

CAPITAL MARKETS, GLOBALIZATION, AND ECONOMIC DEVELOPMENT

Edited by
BENTON E. GUP

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CAPITAL MARKETS, GLOBALIZATION, AND ECONOMIC DEVELOPMENT

Edited by

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 Springer

Library of Congress Cataloging-in-Publication Data

Gup, Benton E.

Capital markets, globalization, and economic development.

Includes index.

ISBN 0-387-24564-2 e-ISBN 0-387-24563-4 Printed on acid-free paper.

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Printed in the United States of America.

9 8 7 6 5 4 3 2 1 SPIN 11054894

springeronline.com

To Jean, Lincoln, Andrew, Jeremy, and Carol.

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PREFACE

The progression of globalization is affecting capital markets and economic development. In this context, globalization involves complex and controversial issues that must be dealt with by governments, regulators, corporations (including banks), and investors. These issues include, but are not limited to the extent to which countries around the world are accepting the Basel II bank capital regulations, the effects of globalization on stock and bond markets, new issues in project finance, the impact of corruption, and other important topics.

The book consists of fourteen articles contributed by authors from Australia, Asia, Europe, South America, and the U.S. who provide a wide range of insights that range from applied to theoretical issues. The contributors include academics, government officials, and regulators. Four of the fourteen articles in this book were presented at a special session “Capital Markets, Globalization, and Economic Development,” at the 2004 Financial Management Association meeting in New Orleans.

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1. INSIGHTS FROM A GLOBAL SURVEY ON BANK CAPITAL

BENTON E. GUP

1. INTRODUCTION

The 1988 Basel Capital Accord (Basel I) was widely accepted and applied around the world. However, Basel I became outdated with respect to the risk management of large complex financial organizations (LCFOs). J.P. Morgan Chase & Co. and Citigroup are examples of LCFOs. Thus, the New Basel Capital Accord (Basel II) was introduced in 2001 to deal with LCFOs; and it is a work in progress that is expected to be implemented at year-end 2006. This article provides insights from a survey of countries around the world to determine 1) whether they applied Basel I, and 2) are they going to apply Basel II?

The remainder of the article is divided into three parts. Part 2 provides an overview of the Basel Committee on Banking Supervision, Basel I and Basel II. Part 3 presents the results of the global survey. Part 4 provides the conclusions.

2. AN OVERVIEW OF THE BASEL COMMITTEE ON BANKING SUPERVISION

The Bank for International Settlements (BIS) was established in 1930 to deal with reparation payments imposed on Germany by the Treaty of Versailles following the First World War. Over time, the BIS's activities changed, and now it concentrates "on cooperation among central banks and, increasingly, other agencies in pursuit of monetary and financial stability."¹ There are 55 central banks that are members of the BIS.

Following failure of Bankhaus I. D. Herstatt in Cologne, Germany, in 1974, the BIS and banking regulators from the Group of 10 (G-10) countries established the Basel

Committee on Banking Supervision.² Currently the Basel Committee on Banking Supervision includes central bankers and regulators from Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, The Netherlands, Spain, Sweden, Switzerland, United Kingdom, and the United States.

2.1. The 1988 Capital Accord

A cornerstone of the Basel Committee's framework is the 1988 Capital Accord (Basel I) which provided for a minimum capital requirement of 8% for internationally active banks in order to 1) ensure an adequate level of capital and 2) competitive equality. Basel I focused exclusively on credit risk.

The BIS reported that more than 100 countries apply the 1988 Basel Capital Accord in their banking systems.³ However, the Basel Committee did not identify the countries. The 8% capital requirement was an arbitrary number—it was not based on studies of the economic capital needs of banks.

In the United States, the 8% Basel I capital requirements apply to all FDIC-insured banks, and similar rules were applied to savings associations. In addition, under the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), a total risk-based capital ratio of 8%–9.9% is considered “adequately capitalized,” while a ratio of 10% or more is “well-capitalized.” Banks with less than 8% risk-based capital are “undercapitalized” and subject to prompt correct action.

In the years that followed the 1988 Basel I Capital Accord, the U.S. experienced massive bank failures in the late 1980s and early 1990s. During the 1980–1996 period, 133 of the International Monetary Fund's 181 member countries experienced significant banking sector problems, including those countries that signed on to the Basel Accord.⁴ Large banks in Japan began having problems beginning in 1990, and their problems had not been resolved by 2003. In the late 1990s and early 2000s, there were financial crises in Southeast Asia, Russia, Turkey, and Latin America where bank capital requirements may have had some impact. In the late 1990s, the Basel Committee on Banking Supervision began to focus on “financial stability in the wave of economic integration and globalization.”⁵ Federal Reserve Governor Olson (2003) identified “the expanded use of securitization and derivatives in secondary markets and vastly improved risk management systems” as two specific areas of change. In addition, regulatory capital arbitrage has undermined Basel I. LCFOs were of particular concern.⁶ All of these factors suggest that changes in the capital requirements were needed, and they are forthcoming.

