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## Chapter 1

# INTERNATIONAL FINANCIAL CONTAGION: *An Overview of the Issues and the Book*

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*“Contagion: 1. a. Disease transmission by direct or indirect contact. b. A disease that is or may be transmitted by direct or indirect contact; a contagious disease. c. The direct cause, such as a bacterium or virus, of a communicable disease. 2. Psychology: The spread of a behavior pattern, attitude, or emotion from person to person or group to group through suggestion, propaganda, rumor, or imitation. 3. A harmful, corrupting influence: ‘feared that violence on television was a contagion affecting young viewers.’ 4. The tendency to spread, as of a doctrine, influence, or emotional state.”*

*-American Heritage Dictionary*

## 1. INTRODUCTION

Before 1997, the term “contagion” usually referred to the spread of a medical disease. A Lexis-Nexis search for contagion before this year finds hundreds of examples in major newspapers, almost none of which refer to turmoil in international financial markets.<sup>1</sup> This changed in July of 1997. A currency crisis in Thailand quickly spread throughout East Asia and then on to Russia and Brazil. Even developed markets in North America and Europe were affected, as the relative prices of financial instruments shifted and caused the collapse of Long-Term Capital Management (LTCM), a large U.S. hedge fund. These global repercussions from what began in the relatively small Thai economy have sparked the widespread use of a new meaning for the term contagion. A Lexis-Nexis search of major newspapers since mid-1997 finds that almost all articles using the term contagion referred to the spread of financial market turmoil across countries.

Although analogies comparing the spread of recent financial crises to the spread of a medical disease such as Ebola are often overdone, this comparison is useful on several levels. As the definition at the top of this chapter suggests, contagion incorporates many different ideas and concepts. At one level, contagion is a “disease”. Recent financial crises that led to sharp contractions in income levels and standards-of-living in many emerging markets were certainly as devastating as many diseases. Contagion also refers to the “transmission” of a disease. As the Thai crisis spread to Indonesia, the Philippines, Malaysia, Hong Kong, and Korea within a few months, it became clear that understanding why the original crisis spread was just as important as understanding what prompted the initial events in Thailand. This definition of contagion also emphasizes that it can occur through “direct or indirect” contact. This is also a key aspect of the debate on international financial contagion. Do currency crises spread through direct economic links, such as bilateral trade flows? Or do they spread through indirect links, such as changes in investor sentiment?

Even the earlier non-medical definitions of contagion, which the above dictionary definition includes as usages two through four, are highly applicable to the recent turmoil in international financial markets. Some of the leading explanations for financial contagion, especially after the Russian default in 1998, are based on changes in investor “psychology,” “attitude,” and “behavior”. Many countries subject to contagion in the past few years, and especially countries with relatively strong fiscal and current account balances, argue that the spread of contagion to their economies was unwarranted given their strong economic fundamentals. Many blame their subsequent difficulties on the “harmful corrupting influence” of investors in other countries instead of on their own characteristics and policies. Finally, the last dictionary usage of the term contagion, “the tendency to spread,” captures the heart of the debate about contagion. Why do local crises spread internationally? Why can an event in a relatively small economy have such pervasive global ramifications? What can be done to limit the spread of crises in the future? These questions are the motivation for this book.

Prior to the East Asian financial crisis, there was relatively little analysis of why country-specific crises could spread internationally. A few economists had considered these issues after the departure of several European countries from the Exchange-Rate Mechanism (ERM) in 1992 and after the Mexican peso crisis in 1994. This discussion, however, did not reach most policy circles or the attention of the public. Then, the financial turmoil that quickly spread across Asia focused attention on this issue. Why was Korea, a recent member of the OECD with relatively strong economic fundamentals, impacted by these events? Why did the turmoil in East Asia affect Russia? And why did the Russian default in turn affect Brazil? As the financial turmoil spread, observers were continually surprised by its virulence and scope.

