as a consequence of the intense propagation of the systematic shocks.

Starting from this terminology, a systemic event that affects a large number of financial institutions or financial markets can be defined as a systemic crisis in a way that seriously affects the functioning of the financial system.

The distinction between the systemic events concept, in a restricted and a broad sense, it is important because the assessment of crisis management may be different in the situation of a particular shock that causes the propagation compared with a systematic shock that could cause simultaneous large-scale destabilizing effects.

In principle, the scale of systemic risk varies from single systemic events that affect only one institution or market to the systemic crisis risk that affects most or even the entire financial system. Also, the geographical assessment of the systemic risk can be made at national, regional, or international level.

3. THE DIMENSIONS OF SYSTEMIC RISK

From a conceptual approach, the systemic risk presents two dimensions: the temporal dimension, that is, the pro-cyclicality, and the structural dimension of the risk, which is the distribution of the risk in the system.

The temporal dimension analyzes how systemic risk evolves over time, and addresses the conection between business cycles and financial cycles (financial system procyclicality).

The main objective of the economic policy within the temporal dimension of systemic risk consists in tempering the way in which the system risk can be amplified by the interactions of the different components of the financial system and by the interconections between the financial sector and the real economy.

The policies targeting pro-cyclicality must consider the construction and use of capital and liquidity amortizators depending on the financial cycles, the establishment of dynamic provisions (Caruana, 2010), but also the use of other policies aimed to limit or prevent the financial and macroeconomic dysfunctions (Ieșan-Muntean, 2018).

The structural dimension analyzes how systemic risk is distributed into the financial system at a moment and addresses the interdependencies and exposures within the financial system and how common sources of risk can affect financial institutions.

As a result, an important role must be assigned to the identification of financial institutions of systemic importance and their contribution to systemic risk, mainly due to the size, the interconnection degree with other financial institutions and the level of substitution for the financial services offered.

Also, the systemic risk is amplified by the lack of information and transparency, as well as by the complexity of the financial products of the respective institutions. The financial system reveal an increased vulnerability when the risk is concentrated in a small number of institutions and markets or when the provision of financial services is not homogeneously distributed within the financial system.

The systemic risk in the structural dimension can be generated by the opacity and complexity of financial institutions, markets and instruments. All these factors amplify the uncertainty and can potentiate the contagion effects, contributing to the suspension of financial transactions and to the deterioration of the functioning of financial markets under high risk and uncertainty conditions (Popescu, 2009).

In the case of the structural dimension, the risks are generated by the common exposure of the institutions and the existence of interconnections. In order to limit these risks, the central authorities must take into account the level of capital or liquidity held by a bank that allows an efficient management the systemic risk; the dissolution regime in order to protect the partner institutions in case of the bankruptcy of an institution; the financial system structure to avoid encouraging leverage and short-term profit; the financial market infrastructure (Caruana, 2010).

Considering the propagation of the systemic risks effects within the financial system, can be distinguished the following intercorrelated features of financial systems, which may be the causes of potential financial fragility:

- the balance sheets structure of the banks. The financial situation of a bank depends not only on attracting profitable investment projects, but also on the depositors' confidence in the quality of the loans. This special feature of banks can not be applied to other financial institutions such as insurance companies. However, if banks or other financial institutions belong to the same entit - as it is often the case - the problems that other financial institutions face could become a source of fragility for the bank;

- the complex organization network of financial institutions. There is a wide exposure network between banks and other financial institutions through the interbank money market and payment systems. At certain times of the day, these risk exposures can be very high and in the event of a crisis, the technical difficulties to fulfill the payment obligations can increase the degree of risk exposure and cause the "domino" effect;

- the intertemporal character of the financial contracts and the problems related to credibility. The financial decisions aim at an intertemporal allocation of the purchasing power and therefore, they are based on expectations about the asset value in the future or on the cash-flows promised in the financial contract. When the credibility of a financial agreement begins to be questioned, the market expectations can change substantially in short periods of time, and so will change the investment or divestment decisions.

These intercorrelated characteristics represent the main source that generates a greater vulnerability for the financial system to the systemic risk compared to other sectors of the economy.

4. CONCLUSIONS

The recent evolution on the international financial market demonstrate how actual is the concept of systemic risk, but also the deficiencies that persist in its approach. Therefore, the definition of the constituent elements, the delimitation of the implications that the systemic risk generates within the financial system represents the premise of establishing the measures of prevention and annihilation of the consequences which this can generate at the level of the institutions, sectors or even economies as a whole.

The determinants and the propagating way of the current financial crisis have given a new dimension to the financial stability, considering the clear deficiencies in the ex-ante identification of systemic risk by the responsible institutions. As a result, these evolutions have imposed the necessity for a macro-prudential orientation of financial stability, taking into account the interconnections between institutions, financial markets and the real economy.

The choice of policies and the appropriate institutional framework for managing systemic crises is a major problem in the present economic context, the research of the characteristics that can influence the efficiency of the systemic crisis management process, thus gaining a special importance.

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