Therefore it was not surprising that bank regulators found that the Basel I leverage ratio was no longer an appropriate measure of a bank's capital adequacy because of changes that have occurred in the banking system. Federal Reserve Vice Chairman Ferguson (2003a) said that “Basel I is too simplistic to adequately address the activities of our most complex banking institutions.” He goes on to say “If we do not apply more risk-sensitive capital requirements to these very large institutions, the usefulness of capital adequacy regulation in constraining excessive risk-taking at these entities will continue to erode. Such erosion would present U.S. bank supervisors with a highly undesirable choice. Either we would have to accept the increased risk of instability in the banking system, or we would be forced to adopt alternative—and more intrusive—approaches to the supervision and regulation of these institutions.”

2.2. The New Basel Capital Accord—Basel II

The New Basel Capital Accord (Basel II), proposed in January 2001, will replace Basel I when it is implemented by year-end 2006. Basel II applies to holding companies (on a consolidated basis) that are parents of banking groups; but insurance subsidiaries are excluded in some G 10 countries.⁷ While Basel I deals only with credit risk, Basel II incorporates market risk and operational risk. As previously noted, Basel II targets LCFOs, and as such, it was “not designed for banks in small unsophisticated developing countries.”⁸

In fact, it was not designed for many banks in developed countries either. In the United States, a “bifurcated” regulatory capital framework is proposed.⁹ Only about 10 internationally active “core banks” (and thrifts) with assets of \$250 billion or more and/or cross-border exposures of \$10 billion or more will be required to comply with Basel II advanced internal ratings based (A-IRB) approach to credit risk and the advanced measurement approach (AMA) approach to operational risk. The core banks will account for 99 percent of foreign assets and two-thirds of all assets of domestic U.S. banking organization.¹⁰ They could include U.S. subsidiaries of foreign banking organizations that meet the core bank standards.¹¹

Other U.S. banks may opt-in (“opt-in-banks”) to Basel II using the A-IRB and AMA approaches. However, the remaining 7,700+ “general banks” in the U.S. will continue to use the Basel I capital standards.¹²

As shown in Table 1, the total risk-based capital ratio for U.S. banks is inversely related to the size of banks. The smallest banks have the highest capital ratios, and the totals for all banks exceed the Basel II capital requirements. The fact that the totals are high does not mean that every bank is adequately capitalized. Table 1 also reveals that 83 banks with asset greater than \$10 billion account for 73% of the total assets of all 7,769 banks. Although not shown in the table, the four largest banks (JP Morgan Chase, Bank of America, Citibank, and Wachovia) have total assets of \$2.182 trillion, or 31% of total bank assets.¹³ Simply stated, the banking system in the United States is highly concentrated in a few large banks.

3. GLOBAL SURVEY

The survey consisted of two questions:

1. Are banks in your country required to comply with the 1988 Basel Capital Accord’s 8% risk-based capital?
2. What is your country’s position on adopting Basel II?

Table 1. Total Risk-Based Capital Ratios for U.S. Banks, 2003

	All commercial Banks	Assets Less than \$100 Million	Assets \$100 million–\$1 billion	Assets \$1–10 billion	Assets Greater than \$10 billion
Number of Commercial Banks	7,769	3,911	3,434	341	83
Total Assets (\$billions) (% of Total)	\$7,603.5 (100%)	\$200.7 (2.6%)	\$910.0 (12.0%)	\$947.3 (12.5%)	\$5,544.5 (72.9%)
Total risk-based capital ratio	12.74	17.56	14.27	14.61	12.07

Source: *Quarterly Banking Profile*, Fourth Quarter, FDIC, 2003, Table III-A

Table 2. 66 Responses Used in the Survey

Albania	Brunei Darussalam	El Salvador	Kazakhstan	Mongolia	Slovenia
Argentina	Cameroon	Estonia	Korea	Morocco	South Africa
Algeria	Cayman Islands	Guinea Bissau	Kuwait	New Zealand	Swaziland
Armenia	Chile	Guyana	Lebanon	Nicaragua	Tajikistan
Aruba	China	Hong Kong	Liechtenstein	Norway	Tavalu
Australia	Columbia	Hungary	Lithuania	Pakistan	Thailand
Bahamas	Comoros	Iceland	Macao	Russia	Trinidad and Tobago
Barbados	Croatia	Ireland	Malawi	Rwanda	Turkey
Bermuda	Cyprus	Israel	Mauritius	Sao Tome	Ukraine
Botswana	Czech Rep.	Jamaica	Mexico	Seychelles	United Arab Emirates
Brazil	Eastern Caribbean	Jordan	Moldova	Singapore	Venezuela

In order to get a global perspective, the survey was mailed in November 2003 to the Permanent Missions of the 191 Member States of the United Nations.¹⁴ Excluded from the survey were the previously mentioned 13 countries that served on the Basel Committee on Supervision and 6 additional countries (Austria, Denmark, Finland, Greece, Ireland, and Portugal) that are Member States of the European Union (EU). Members of the EU are required to comply with the Basel I and II capital requirements.