Not only were the financial crises of the late 1990's different from their precursors, but it quickly became apparent that the standard theories explaining and predicting crises were no longer applicable. Economic models of financial crises had already progressed from first-generation, balance-of-payments models focusing on a country's weak fundamentals to second-generation, multiple-equilibria models incorporating investors' expectations and governments' policy objectives. Even these second-generation models, however, did not seem to accurately explain the global financial turmoil from 1997 through 1999.

This poor understanding of the transmission of financial crises in the past few years has prompted a surge of interest in international financial contagion. This book is one of the most extensive collections, to date, of research addressing these issues.<sup>2</sup> It includes survey articles and policy discussions, as well as detailed theoretical models and empirical analyses. Topics range from how to define contagion, to the relative importance of real linkages (such as trade) versus financial linkages (such as investor behavior), to what policies could reduce contagion in the future. Many of the chapters perform empirical tests attempting to explain why crises spread, either by focusing on a specific transmission channel across countries or by comparing several transmission channels within an individual country or region. Although the results are far from definitive and there are still numerous unanswered questions, the chapters in this book have made impressive strides in better understanding the causes and channels of financial contagion.

The remainder of this chapter is divided into three sections. The next section surveys the goals, methodology, and results of each chapter in the book. The following section discusses some of the main lessons and insights from this group of studies. The final section concludes with a number of unanswered questions and suggestions for future research.

## **2. BOOK OVERVIEW**

This book is divided into four sections. The first section provides an overview of the current knowledge and debates on international financial contagion. It includes research surveys, as well as discussions of the empirical difficulties in measuring contagion and the theoretical difficulties in isolating exactly how it occurs. The second section performs several in-depth analyses of specific channels for contagion, with a focus on how different types of investors and investor strategies could generate these patterns. The third section includes detailed case studies of specific financial crises, as well as several chapters focusing on how recent crises affected specific countries and regions. The final section of this book evaluates a

number of implications from these studies and options for reducing international financial contagion in the future.

## 2.1 Overview: The Theory and Empirics of Contagion

Following this introductory chapter, the second chapter in this section is “Contagion: Why Crises Spread and How This Can Be Stopped” by Claessens, Dornbusch, and Park. This chapter provides a survey of existing empirical and theoretical work on contagion. It begins by arguing that strong linkages between countries are not necessarily contagion, and that contagion should be defined as an increase in cross-market linkages after a shock to one country. It carefully surveys the extensive theoretical work explaining how contagion could occur, as well as the statistical evidence assessing the existence of contagion. The chapter draws a number of conclusions. First, a country's weak economic fundamentals, macro-similarities, heavy exposure to certain financial agents, and the state of the international financial system can all increase the risk of sudden spillovers. Second, although contagion need not represent irrational investor behavior, much is still unknown about what makes countries vulnerable to contagion and through which mechanisms contagion occurs. Third, it may be necessary to implement specific measures at the national level and within the international financial architecture to reduce these risks and manage their impact. No matter what measures are undertaken, however, volatility in the international financial system will not disappear.

The third chapter in this section focuses on two specific aspects of this literature: how to define and empirically test for contagion. The chapter by Forbes and Rigobon, “Measuring Contagion: Conceptual and Empirical Issues,” begins by discussing the current imprecision and disagreement surrounding the term contagion. It proposes a concrete definition, a significant increase in cross-market linkages after a shock, and suggests using the term “shift-contagion” in order to differentiate this explicit definition from the existing ambiguity surrounding the word. Several examples show why this definition is not only intuitive, but also important in a number of applications. Then, using this definition, the chapter classifies various theoretical transmission mechanisms as “crisis-contingent” or “non-crisis-contingent”. It also surveys previous empirical work, which generally concludes that contagion occurred during recent financial crises. Next, the chapter presents a number of coin-toss examples and a simple model to show that the standard tests for contagion are biased due to the presence of heteroscedasticity, endogeneity, and omitted variables. Recent empirical work that addresses these problems finds little evidence of contagion during a range of crisis periods. Instead, this work argues that many countries are

highly "interdependent" in all states of the world, and the strong cross-country linkages that exist after a crisis are not significantly different than those during more stable periods.

