



THE THEORY OF INTERNATIONAL FINANCIAL CONTAGION

PhD Iulia LUPU*

Rezumat

Contagiunea financiară este un proces complex și multidimensional, fără a exista însă o definiție larg acceptată și o metodologie precisă de măsurare. Contagiunea a devenit ideea centrală a tot mai multor studii deoarece este percepută ca o problemă, fiind deseori asociată crizelor financiare. Rațiunea pentru care este aplicată diversificarea internațională a portofoliilor de investiții în vederea protecției împotriva riscului de țară, nu mai are aceeași valoare, corelațiile dintre piețe estompând în bună măsură beneficiile sale. În acest articol ne propunem să prezentăm modalitățile în care subiectul contagiunii financiare internaționale a fost abordat.

Abstract

Financial contagion is a complex and multivariate process, with no widely accepted definition and an accurate measurement methodology. Contagion became more and more the central idea of research studies because it is perceived as a problem, and often associated with financial crises. The reason for that international diversification of investment portfolios is applied to protect against country risk, is no longer valid, correlations between markets largely vanishing its benefits. In this article we intend to present the ways in which the subject of international financial contagion was approached.

* Scientific researcher III, "Victor Slăvescu" Centre for Financial and Monetary research, Romanian Academy.

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Introduction

As a consequence of an increasing correlation of international financial markets and of the problems posed by economic recessions, drop in stock prices, sovereign debt insolvency, an increasing attention has been paid in academia, but also in practice, to the phenomenon called contagion. The concept, borrowed from epidemiological terminology where contagion is immanent associated with disease and even death, often assumed that those who entered the crisis through contagion, it was not because of them.

Some authors question the existence of international financial contagion itself (Karolyi, 2003), while others suggest that the issue of contagion was one of the most debated subjects after the Asian crises (Rigobon, 2002).

Contagion became more and more the central idea of research studies and our intention is to present the ways in which the subject of international financial contagion was approached in time.

Definition debate

If the majority agrees with the existence of the contagion phenomenon, we do not have yet an agreement regarding a widely accepted definition of the term (Forbes and Rigobon, 2001, Dornbush et al., 2001, Corsetti et al., 2002) and the best methods of measurement. In most cases, contagion is considered to be present when is observed an increase in correlations between indicators after the appearance of a market shock.

A benchmark for the definitions' variety of the term contagion is the three options offered by the World Bank (broad definition, restrictive definition, very restrictive definition). We mention here only the *restrictive* definition of the World Bank: „*Contagion is the transmission of shocks to other countries or the cross-country correlation, beyond any fundamental link among the countries and beyond common shocks.*”

In their study, Eichengreen et al. (1995, 1996) argue that contagion refers to the association of in excess earnings of a country with in excess earnings of another country, having been removed

fundamental links influences. This definition is closely related to the “*true*” contagion, as it is defined by Calvo and Reinhart (1996), appearing in the absence or after excluding traditional shocks and all possible interconnection channels.

The same authors discern between this type of contagion and that driven by fundamentals, such as trade or finance. Further, Kaminsky și Reinhart (2000) observed that “*true*” contagion is affiliated with herding behaviour (rational or not). From another point of view, the coincidence of having extreme returns in different countries is an evidence of contagion (Bae et al., 2003).

Even if we consider that it is an agreement on a definition, the measurement of the contagion phenomenon can be relative because it is very difficult to specify an appropriate mix of fundamentals (financial, real economic, political), and most of the times they are selected according with the analysed problem.

In time, it was made a distinction between contagion and interdependences. Unlike contagion, interdependence is reflected in the fact that the simultaneous movement of the market is not much stronger after a shock affecting a country or group of countries.

What is analysed when studying contagion?

Usually, in the research papers is analysed the spread of market disturbances (exchange rates, stock prices, sovereign spreads and capital flows), and in most cases these are observed around the crisis. One methodology consists in measuring the market correlations during tranquil times, and then in testing if these correlations increased after a shock occurrence, using a cross-market correlation coefficient.

One of the first studies using this methodology is the seminal work of King and Wadhvani (1990), appeared immediately after the American stock market crash from 1987. The subject was the correlation between US, UK, and Japan markets, that according with the authors increased considerably after that crash. After the publication of this research, other authors increased the number of studied markets and also test for contagion after other economic and financial crisis. The conclusion of the research papers using this kind of methodology generally admitted that the correlation coefficient increased after the important crisis and accordingly, the contagion phenomenon exists.