Countries that applied for EU membership, or are considering joining it were included in the survey. Also included in the survey are members of the European Economic Area (EEA), such as Iceland and Norway, which must meet the same capital requirements of the EU countries.

Because of the small number of responses to the mail survey, in January 2004 an e-mail survey was sent to 117 central banks that were listed on the BIS website.¹⁵ Some central banks represent a group of countries or states. For example, the Bank of Central African States (Commission Bancaire De L'Afrique Central) represents Cameroon (listed in Table 2), Chad, Congo, Gabon, Guinea, and the Republic of Central Africa. Similarly, the Eastern Caribbean (listed in Table 2) Central Bank represents Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent, and the Grenadines. The Bank of Central African States is listed in Table 2 as Cameroon, and the Eastern Caribbean Central Bank is listed as Eastern Caribbean. Therefore, the number of responses understates the number of countries or states that are represented. For simplicity, the terms respondents and countries will be used in the rest of the article.

By mid-April 2004, 66 responses had been recorded from the countries listed in Table 2. The table reveals the global coverage of both large and small countries. The responses of several other countries were not usable because they did not answer the questions.

3.1. Answers to Question 1: Are banks in your country required to comply with the 1988 Basel Capital Accord's 8% risk-based capital?

All of the respondents reported that they had a minimum of 8% or more capital, and many did not answer the question as asked. Thus, it is not clear if the 8% minimum was a result of their needs and regulations, or if it was because of Basel I. As shown in Table 3, 28 respondents have minimum capital requirements that exceed those of Basel I. The list includes both

Table 3. Respondents with Capital Requirements More Than 8%

Respondent	Gross Domestic Product, 2002 est. \$ billions	Capital Requirement
Argentina	\$431	10%
Armenia	\$12	12%
Bahamas	\$5	8%+ ¹⁶
Bermuda	\$2	10%
Botswana	\$14	15%
Brazil	\$1,376	11%
Cayman Islands	\$1	8–15%
Columbia	\$252	9%
Comoros	\$0.4	10%
Cyprus	\$9	10%
El Salvador	\$29	12%
Estonia	\$16	10%
Jamaica	\$10	10%
Israel	\$117	9%
Jordan	\$23	12%
Malawi	\$7	10%
Mauritius	\$12	10%
Moldova	\$11.5	12%
Mongolia	\$5	10%
Nicaragua	\$11	10%
Russia	\$1,409	10–11%
Seychelles	\$1	12%
Singapore	\$112	12%
South Africa	\$428	8–10%
Tajikistan	\$9	12%
Thailand	\$446	8.5%
United Arab Emirates	\$54	10%
Venezuela	\$132	12%

Source: GDP data—*The World Fact Book*, Washington, D.C., Central Intelligence Agency, 2004, <http://www.cia.gov/cia/publications/factbook/index.html>

large and small countries as measured by their Gross Domestic Products. The most common minimum capital ratio is 10%.

Although 10% may seem relatively high, the data shown in Table 1 revealed that the average capital ratio for all U.S. banks was 12.74%. The capital ratio for the smaller U.S. banks (less than \$10 billion in assets) ranged from 14.61% to 17.56%. Comparable data were not available to compute “actual” capital ratios for the respondents.

3.2. Answers to Question 2: What is your country’s position on adopting Basel II?

Some of the answers to Question 2 were a straightforward yes or no. But others required judgment to determine how they should be classified. For example, New Zealand is recommending the adoption of the “Standardized approach,” so it was classified as a yes in Table 4. Similarly, “We are fully committed to its implementation in Bermuda. However, we are unlikely to be in a position to adopt it in 2006,” was counted as a yes. Tuvalu did not adopt Basel I, it only has one bank, and their response was “there is no firm stance as to whether we will adopt it or not.” Tuvalu was classified as a “no.” The response from Armenia said “the debate about possible introduction of Basel II is still in place and there is no final