Instead of focusing on how to define or empirically test for contagion, the final chapter in the overview section focuses on a different aspect of the literature: the theoretical channels through which contagion can occur. In "The Channels for Financial Contagion," Pritsker discusses the fears of irrational contagion that arose during the Asian financial crisis. To clarify which channels may be irrational, the chapter focuses on rational channels through which contagion might have spread and highlights those factors that make a country susceptible to contagion. The four rational channels studied are: real sector linkages; financial market linkages; financial institution linkages; and the interaction of financial institutions and financial markets. The latter channel is suggested as a factor driving the reduction in financial market liquidity and the flight to quality following news of significant losses at Long-Term Capital Management in 1998. The chapter includes a number of diagrams showing how these different channels might interact, clarifying why it is so difficult to identify and measure the strength of the various mechanisms through which financial contagion could occur.

## **2.2 Specific Mechanisms Driving Contagion**

In the next section of the book, four chapters take a closer look at specific transmission channels during recent financial crises. In the first chapter in this section, "Crisis Transmission: Evidence from the Debt, Tequila, and Asian Flu Crises," De Gregorio and Valdés examine how the 1982 debt crisis, the 1994 Mexican crisis, and the 1997 Asian crisis spread to a sample of twenty other countries. The chapter considers not only how these crises were transmitted, but also whether contagion was similar across crisis episodes and whether macroeconomic policies such as capital controls, exchange rate flexibility, and debt maturity affected a country's vulnerability to contagion. The analysis focuses on the behavior of four alternative crisis indicators, where each crisis indicator measures a different transmission channel. The results indicate that a neighborhood effect is the strongest determinant of which countries suffer from contagion. Trade links and pre-crisis growth similarities are also important, although to a lesser extent than the neighborhood effect. The chapter shows that the 1982 debt crisis was as contagious as the Asian crisis, although the 1994 Mexican crisis was considerably less contagious. Finally, the chapter argues that both debt composition and exchange rate flexibility can lessen the extent of contagion, whereas capital controls are less effective.

Eichengreen, Hale and Mody, in the next chapter in this group, focus on the transmission of recent crises through the market for developing-country debt. “Flight to Quality: Investor Risk Tolerance and the Spread of Emerging Market Crises” specifies a model integrating debt issuance, spreads, and maturities and studies the periods of the Mexican, Asian, and Russian crises. The chapter estimates that both fundamentals and market sentiment (e.g., flight to quality) played a role in the transmission of these crises. The impact of changes in market sentiment, however, tended to be limited to the region where the crisis originated. Market sentiment also had more impact on prices and less on quantities in Latin America (versus other parts of the world). The chapter interprets this as evidence that limited real-side flexibility and greater current account deficits forced Latin America to continue borrowing from the markets even when terms worsened. Other regions (such as East Asia) had stronger macroeconomic balances and could therefore delay borrowing when spreads rose and market sentiment deteriorated. A final result from this chapter is that although changes in market sentiment affect the price and quantity of new debt issues, they appear to have minimal impact on debt maturity.

The next chapter in this section focuses on mutual funds, instead of debt markets, in the transmission of recent financial crises. In “Mutual Fund Investment in Emerging Markets: An Overview,” Kaminsky, Lyons and Schmukler present a number of statistics showing that international mutual funds are one of the main channels of capital flow to emerging economies. There is still little known, however, about the strategies and investment allocations of mutual funds. The chapter describes a number of characteristics of mutual fund activity in emerging markets, such as their relative size, asset allocation, and country allocation. It focuses on how these funds behaved during recent crises, and analyzes data on both managers as well as investors. The chapter finds that capital flows in and out of mutual funds are not stable due to large redemptions and injections. Moreover, withdrawals from emerging markets were large during recent crises, supporting and possibly driving the existing evidence on financial contagion.

