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On the measurement of the international propagation of shocks: is the transmission stable?

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Abstract

The empirical literature on 'contagion' focuses mainly on two questions: (1) what are the channels through which shocks are transmitted across countries, trade, macro similarities, financial weaknesses, or investor behavior? (2) Is there a shift in the transmission of shocks during crises? Are crises spread with higher intensity? If so, why? This paper concentrates on the econometric problems that arise in dealing with the second question. The data where most of these issues are raised are plagued with problems of simultaneous equations, omitted variables, and heteroskedasticity. The standard methodologies used in the literature are inappropriate if all three are present. This paper applies a new procedure that allows one to test for parameter stability, taking into account all three predicaments. The paper tests for the stability of the transmission mechanisms among 36 stock markets during the last three major international financial crises (Mexico 1994, Asia 1997, and Russia 1998).

Keywords: Contagion; Stock market crises; International financial markets; Measuring the transmission mechanism

JEL classification: F30; C32; G15

1. Introduction

It has been widely documented that stock markets around the world are highly correlated, specially during crises. Table 1 shows simple correlations of daily stock

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Table 1
Simple correlations

Latin American countries

	BRA	CHI	COL	MEX	PER	VEN
ARG	61.9%	−46.6%	−37.7%	48.6%	44.9%	73.5%
BRA		−24.6%	−12.0%	70.3%	47.0%	59.7%
CHI			13.1%	−47.3%	−42.5%	−38.6%
COL				−39.9%	−23.2%	−57.8%
MEX					50.1%	65.5%
PER						45.0%

South East Asian countries

	IND	KOR	MAL	PHI	SIN	TAI	THA
HON	62.9%	67.5%	75.9%	74.8%	84.7%	46.6%	66.1%
IND		36.3%	79.9%	73.5%	66.9%	7.6%	65.0%
KOR			57.9%	53.0%	80.9%	44.5%	61.9%
MAL				91.3%	87.7%	15.2%	89.7%
PHI					84.7%	22.4%	89.6%
SIN						29.4%	86.6%
TAI							1.2%

OECD countries

	AUT	CAN	DEN	FIN	FRA	GER	GRE	IRE	ITA	JAP
AUS	20.8%	−30.8%	−3.0%	−43.2%	−31.9%	−3.4%	−13.9%	9.9%	4.3%	5.8%
AUT		21.4%	64.1%	14.0%	48.7%	69.2%	47.8%	90.8%	60.1%	−54.5%
CAN			82.1%	81.5%	84.8%	73.8%	52.3%	46.5%	72.7%	−3.3%
DEN				59.8%	79.6%	88.1%	53.8%	81.5%	79.6%	−33.2%
FIN					89.4%	73.7%	70.9%	31.2%	73.3%	22.1%
FRA						90.1%	76.8%	61.3%	85.9%	−4.2%
GER							70.4%	79.9%	86.9%	−19.6%
GRE								52.6%	78.8%	−2.6%
IRE									71.1%	−57.0%
ITA										−6.8%
JAP										
NET										
NOR										
NZE										
POR										
SPA										
SWE										
SWI										
UK										

market returns from 1994 to 2001 for several Latin American, South East Asian, and developed countries. As can be seen, if Colombia and Chile are excluded from the Latin American sample, the average correlation is 56.6% between Latin American countries—it is 60.8% on average, with a median of 66.5% for the South East Asian countries—and, it is 41.8%, with a median of 60.7% for the developed economies. By any standard, these correlations show a very strong