Table 4. Adoption of Basel II

Albania Yes	Brunei Darussalam Yes	El Salvador ?*	Kazakhstan Yes	Mongolia ?*	Slovenia Yes
Argentina Yes	Cameroon ?	Estonia Yes	Korea No answer	Morocco Yes	South Africa Yes
Algeria ?	Cayman Islands ?*	Guinea Bissau Yes	Kuwait ?	New Zealand Yes	Swaziland Yes
Armenia ?*	Chile ?	Guyana Yes	Lebanon ?	Nicaragua ?*	Tajikistan No
Aruba ?	China Yes	Hong Kong Yes	Liechtenstein ?	Norway ?	Tavalu No
Australia Yes	Columbia Yes	Hungary No answer	Lithuania Yes	Pakistan ?	Thailand ?*
Bahamas Yes	Comoros ?*	Iceland Yes	Macao Yes	Russia Yes	Trinidad and Tobago ?
Barbados ?	Croatia Yes	Ireland Yes	Malawi ?*	Rwanda No	Turkey Yes
Bermuda Yes	Cyprus Yes	Israel Yes	Mauritius ?*	Sao Tome ?	Ukraine ?
Botswana Yes	Czech Rep. Yes	Jamaica ?*	Mexico No answer	Seychelles ?*	United Arab Emirates Yes
Brazil Yes	Eastern Caribbean ?	Jordan Yes	Moldova ?*	Singapore Yes	Venezuela ?

? = undecided; ?* = minimum capital requirement greater than 8%

conclusion...” and it was classified as “undecided,” and it is noted in Table 4 with a question mark (?). If the answers were too vague to be interpreted, they were classified as undecided. In several cases, the responses consisted of copies of bank regulations (in foreign languages) or references to various web sites. In the case of Mexico, for example, the regulations that were sent to me did not mention Basel I or II, so it was not included in the total number of responses to Question 2. Hungary did not answer that question so it too was excluded. Thus, judgment played a substantial role in determining if the responses were classified as yes, no, or undecided. A total of 63 responses are shown in Table 4. Three (Hungary, Korea and Mexico) did not answer the question.

With that disclaimer in mind, 33 of the 63 responses were classified as yes—they will adopt Basel II in some form. For the most part, these included the larger countries and those that are actively engaged in international trade. As previously noted, some of the countries that said yes are in the process of joining the EU, or they are members of the EEA.

Three countries (Rwanda, Tajikistan, and Tavalu) said no.

Twenty seven respondents were classified as “undecided.” All are small countries. Twelve of the undecided respondents have a minimum capital requirement of 8% or higher (reported in Table 3), and they are designated in Table 4 with an asterisk (*) next to the question mark (?*). One respondent said “In Armenia the debate about possible introduction of Basel II is still in place and there is no final conclusion about the timing and etc. My personal opinion that it is too complicated for Armenian Banks.” The Cayman Islands responded that “We are still evaluating the adoption of Basel II, however we recognise that an international

centre with branches and subsidiaries of international banks some changes to the current approach must be expected.”

4. CONCLUSIONS

The 1988 Basel Capital Accord (Basel I) was a major step forward on the road toward the harmonization of bank capital regulations. All 66 of the countries that responded to the survey had 8% or higher minimum capital requirements. Basel II, however, appears to be a bump in the road toward harmonization. In part, this is because the objectives of Basel I and II differ. Basel I was concerned with credit risk, the level of capital, and competitive equality. In contrast, Basel II is targeted at LCFOs, not small and medium size banks.

Thirty three of the respondents surveyed will use Basel II, and most of the remaining respondents are undecided. The division closely follows country size. The larger countries and those that are internationally active will apply it. The “undecided” group tends to be smaller countries and many of them have capital requirements that exceed those of Basel II. Therefore it is highly likely that some of these countries will use Basel II. Only three respondents rejected it.

The most common criticisms by those considering Basel II are that it is too complicated, and not suitable for banks in small unsophisticated developing countries. In addition, the Norwegian Financial Services Association (2003) noted that Basel II has many areas “which either prescribes or opens up for relatively wide national discretions. In many instances such discretion may be used to apply more lenient rules, and thus have the potential to create serious differences in competitive positions of national banking systems in the international market place. The result may well be increased regulatory arbitrage.”

Recall that one of the goals of Basel I was “competitive equality.” Smaller size banks in many of the countries surveyed have minimum capital requirements that meet or exceed those of Basel II, and they are not really affected by it. However, the information presented here suggests that Basel II may undermine that goal for medium and large size banks that don’t opt-in to Basel II using the A-IRB and AMA approaches.¹⁶