The final chapter in the section analyzing specific channels for contagion is “Portfolio Diversification, Leverage, and Financial Contagion” by Schinasi and Smith. Many theoretical models of contagion rely on market imperfections to explain why adverse shocks in one asset market might be associated with asset sales in unrelated markets. This chapter studies the extent to which basic principles of portfolio diversification could explain the “contagious selling” of financial assets after purely local shocks. It demonstrates that elementary portfolio theory offers key insights into contagion and that “Value-at-Risk” portfolio management rules do not have significantly different consequences for portfolio rebalancing and contagion than other rules. The chapter also includes several numerical exercises quantifying optimal portfolio rebalancing responses under different scenarios.

The main conclusion is that portfolio diversification and leverage may be sufficient to explain contagion. In other words, the optimal behavior for rational investors after a shock to one asset may be to sell many unrelated higher-risk assets.

### **2.3 Case Studies of Contagion**

The third section of this book moves from individual channels of contagion to detailed case studies analyzing specific periods and countries where contagion may have occurred. The first case study, “Thai Meltdown and Transmission of Recession within the ASEAN4 and NIE4” by Abeysinghe, focuses on the spread of the 1997-98 crisis across Asia. It divides contagion into trade and financial channels and uses changes in the real exchange rate and credit flows to measure each of these channels. A key tool used for this analysis is a VARX model that transforms each country’s trade matrix into output multipliers. The chapter’s results suggest that real appreciations were neither a major cause of the Asian crisis nor a major factor in the regional spread of this crisis. It concludes that in the medium term, fundamental linkages were important in transmitting the Asian crisis. In the short term, however, the large economic contractions immediately after the Thai devaluation were not well explained through these fundamentals and may represent “pure contagion”.

The second case study, “Financial Contagion in the East Asian Crisis: With Special Reference to the Republic of Korea” by Park and Song, also focuses on the transmission of the 1997-98 crisis within Asia. The chapter begins by carefully defining contagion as a significant increase in the correlation of financial variables during a crisis, after controlling for fundamentals and common shocks. The key econometric technique utilized to measure contagion is an autoregressive model. The chapter attempts to exclude the common effects of the crisis in Southeast Asia on the rest of Asia in order to isolate the direct and indirect causes of contagion affecting each country (especially Korea). The empirical results suggest that the events in Southeast Asia did not directly trigger the Korean crisis, but that the events in Southeast Asia did affect Taiwan, which in turn precipitated the Korean crisis. The chapter concludes that this result supports the argument that the crisis in Korea was not sparked by portfolio investors, but instead by foreign banks which refused to roll over short-term loans to Korean banks after the crisis spread to Taiwan.

After these two chapters focusing on the Asian crisis, the next case study moves to the Russian crisis in the fall of 1998. Baig and Goldfajn, in “The Russian Default and the Contagion to Brazil,” focus on two specific aspects of the transmission of the Russian crisis to Brazil: the players

involved and the timing of events. The chapter presents a number of statistics that do not support the hypothesis that contagion was caused by international institutional investors who were forced to liquidate assets after the Russian crisis. The analysis does suggest, however, that contagion may have been caused by foreign investors panicking after the Russian crisis and joining local residents in their speculation against the Brazilian currency. The chapter reports that heteroscedasticity-adjusted correlation coefficients for rates of return on Brady bonds increased significantly during the Russian crisis. This implies that any contagion from Russia to Brazil probably occurred in the offshore Brady market. A final result is that the liquidity crisis in developed markets (as reflected in the problems with Long-Term Capital Management) was less important than the Russian crisis in directly causing the devaluation in Brazil.

