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

Roberto Rigobon*

Sloan School of Management, MIT and NBER, E52-434, Cambridge, MA 02142 1347, USA

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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).

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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

*Corresponding author.

E-mail addresses: rigobon@mit.edu (R. Rigobon), <http://web.mit.edu/rigobon/www/> (R. Rigobon).

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

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