ENDNOTES

1. “BIS History,” <http://www.bis.org/about/history.htm>.
2. For further information about Herstatt, see Gup (1998), Chapter 2.
3. “The New Basel Capital Accord: An Explanatory Note,” 2001; also see: The Basel Committee on Banking Supervision, <http://www.bis.org/bcbst/aboutbcbst.htm>
4. Lindgren, et al., (1996). Also see Gup (1998; 1999).
5. “BIS History, 2003.
6. For further discussion of LCFOs, see Bliss 2002A and B; Herring, 2003; DeFerrari and Palmer, 2001.
7. “The New Basel Capital Accord,” Consultative Document, January 2001.
8. “Comments of the Caribbean Group of Bank Supervisors (CGSB) on the Third Consultative Paper on the New Capital Accord,” (no date).
9. Advanced Notice of Public Rule Making, Risk Capital Guidelines, August 4, 2003.
10. Ferguson, 2003b.
11. Ferguson, 2003c.
12. Olsen, 2003.
13. Large Commercial Banks, Federal Reserve Statistical Release, December 31, 2003.
14. *Permanent Mission to the United Nations*, 2003.
15. See: <http://www.bis.org/cbanks.htm>
16. The Financial Stability Institute published the results of a survey on non-Basel committee member countries (Implementation. . . . 2004). Their results also suggest that Basel II will be accepted, at least in part, over time by many nations.

REFERENCES

- Advanced Notice of Public Rule Making, Risk Capital Guidelines, 12 CFR Parts 3, 208, 325, 567, *Federal Register*, August 4, 2003, 45900–459888.
- “BIS History,” <http://www.bis.org/about/history.htm>, June 2003.
- Bliss, R. R., (A) “Bankruptcy Law and Large Complex Financial Organizations,” *Economic Perspectives*, Federal Reserve Bank of Chicago, First Quarter, 2003, 48–54.
- Bliss, R. R., (B), “Resolving Large Complex Financial Organization,” “Draft, Federal Reserve Bank of Chicago, May 19, 2003.
- “Comments of the Caribbean Group of Bank Supervisors (CGSB) on the Third Consultative Paper on the New Capital Accord,” Bank for International Settlements: <http://www.bis.org/bcb/cp3comments.htm> (no date).
- DeFerrari, L. M., and D. E. Palmer, “Supervision of Large Complex Banking Organizations,” *Federal Reserve Bulletin*, February 2001, 47–57.
- Ferguson, Roger W. Jr., Vice Chairman Federal Reserve Board, Testimony Before the Subcommittee on Domestic and International Monetary Policy, Trade, and Technology, Committee on Financial Services, U.S. House of Representatives, February 27, 2003 (a).
- Ferguson, Roger W. Jr., Vice Chairman Federal Reserve Board, Testimony Before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate June 18, 2003 (b).
- Ferguson, Roger W. Jr., Vice Chairman Federal Reserve Board, “Concerns and Considerations for the Practical Implementation of the New Basel Accord,” Remarks at the ICBI Risk Management 2003 Conference, Geneva, Switzerland, December 2, 2003 (c).
- Gup, Benton E., *Bank Failures in the Major Trading Countries of the World: Causes and Consequences*, Westport, CT, Quorum Books, 1998.
- Gup, Benton E., *International Banking Crises: Large-Scale Failures, Massive Government Interventions*, Westport, CT., Quorum Books, 1999.
- Herring, R., “International Financial Conglomerates: Implications for Bank Insolvency Regimes,” Wharton School of Business, University of Pennsylvania, Draft, May 2003.
- “Implementation of the New Capital Adequacy Framework in Non-Basel Committee Member Countries,” Financial Stability Institute, Occasional Paper No. 4, Basel, Switzerland, Bank for International Settlements, July 2004.
- Large Commercial Banks, Federal Reserve Statistical Release, December 31, 2003: <http://www.federalreserve.gov/releases/lbr/current/default.htm>
- Lindgren, Carl-Johan, Gillian Garcia, and Matthew I. Saal, *Bank Soundness and Macroeconomic Policy*, Washington, D.C., International Monetary Fund, 1996.
- Norwegian Financial Services Association, “Comments on Consultative Document on the New Capital Accord (CP 3), March 7, 2003, www.bis.org.
- Olsen, M. W., “Basel II: Its Implications for Second-Tier and Community-Size Banks” Remarks by Federal Reserve Governor Mark W. Olson at the 2003 Banking Institute, Center for Banking and Finance, University of North Carolina, Charlotte, North Carolina, April 10, 2003.
- “Overview of the New Basel Accord,” Consultative Document, Basel Committee on Banking Supervision, Bank for International Settlements, Basel Switzerland, January 2001.
- Permanent Mission to the United Nations*, No. 289, New York, United Nations, February 2003.
- Quarterly Banking Profile*, Fourth Quarter, FDIC, 2003.
- “The New Basel Capital Accord: An Explanatory Note,” Secretariat of the Basel Committee on Banking Supervision, Bank for International Settlements, Basel Switzerland, January 2001.
- “The New Basel Capital Accord,” Consultative Document, January 2001, 2–3; “Overview of the New Basel Accord, January 2001, # 56, page 11.
- The World Fact Book*, Washington, D.C., Central Intelligence Agency, 2004, <http://www.cia.gov/cia/publications/factbook/index.html>