Instead of focusing on one specific crisis, the next chapter analyzes the impact of a number of recent crises on one specific country – Mexico. In “Contagion of International Financial Crises: The Case of Mexico,” Bazdresch and Werner use a number of different statistics and econometric techniques to examine how the Asian, Russian, and Brazilian crises affected Mexico’s national markets between 1997 and 1999. The chapter finds evidence of contagion to Mexico in some markets (such as bond markets) and during certain crisis periods (such as the second wave of the Asian crisis and the Russian default). It evaluates the strength of various channels for contagion and argues that both trade and financial channels were important in the transmission of these crises. The chapter also discusses how the Mexican economy responded to these shocks. It argues that the impact of these crises on Mexico was relatively mild due to its links to the strong U.S. economy, as well as its conservative fiscal and monetary policies, strong liquidity, and low current account deficits.

The next chapter is another case study focusing on a specific area of the world, but the focus shifts from Mexico to Eastern Europe. In “Financial Market Spillovers: How Different are the Transition Economies?” Gelos and Sahay examine financial market co-movements across European transition economies. The chapter finds that trade linkages are important in explaining cross-country correlations in a monthly exchange-market pressure index. Other fundamentals, however, are not significant. Financial channels may also have been important, such as links through German bank lending, although these are much more difficult to measure. The chapter also analyzes higher-frequency data during the Asian, Czech and Russian crises. It finds structural breaks, interpreted as contagion, during these periods in exchange markets but not in stock markets. Finally, the chapter compares the extent of contagion in Eastern Europe with that in other emerging markets during other crises. It finds that many within-region episodes of contagion are similar to the impact of the Russian crisis on the neighboring transition economies.



The final chapter in the case-study section, by Bordo and Murshid, takes a much longer time perspective than any other chapters in the book. "Are Financial Crises Becoming More Contagious?: What is the Historical Evidence on Contagion?" analyzes financial crises from 1825 through 1998. The chapter begins with a succinct summary of the numerous international financial crises in the nineteenth and twentieth centuries. It continues by using several different methodologies to measure the scope and severity of contagion throughout time. One portion of the chapter analyzes weekly bond prices and interest rates and finds that after correcting for heteroscedasticity, there is little evidence of contagion during any historic or recent periods. Another portion of the analysis uses principal components and finds that cross-country linkages are strong during both crisis periods and turbulent periods, although this co-movement may have been higher during the interwar crises. The chapter's main conclusion is that when judged from a historical perspective, the scope and severity of recent financial crises is not unusual. Crises are no more contagious today than in the past.

## **2.4 Implications for Policy and the International Financial Architecture**

The last section of this book evaluates the policy implications of international financial contagion. In the first chapter in this section, "International Contagion: Implications for Policy," Chang and Majnoni develop a simple theoretical model of financial crises to help evaluate a number of public policies which are frequently discussed. In the model, financial contagion can be driven by a combination of fundamentals and self-fulfilling market expectations. The model is also able to identify different types of contagion, such as distinguishing between "monsoonal effects," "spillovers," and "switches between equilibria." The chapter's analysis suggests that at a national level, financial fragility is associated with a short maturity of outstanding debt as well as contingent public liabilities. Therefore, a better liability structure can improve an economy's liquidity and limit its exposure to contagion. The chapter also discusses international policy options, such as liquidity assistance, and shows that the effectiveness of international rescue packages depends on the kind of contagion to which a country is exposed.

This volume closes with the chapter "International Financial Reform: Regulatory and Other Issues" by Hawkins and Turner. This chapter reviews how various mechanisms of prudential oversight for the financial system can help make an economy more resistant to (contagious) financial shocks. It discusses current regulations in the global financial system, such as international rules for capital ratios. It also explains a number of dilemmas

that regulators face, such as how to set the "right" capital ratios for different types of countries and how to handle the moral hazard created by implicit and explicit guarantees on financial sector liabilities. Much of the chapter focuses on a variety of outstanding proposals for improving the international financial system, such as better and more realistic supervision and deeper financial markets. One key theme is that regulators and supervisors face several complex dilemmas, so that there are no "quick fixes". Another theme is that circumstances differ enormously across countries, so that supervision will largely remain the responsibility of individual countries. Therefore, international cooperation should focus on ensuring that general principles meant to ensure strong banking systems (and not necessarily specific rules) become applied worldwide.

