



Article

A Spanish Financial Market Stress Index (FMSI)

M^a Isabel Cambón ^{*,1}, Leticia Estévez ¹

Research, Statistics and Publications Department, CNMV (Spanish Securities Markets Supervisor), c/Edison, 4, 28006 Madrid, Spain

ARTICLE INFO

Article history:

Received 23 April 2015

Accepted 22 January 2016

Available online 28 February 2016

JEL classification:

G01

G10

G20

E44

Keywords:

Systemic risk

Financial crisis

Composite indicator

Real economy

ABSTRACT

The relevance of systemic risk was highlighted by the economic and financial crisis starting in mid-2007. Supervisors and regulators recognized the need to improve the process of identification, management and mitigation of systemic risk. This paper introduces a Spanish Financial Market Stress Indicator (FMSI), similar to the “Composite Indicator of Systemic Stress” that Holló et al. (2012) proposed for the euro area as a whole. This indicator, which represents a real-time measure of systemic risk, tries to quantify stress in the Spanish financial system and describes the contribution of each financial market segment (bond market, equity market, money market, financial intermediaries, forex markets and derivatives) to the total stress in the system. The methodology takes into account time-varying correlations between market segments. The study analyses the ability of the FMSI to identify past periods of high financial stress and presents two econometric approaches with the aim of classifying observations into different stress regimes and of determining if financial stress has a negative impact on the real economy.

© 2016 Asociación Española de Finanzas. Published by Elsevier España, S.L.U. All rights reserved.

1. Introduction

The global economic and financial crisis that many economies suffered after the collapse of Lehman Brothers in 2008 highlighted the importance of systemic risk. Following the crisis, authorities and financial supervisors realized that the identification of systemic risks deserved more attention. There was also a revision to the definition of systemic risk published by international institutions (IMF, FBS, BIS and IOSCO). One of the main lessons of this process was the recognition of the role that both banking and securities regulators had to play in this area. There have been many and various studies looking at some aspect of systemic risk in recent years. In general, current research is related to one or more relevant factors when considering systemic risk: size, interconnectedness, lack of substitutes and concentration, lack of transparency, leverage, market participant behaviour, information asymmetry and moral hazard.

There is a group of papers that, with the objective of measuring systemic risk, have developed Financial Stress Indexes (FSI) or fragility indexes. Some of these are coincident measures (like thermometers) that try to capture the level of financial stress in real

time and others are forward-looking indicators. Other approaches have in common the definition of systemic risk as an extreme loss on a portfolio of assets related to financial intermediaries' balance sheets. This definition of systemic risk focuses on the financial health of intermediaries, rather than on monetary and credit conditions. Finally, during the global financial and economic crisis, and especially in the context of the European sovereign debt crisis, many studies focused on the phenomenon of contagion.

This paper introduces a Spanish Financial Market Stress Indicator (FMSI), similar to the “Composite Indicator of Systemic Stress” that Holló et al. (2012) proposed for the euro area as a whole. This kind of indicator, which can be included in the group of Financial Stress Indicators (FSI), represents a coincident measure of systemic risk and tries to quantify and summarize the stress in the Spanish financial system in a single statistic. As well as summarizing the statistical design of the indicator, we provide a threefold evaluation of the FMSI and propose some applications in the context of the CNMV's supervisory duties.

The remainder of the paper is structured as follows: Section 2 summarizes the background and academic literature regarding systemic risk and explains the motivation for this paper. Section 3 provides the details of the statistical design of the Spanish FMSI, including the selection of markets and variables, the construction of the sub-indices and their aggregation into the composite indicator. Section 4 evaluates the indicator in terms of its ability to identify past episodes of stress in the Spanish financial system. This section also presents the results of two econometric approaches related

* Corresponding author.

E-mail address: micambon@cnmv.es (M.I. Cambón).

¹ M^a Isabel Cambón and Leticia Estévez are both members of the Research, Statistics and Publications Department, CNMV (Spanish Securities Markets Supervisor).

to the theory of switching regimes and to the potential impact of financial stress on domestic output. Finally, Section 5 lays out the main conclusions.

2. Theoretical background and related literature

Following the global financial crisis, which started by mid-2007, international authorities and governments realized that financial stability analysis and the process of identification of systemic risks should receive more attention. In their conclusions it was clear that both banking and securities regulators had to play a role in this area. In 2009, the International Monetary Fund (IMF), the Financial Stability Board (FSB) and the Bank of International Settlements (BIS) set out an approach to assessing the systemic importance of financial institutions, markets and instruments. These institutions described systemic risk as:

“[...] the risk of disruption to financial services that is (i) caused by an impairment of all or parts of the financial system and (ii) has the potential to have serious negative consequences for the real economy².”

In 2010 the Board of the International Organization of Securities Commissions (IOSCO) adopted two new principles (6 and 7) related to the process of monitoring, mitigating and managing systemic risk and to the process of reviewing the perimeter of regulation. Moreover, in 2011, IOSCO published a definition of systemic risk very close to that of IMF/FSB/BIS:

“Systemic risk refers to the potential that an event, action, or series of events or actions will have a widespread adverse effect on the financial system and, in consequence, on the economy³”.