2. THE EFFECTS OF BASEL II ON DEVELOPING COUNTRIES: A SUMMARY OF A GLOBAL PUBLIC GOODS NETWORK EFORUM ON BASEL II

BENTON E. GUP

1. INTRODUCTION

During the May 26–June 14, 2004 period, Global Public Goods Network (gpgNet) held a discussion forum (eForum) on International Financial Stability—Basel II: Accord or Discord.¹ Over 250 participants from around the world registered for the e-Forum, but relatively few submitted comments or replies. This article summarizes some comments and provides excerpts from others that were posted on the gpgNet web site for the eForum.² They are presented here in the order in which they were sent. No changes or corrections were made in the comments that are quoted. The full-texts of all of the comments are available on that same website.³

Several points suggested for debate included:

- What effects will Basel II have on developing countries?
- What measures could be introduced to reduce the potential negative effects, such as taking the diversification of risk into account?
- Why have measures to curb its potential negative impact on developing countries not been taken into account?

2. COMMENTS AND REPLIES

2.1. Mistakes in Basel Could Harm Developing Countries

The eForum began by asking participants to review a paper by Stephany Griffith-Jones, who argues that Basel II would significantly overestimate the risk of international bank lending to developing economies.⁴ This would lead to the increased cost of borrowing by

those countries, and to a decline in loans to the developing world. Stephany Griffith-Jones and Stephen Spratt go on to say that sophisticated international banks have diversified their portfolios, but Basel II does not take this risk reducing factor into account.⁵

2.2. Insights from a Global Survey on Bank Capital

Insights from a Global Survey on Bank Capital, by Benton E. Gup, revealed that of the 66 countries that responded to the survey, all met or exceeded the 8% capital requirements of Basel I.⁶ About half of the respondents would apply Basel II, and most of the remaining countries were contemplating it. The fact that banks in many countries have excess regulatory capital mitigates some of the effects of Basel II's higher capital requirements for riskier loans.

2.3. Micro vs. Macro

Sunada Sen pointed out that Basel II is focused strictly on the micro-finance of banks; and it ignores the macro-economic aspects of global capital flows.⁷

2.4. Procyclicality

Paul Bance presented a paper on "Prudential Supervision Against Banking Procyclicality: A Critical Assessment of the Line of Defense of the Basel Committee."⁸ He says that "The New Basel Capital Accord may heighten the procyclical impact of the financial system through its proposal for a risk-sensitive regulatory framework. The line of defense of the Basel Committee for Banking Supervision relies on a strengthened supervision mix of public and private discipline to carefully monitor banks' positions and actions and to efficiently prevent them from adopting imprudent behaviors. This essay argues that the impact of increasing supervision on banks' prudential behavior is not monotonic through the economic cycle and may be counterproductive in some points of the cycle."

2.5. Making a Fragile System More So

Avinash Persaud and Stephen Spratt argue that Basel II is too complex and places too much emphasis on risk-sensitivity.⁹ "... the purpose of bank regulation is not to assess private risks: this is the job of the banks and the markets. The purpose regulation is to consider where social risks are different from private risks, and then to use regulatory capital to make those social risks internal to the bank. If the failure of a particular bank would have no negative effects on confidence in the financial system—if, for example, there would be no strong reason to bail out that institution—then it is not clear why we would regulate it any differently than we would regulate a non-financial corporate with concern for the health and safety of its consumers and employees. We regulate banks further because we are worried about their spill-over risks. Sensitivity to private risks is a red-herring. Of course, it is what big banks would like regulators to worry about, because then regulatory capital will be aligned to their narrow risks. Instead regulatory capital should focus on the difference between internal assessments of risk and the regulators' assessment of the wider social risks."

They conclude by saying that "Basle's prescriptions are at the root of its enormous complexity. Complexity is the avenue of capture. Faced with over 200 pages of complex rules and exceptions, the supervisors will be more easily manipulated, the consultants will be happily employed and the big banks will pick off smaller banks straining under the financial costs of implementation."

2.6. Benefits of International Diversification

Djamester Simarmata addressed the issue of international diversification¹⁰. “. . . we need more information in order to shed more lights on the problem of financial flows to developing countries from international banks. The problems are related to the following issues:

- 1) The procyclicality of the credits to the developing countries. At the boom times, the credit will be abundants, but it will be scarce at the recessionary periods, where the needs were really mounting to push the economic growth.
- 2) The price of commodities in developing countries follows the boom and bust cycles, where the bust cycles were generally longer than the boom cycles. We need more information on the periods of these cycles between commodities and between countries. By common sense we could concludes that the bust cycles will be in line with the recessionary periods in the developed countries.
- 3) How could we adjust the simultaneity of those cycles to help the economic growth of the developing countries. Here comes the problem of procyclicalities of credits to the fore again.
- 4) How could we manage the diversification issues in relation to the above issues on boom-bust of commodity prices, procyclicalities, and so on.”