### **3. WHAT WE LEARNED**

One clear lesson emerges from these chapters: understanding international financial contagion is extremely difficult. Simply measuring if contagion occurred during a specific period is complicated by a number of econometric issues. Isolating the channels by which crises are transmitted is problematic due to the interactions between various propagation mechanisms. Data availability, especially for financial linkages across countries, aggravates both of these difficulties. Policies to reduce contagion often involve uncertain, and potentially high, costs. There is not even any consensus on how exactly to define contagion. Despite these obstacles, the chapters in this book (as well as other papers presented in the supporting conference) have made substantial progress in untangling many of the issues surrounding international financial contagion. This section will discuss four main areas of insight and contributions of this book.

One contribution is to emphasize the importance of carefully defining contagion before undertaking any sort of analysis. Many economists, especially those performing empirical tests, prefer a very strict definition where contagion is defined as an increase in cross-market linkages during a crisis. In their chapter, Forbes and Rigobon suggest using the term "shift-contagion" to clarify exactly what this term means. Other economists, including many in governments and policy institutions, tend to prefer a broader definition. For example, Pritsker defines contagion as occurring when a shock to one market (or group of markets, countries, or institutions) spreads to others. This broader definition provides a better indicator of overall country vulnerability to a crisis that originate elsewhere. Other economists and policy makers promote definitions of contagion which fall somewhere between these two extremes. Although the chapters in this book do not produce any clear consensus on the "correct" definition, they do show the

importance of defining contagion carefully. Moreover, they have helped clarify the advantages and disadvantages of different definitions, and why different definitions may be preferred for different types of analysis.

A second major contribution of this book is its empirical work on financial linkages in the international transmission of crises. Although the global impact of the East Asian and Russian financial crises suggested that cross-country financial linkages could be important determinants of contagion, there has been little detailed analysis of these linkages. One difficulty is the lack of high-frequency data on the requisite variables. Several chapters in this book, however, use a number of creative approaches and new statistics to make important progress in these areas. For example, the chapters by Eichengreen et al. and Kaminsky et al. focus on the role of debt markets and mutual funds, respectively, in the spread of recent crises. Many of the case studies compare the relative strength of financial linkages and trade linkages in the transmission of recent crises. The chapter by Baig and Goldfajn analyzes the behavior of different groups of investors during the Russian crisis. Although much more work is necessary in order to fully understand how financial channels link countries, this book has provided a number of new insights on this topic. Moreover, the empirical results indicate that these financial linkages are important and that a better understanding of these channels is necessary for a better understanding of contagion.

Although many chapters in this book emphasize the importance of these financial linkages, others also document that trade linkages and macroeconomic fundamentals should not be forgotten. In fact, one of the most consistent results from the case studies is that real linkages and macroeconomic policies were critical in determining a country's vulnerability to contagion. For example, Bazdresch and Warner argue that the impact of recent crises on Mexico was muted due largely to Mexico's conservative fiscal and monetary policy, strong liquidity, and low current account deficits. In another chapter, Gelos and Sahay argue that trade linkages are one of the most important factors explaining market co-movements in the transition economies. Exactly which fundamentals and policies are most important will undoubtedly depend on the specific situation, but these chapters clearly suggest that real linkages and macroeconomic fundamentals are critical determinants of a country's vulnerability to contagion.