However, IOSCO elaborated on this definition, enumerating several factors which potentially can increase systemic risk. They mentioned the design, distribution or behaviour under stressed conditions of certain investment products, the activities or failure of a regulated entity, a market disruption or an impairment of a market's integrity. From IOSCO's perspective systemic risk can also take the form of a more gradual erosion of market trust caused by inadequate investor protection standards, lax enforcement, insufficient disclosure requirements, inadequate resolution regimes or other factors.

The academic research community has pursued a plentiful variety of approaches in the area of financial stability.⁴ In general, academic research has concentrated on one or more relevant factors to consider when assessing systemic risk: size, interconnectedness, lack of substitutes and concentration, lack of transparency, leverage, market participant behaviour, information asymmetry and moral hazard. A vast number of papers are based on banking industry data, as it was considered the main source of systemic risk.⁵ Since the beginning of the global financial crisis, many empirical studies have been performed on the basis of a more global approach.

There are several broad streams of studies that involve some kind of evaluation of systemic risk. There is a group of papers that, with the objective of measuring systemic risk, have developed Financial Stress Indexes (FSI) or fragility indexes. Some of these are coincident measures (like thermometers) that try to capture the level of financial stress on real time. Others are forward-looking indicators that, for example, calibrate the likelihood of

simultaneous failure of a large number of financial intermediaries. The study of Illing and Liu (2006) can be considered as a seminal paper in this category. They develop a FSI for the Canadian financial system and propose several approaches to aggregate individual stress indicators into a composite stress index. Other relevant papers are Nelson and Perli (2007), Kritzman et al. (2010), Caldarelli et al. (2009), and Holló et al. (2012). Holló et al. (2012) perform a Composite Indicator of Systemic Stress (CISS) for the euro area, based on data of five segments of European financial markets (equity markets, bond markets, money markets, financial intermediaries and forex markets). They compute the Cumulative Distribution Function (CDF) of fifteen variables and take into account potential cross-correlations between market segments.

Other approaches have in common the definition of systemic risk as an extreme loss on a portfolio of assets related to financial intermediaries' balance sheets. This definition of systemic risk focuses on the financial health of intermediaries, rather than on monetary and credit conditions. Examples of this methodology can be found in Segoviano and Goodhart (2009), Acharya et al. (2010), Adrian and Brunnermeier (2011), Huang et al. (2011), Gray and Jobst (2011), Brownlees and Engle (2012) and Hovakimian et al. (2012).

During the global financial and economic crisis, and especially in the context of the European sovereign debt crisis, many studies focused on the phenomenon of contagion. Relevant papers in this topic are Forbes and Rigobon (2001), Hyde et al. (2007), Diebold and Yilmaz (2009), Billio et al. (2010) and Caporin et al. (2013). Some studies show that correlations tend to increase during market crashes. As a consequence, the exposure to different countries' equity markets offers less diversification in down markets than in up markets. This pattern has been shown to apply in other industries also⁶ (affecting the returns of global industries, individual stocks, hedge funds and international bond markets). The presence of sudden regime shifts, considered by some authors as a symptom of systemic risk, has also been tested by many studies. In general there is a perception that every economy shows two types of regimes: regimes of GDP growth and low volatility and regimes characterized by GDP contraction and high volatility (usually in the context of high uncertainty). Several papers show the existence of sudden regime shifts not only in the context of GDP but also in other economic or financial areas of interest like short-term interest rates, inflation or market turbulence.⁷

This paper introduces a Spanish Financial Market Stress Indicator (FMSI), similar to the “Composite Indicator of Systemic Stress” that Holló et al. (2012) proposed for the euro area as a whole.⁸ This kind of indicator, which can be included in the group of Financial Stress Indicators (FSI), represents a coincident measure of systemic risk and tries to quantify and summarize the stress in the Spanish financial system in a single statistic. Of course, this kind of approach may have some disadvantages due to the potential excessive simplification in the evaluation of systemic risk. However, it offers some useful characteristics. Firstly, it allows the real-time evaluation of financial stress in the whole financial system and the identification of past episodes of financial stress. Secondly, it can provide the basis information for an early warning signal model that assesses when the system may be nearing a high financial stress episode. It can also be used to test the impact of any policy measure regarding financial stability.

One of the major strengths of the Spanish FMSI is related to its ample coverage of the financial system. As we stated earlier, one of

² See IMF-BIS-FSB (2009).

³ See IOSCO (2011).

⁴ See European Central Bank (2011).

⁵ See, for example, Rodríguez-Moreno and Peña (2013).

⁶ See Ferreira and Gama (2010), Hong et al. (2003) or Cappiello et al. (2006).

⁷ See Smith (2002), Kumar and Okimoto (2007) and Kritzman and Li (2010).

⁸ The Bank of Spain publishes a simpler version of this indicator in its Financial Stability Report (FSR). See box 1.1 in the May-13 FSR for details.

Download English Version:

<https://daneshyari.com/en/article/1001036>

Download Persian Version:

<https://daneshyari.com/article/1001036>

[Daneshyari.com](https://daneshyari.com)