“By regading the previous published risks by the BIS for several countries, the new Basel-II could give way to the reduction of risks, so that it could reduce the necessary loss provision. In that publication, it was shown for the year 2001 by the BCBS publication that the risks in Indonesia was leading to CAR (minimum capital requirements) of 12 percent, while that for Malaysia was only 4 percent. The Malaysian case show that if the internal situation were conducive, the risks were low, leading to a required CAR of less than Basel-I one-size-fit all of 8 percent. From this point, there could be an incentive for developing countries to manage their economy well following the Basel—II criteria leading to a low CAR.”

2.7. Strengthening Asia’s Financial System

Amador Honrado, Jr. presented the Asian Bankers’ Association position paper on Strengthening Asia’s Financial Systems.”¹¹ “1. The Asian Bankers’ Association (ABA) notes that recent developments, including significant declines in asset prices, the emergence of major corporate governance failures, renewed financial troubles in emerging markets and lingering concerns about security have generated an atmosphere of considerable uncertainty, aggravating the current economic weakness in key markets and threatening to delay the process of recovery in most Asian economies from the effects of the 1997–98 financial crisis.

2. We see the need for urgent action by individual governments and more active cooperation within bodies such as the Asia-Pacific Economic Cooperation (APEC) forum to restore investor confidence in key markets while accelerating the resolution of bad debt problems and further strengthening Asia’s financial systems against risks of recurrent crisis and contagion.”

. . . “In the light of this situation, we see even greater urgency for the full implementation of measures we have recommended in the past to APEC Economic Leaders and Finance Ministers, multilateral financial institutions, and financial authorities . . . We reiterate our call for cooperative measures to assist bank supervisory authorities in *preparing to implement the new Basel Capital Accord*.”

2.8. Differing Goals

Frank Sammeth stated that “The problem is in fact complex because development policies and banking on the one hand, and macroeconomic aspects of growth and microeconomic particularities of capital flow and financial markets seem to collide.¹²”

On the one side there is the urgent need of capital for development and on the other side the private banking system which is interested in lowering the risks of any credits given.

The main two questions are: does the BCA negatively affect capital flow to countries in need of capital for growth, and if so what can be done to reduce those effects?

Before you can answer the second question you have of course to agree on the first one.

The key is the method risk—assessing and—management which can differ whether you represent the interests of a private bank or of a development organisation, because the perspective is different: creditors look at the projects themselves and its chances of success under the aspect of risk, while international organisations have to include socio-economic, political, ethical and other aspects according to their mission. The result can be that a NGO or IO approves a project because of its long-term positive impact and sustainable effect on an aspect of development while a private investor may disapprove because he settles the risks to high and prefers to give not the credit.”

... “What are the different interests of the agents? Governments want to encourage private banks to lend to developing countries in order to relax national budgets affected by high unemployment and low growth rates. Banks want to minimize their risks, and of course make profit. Developing countries and agents or institutions in development cooperation are in need of capital and defend the long—run and global perspective of growth, including qualitative aspects you see rarely in monetaristic or specific approaches.

The solution is a risk-calculation method which satisfies them all: governments, by being supported by private banks concerning the overall capital flow to developing countries; the banks who are sure they are running low risks and the development agents who get more funds.

So, finally, does Basel II go into that direction? I think yes, because it offers a common approach applicable to all agents, making internal or other ratings less crucial for decision making. Secondly, if all banks implement Basel II, their practice will converge and will be more predictable.”

2.9. Normal Times vs Crises

Ashima Goyal wrote that “In lending to emerging market economies we need to distinguish between risk in normal times and that in times of crises.¹³ In normal times risk is low, and portfolio diversification works to lower it further. Moreover the productivity of such lending is high. The problem with sophisticated Var models is that they would overstate risk in such times, but cannot cover the sharp rise in systemic risk in times of crises. Systemic risk at such times is aggravated by herd behaviour which punishes countries for circumstances they are not wholly responsible for. Therefore individual or micro risk cover can never be sufficient. Some macro intervention linked to a new international financial architecture has to be designed to supplement Basel II.

Second we need to distinguish between sophisticated banks which will be able to lower risk cover and gain a competitive advantage over the others. The latter are largely small

banks in emerging market economies. Since these tend to be tightly regulated by central banks, and are a major source of the portfolio diversifying type of credit to the small firm or farmer, there is a rationale for lowering their capital adequacy requirement while giving them incentives to graduate to higher levels of sophistication. If Basel II increases their capital requirement it would be inefficient as well as inequitable.”