A final important contribution of this book is its collection of detailed case studies. Before the 1997-98 East Asian crisis, there was minimal work on contagion. After this crisis, a number of papers analyzed contagion across countries and across different crisis periods. Although this broad, panel approach is useful in drawing conclusions about contagion in general, the cost is a loss of specificity. Data availability across countries and periods severely limited the scope of any empirical analysis. Most of the chapters in this book, however, have taken a very different approach. They focus on contagion in a specific country (or region), or a specific crisis episode. The

result is a number of detailed analyses that provide a much clearer understanding of each of these incidents. This meticulous individual analysis is critical to obtain a better understanding of international financial contagion.

## **4. DIRECTIONS FOR FUTURE RESEARCH**

While this book has made a number of contributions to the literature on international financial contagion, there are still many unanswered questions. Some of these questions were phrased years ago, and this book has only solidified the difficulty in answering these questions. Other questions are new and were raised in the context of the preparation of this book. This chapter closes with a discussion of several of the most pressing questions, many of which are promising channels for future research.

### **4.1 Empirical Analysis of the Financial Channels for Contagion**

While the empirical research on contagion has made great strides in the last few years, many of the channels for contagion are still poorly understood. In particular, there is still very little comprehension of the financial channels through which contagion occurs and the actors involved in these financial channels. For example, only a few papers have considered the role of different groups of investors and financial intermediaries. Are the actions of particular classes of investors rational or irrational? How important is the incentive framework under which different groups of investors operate?

For example, hedge funds are one type of investor that are often discussed in the popular press and blamed for large speculative attacks or market swings. Hedge funds are obvious candidates to blame for contagion, since they often take large positions contrary to market sentiment. Since most hedge funds are private, they are not subject to the same reporting standards as many publicly-owned investment companies and their actions are often shrouded in mystery. The role of hedge funds in forcing Britain's departure from the ERM in 1992 only increased the tendency of governments in emerging markets to blame hedge funds for any contagion and "unjustified" pressure on their own countries. Despite these fears, there has been virtually no empirical research on the benefits and costs of hedge funds, or on the role of hedge funds in recent crises and in generating international financial contagion.

Empirical research on investors other than hedge funds is also limited. For example, mutual funds are a major source of international capital

flows. The chapter by Kaminsky, Lyons and Schmukler is one of the few articles to closely examine the importance of mutual funds in global capital markets and how these funds behave during periods of market turmoil. Much more work on this subject is necessary in order to distinguish between the role of investors and managers in driving the actions of mutual funds. Commercial banks are another culprit often blamed for contagion, but which have been the subject of very little empirical analysis. Foreign exchange traders are rarely discussed in the empirical or theoretical literature on contagion, but they could also be important actors driving markets during financial crises. All in all, there is very little understanding of the behavior, influence, and role of different groups of investors in driving international financial contagion.

## **4.2 Detailed Case Studies**

One of the important contributions of this book is its collection of detailed case studies. The chapters in Section III provide some of the most in-depth analyses, to date, of recent financial crises in a range of countries and regions. These case studies, however, are only a start. There are numerous other countries and regions that had very different vulnerabilities and reactions to the financial crises of the 1990's. For example, several Asian countries, such as China and India, were much less affected by the Asian crisis than their neighbors. The impact of the Russian crisis on Europe varied significantly across countries. Some emerging markets, such as Israel and Chile, seemed to be much less vulnerable to this series of recent financial crises than other emerging markets, such as South Africa and Venezuela.

Case studies of individual countries could address a number of questions. Do government policies determine a country's vulnerability to contagion? For example, what were the effects of Chile's and India's capital controls? How important was a country's financial exposure before a crisis began? What types of financial contracts or investor exposure were important? How important were its macroeconomic balances, such as its current account? And how important are bilateral country linkages, whether through trade or investment flows? Are regional effects still important after controlling for these bilateral linkages? This is only a sample of the questions that could be addressed through further case- studies. Although cross-country work is a useful tool to address many of these questions at a general level, further careful analysis on individual countries will be necessary to understand exactly why some countries were so much more vulnerable to recent financial crises than others.

