

Analyzing systemic risk in Bolivia: an application of models of network topology and simulation to the functioning of High-Value Payment System

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ABSTRACT

The aim of the study is to present a new tool to analyze systemic risk and estimate the direct financial contagion that could happen as a result of default in liabilities of the participants systemically important in the high value payment system level.

As an alternative to the ‘too big to fail’ approach, which considers the so-called big banks as the most systemic relevant, the paper presents a tool based on the ‘too interconnected to fail’ approach to analyze systemic risk, which makes it possible to study the characteristics of network structures, to identify through quantitative criteria the agents systemically important, and to estimate the magnitude and extent of direct financial contagion.

The results of network topology and simulation models, applied to the Bolivian case during the period 2007 – 2010, show that direct financial contagion had not compromised the financial stability condition.

JEL Classification: C15, G21

Keywords: Systemic risk, payment system, network topology, simulation models, financial contagion