Some papers are concentrated instead on long run relationship between markets. Longin and Solnik (1995) look upon seven OECD countries for a period of thirty years, between 1960 and 1990, and compare the correlation between US and the other markets over this period.

Measuring co-movements in exchange rates, stock prices, sovereign spreads and capital flows it is also a common technique to test for contagion.

A smorgasbord of econometric methods was used to test for contagion on financial markets. They may be simple correlation coefficients between divers markets, GARCH models or other alternative methods. The extreme value theory was applied by Longin and Solnik (2001) and Bae, Karolyi, and Stulz (2003). Markov switching models were utilized by Ang and Bekaert (2002) and more recently by Gallo and Otranto (2008). When contagion is seen as a nonlinear process, copulas functions are proposed for studying its effects (Rodriguez (2007).

According with Forbes and Rigobon (2001), the studies that do not take into account the heteroscedasticity are biased and „recent empirical work that adjusts for heteroscedasticity, endogeneity, and/or omitted variables finds *no contagion, only interdependence*".

Another topic of contagion research is the transmission channels of contagion (macroeconomic and political environment, common lender, financial and trade linkages, geographical distance etc.). According with some authors, the channels that engender contagion in 1990s recently showed a similar potential (Didier et al., 2008). From the other point of view, down from the beginning of 2000s, "not only the exact causes and channels of contagion are not known, neither are the precise policy interventions which can most effectively reduce it" (Dornbusch et al., 2000). If some authors identified some evidence regarding the transmission of crisis through some specific channels, is even harder to assess the magnitude of every element.

Between the identified transmission channels, a special attention was paid to the role played by the common lenders, usually international commercial banks. As suggested by Kaminsky and Reinhart (2000), the common lender and the trade put some things straight on the past crisis, explaining some „historical pattern of contagion".

The financial contagion was approached through the trade channel. This was sustained by the increasing role of the financial sector for the trade performance and for price assessment and by the financial innovations and deregulation. Nowadays, the investments are rather based on information from the financial sector than on information specific to commodity markets. Therefore, the financial investors bring some extra volatility on commodity markets that finally decrease the efficiency of the hedging instruments.

Many research studies connected with international financial contagion are close related with the gains of international portfolio diversification. Once the correlations in the financial markets are increasing in times of crisis, the rational of risk reduction true international diversification is humbled.

Beyond the economic fundamentals

Although the classical economic elements explained largely the financial links, these explanations are not complete and researchers are attempting to discover unknown factors that could be important for the international contagion.

Therefore, psychological issues were approached to complete the explanations. The term of *emotional contagion* which finally conduct to *emotional convergence* was introduced in the early 1990s when Schoenewolf (1990) defined it like „a process in which a person or group influences the emotions or behaviour of another person or group through the conscious or unconscious induction of emotion states and behavioural attitudes”. People automatically and continuously incline to synchronize their emotions with others through various instruments.

As suggested by Tiță (2008), emotional contagion entails, in addition to similar emotions, and complementary emotions, some of them visibly opposed. This raises the term "contra-contagion" that could be borrowed in finance to describe the behaviour of those who are "intimidated" by the "aggressive" actions of some investors.

There is considerable literature attempting to understand the issue of contagion analysing the herding behaviour that is considered to be, by some authors, a key factor.

The self-fulfilling crises only occur because economic agents believe that they will occur and consequently withdraw their investments, believing that others will do the same. An overview of

such crisis models is well made by Obstfeld (1996) and Krugman (2000) that describe the crisis in Southeast Asia from this perspective. According to the study by Goldstein and Pauzner (2004), the process that generates contagion in a self-fulfilling crisis is the wealth effect.

Even if it is known that cultural elements play a very important role for economics, they are not used very often in these analysis, but recently appeared some research papers that are investigating the link between culture and financial contagion. Hofstede's cultural dimensions are most used perspective when measuring culture. Lucey and Zhang (2009) investigated the link between cultural distance and co-movement of stock returns; for them, the relation is in inverse proportion: countries that have smaller cultural distances have also higher linkages.

Conclusion

The financial contagion is a complex phenomenon that does not have a generally agreed definition or measurement methodology. This topic was more and more studied because is associated with problems. As a consequence, in the financial architecture emerged new regulations regarding foreign ownership restrictions, exchange rate convertibility, hedge fund disclosure or the free flow of global capital in general.

Many countries have been affected by the financial contagion and a lot of research has been done on this subject, but the full story has still to be discovered.

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