### 4.3 Research on the International Financial System

One of the goals of research on international financial contagion is to learn how to minimize the harmful effects of contagion in the future. This has proved to be a challenging goal. Without a clear understanding of the channels through which contagion occurs, and especially the role of different groups of investors, it is difficult to develop clear policy options. Moreover, even though specific policies have been proposed to limit countries' vulnerability to contagion, there has been little evaluation of the specific costs and benefits of these different proposals. This section will discuss two aspects of the debate on how to limit international financial contagion in the future: reform at the country-level and restructuring the global financial system.<sup>3</sup>

There are numerous suggestions for country-level reform in order to reduce a nation's vulnerability to financial crises in the future. In particular, many recent reforms have been guided by the development of international "standards," covering issues such as banking system regulation and supervision, data dissemination, corporate governance, transparency in monetary and financial policies, and accounting. Adherence to these standards should strengthen a country's macro-economic policies, financial systems, and the institutional environment in which capital flows take place. Therefore, they should reduce the risk of a financial crises and contagion. At the same time, however, it is unclear how effective these standards will actually be in reducing the risks and impact of contagion. Many markets which were relatively well regulated with fairly good standards and a sound institutional structure (such as the U.S.) were still affected by recent financial crises. Therefore, how important will better standards actually be in preventing a financial crisis or reducing its spread, especially in emerging markets?

Moreover, can this drive to common standards increase, instead of decrease, the risk of contagion? Could improved transparency, better information, and early-warning systems precipitate a crisis and therefore increase market volatility? Does it make sense to hold a country subject to standards that are not realistic given its institutional development and income level? Could an attempt to improve standards too early in a country's development be overly ambitious, setting up the country for failure and therefore triggering a capital outflow or asset price decline? More generally, the standards approach is problematic because it does not prioritize. Which parts of which standard are most important? Should other constraints be overriding? Should the standards be combined with other measures? These priorities can be critical for an emerging market where the institutional capacity and political will to adopt many of these standards is limited. For example, adopting many of the Core Principles for Effective Banking

Supervision without addressing the large salary differences between banking supervisors and private markets may do little to create effective banking supervision. With all of these difficulties, how effective will improved standards be in limiting international financial contagion? What other steps are necessary?

While there has been some progress on improving standards and the robustness of financial sectors at the individual-country level, there has been much less progress on reforming the international financial architecture (although this not from a lack of debate). This minimal progress is driven partially by differences in opinions across countries, and partially by a lack of answers to some of the most difficult questions. For example, the U.S. supports a case-by-case approach to handling financial crises, while the Europeans generally advocate a more structured, ex-ante defined approach. Moreover, how can any international lender of last resort deal with problems such as moral hazard? What should be the role of the IMF? What will be the effect of enlarged contingent financing facilities? Many new proposals could have adverse signaling properties and potentially worsen market volatility. Capital controls are frequently discussed, but should they be used to prevent the buildup of vulnerabilities? Moreover, even if the economic answers to many of these questions were clear, would the optimal reforms be politically feasible to implement? The answers to some of these issues will require not only political consensus and institutional change, but also a better understanding of the determinants of contagion.

## **Notes**

<sup>1</sup> The only exceptions are a few articles written directly after the Mexican peso crisis in 1994 and referring to the spread of this crisis to other Latin American countries.

<sup>2</sup> For a continuous update on research on financial contagion, see the World Bank's website, <http://www.worldbank.org/contagion>. Also see Nouriel Roubini's website, <http://www.stern.nyu.edu/globalmacro/>.

<sup>3</sup> The IMF distinguishes five categories for strengthening the international financial architecture: transparency, standards, financial-sector reform, involving the private sector, and modifying IMF financing facilities and other systemic issues. See the web-site <http://www.imf.org/architecture> for further information. These five categories can (roughly) be divided into the two categories discussed here.