2.10. Adjusting Capital for Diversification

Stephen Spratt & Stephany Griffith-Jones responded to a question about correction factor for the Capital Accord that would take diversification into account.¹⁴ “One such mechanism has been proposed by the Spanish bank BBVA.

In A practical proposal for improving diversification treatment in Basel 2 the authors define a “correction factor” which measures the error made when using a single factor model—such as that envisaged in Basle 2—when in fact there are two (or three) factors affecting diversification of the portfolio. These factors could be geographical areas (emerging vs. non emerging economies), industrial activities or a combination of the two. The correction factor is defined as the ratio between the capital calculated with the two (or three factor model) and the capital obtained with the single factor model. The paper then develops a diversification index to measure the degree of diversification in a portfolio (a diversification index of 35% indicates maximum diversification and 100% indicates maximum concentration), and the authors demonstrate a clear relationship between the correction factor and the diversification index. In a situation of no diversification the discrepancy between the one-factor model (to be used in the Basel 2 and which does not take account of the benefits of diversification) and the two and three factor models is zero: they produce the same result as there is no diversification to take into account. However, as the level of diversification increases so does the discrepancy between the Basel 2 one-factor model and the more sophisticated two and three factor models: as diversification increases the Basel 2 one-factor model becomes increasingly inaccurate in its overestimation of the capital required.

In practical terms, the maximum capital savings for broad diversification in the BBVA empirical work (for both the two and three factor models) range from 16% to 21%. It is interesting that these figures coincide with our own simulated calculations, suggesting that something beyond a particular case is being captured here. In short, if a one risk factor model is used as in Basel 2, it would require capital requirements to be higher than the two and three factor models by between 16% and 21%, which can be seen as a proxy for the failure to take account of international diversification.

BBVA propose a simple practical adjustment mechanism that enables the introduction of the benefits of international diversification into Pillar1. The mechanism proposed consists of using the correction coefficient so that regulatory capital is defined from the one factor model currently proposed multiplied by this coefficient,

$$\text{Capital adjusted for diversification} = \text{Capital defined by the one factor model} \\ \times \text{Correction coefficient}$$

That is, a fully diversified bank would multiply their total regulatory capital by a coefficient to correct for diversification. In the BBVA study this would be 0.79 for the three factor model

and 0.84 for the two factor. Our own simulations would suggest a correction coefficient in the range of 0.77 to 0.80.

Much in the Accord decreases the incentives for international banks to lend to developing countries. This proposal would offset that to some extent: banks that are already diversified would face less of an incentive to withdraw from developing country lending, whilst those that are not currently engaged in such lending would face lower obstacles to becoming so.

2.11. Globalization of Financial Markets Is The Key

Jose Joaquin Morte Molina said that “One must admit, however, that many of the concerns this forum have underlined are already occurring in the banking industry.¹⁵ Deutsche Banks, one of the leading international banks, has been systematically shrinking its loan portfolio at the same time that trading and investment assets account for the biggest part of its total assets. In fact, due to capital requirements, the bank has been shifting business from traditional banking to investment banking with negative consequences not only for emerging markets but for the SME sector . . . in Germany!!!

My message today will be that while the biggest players are already engaged in a process about how to do business in banking, it is important to analyze more broadly how financial systems currently develops, both at national and at international level.”

. . . “In all, if the market approach is to be the result of the new Basel II accord, globalization of financial markets is the key. Admittedly, with globalization, financial markets become more complex. But to reinforce financial stability we have to consider the increasing overlap and interaction between banks and securities markets, and between both of them and the insurance sector.”

3. CONCLUDING COMMENTS

The principal intent of Basel II was to enhance the risk management systems of Large Complex Financial Organizations (LCFOs) such as Citigroup, Deutsche Bank, and ABN Amro. By definition, LCFOs are internationally active, and their actions may affect some developing countries. However, the Basel Committee did not address the needs of developing countries. Nevertheless, Basel II will have a direct impact on those countries that adopt it and an indirect impact on the other countries. The comments presented here addressed issues that the Basel Committee should consider as Basel II evolves over time.

ENDNOTES

1. For further information about the gpgNet, see: <http://www.sdn.undp.org/gpgn/about.php>. The gpgNet is hosted by the Office of Development Studies in the United Nations Development Programme (UNDP). However the contents of this website do not, in any way, reflect the views of UNDP, or the views of any of the Member States of the United Nations (UN). The “global public goods” concept is an emerging one, and gpgNet places it in the public domain for wider consultation, study and debate.
2. The gpgNet web site for the eForum is: <http://groups.undp.org/read/?forum=gpgnet-basel>
3. The dates shown below are the dates that the messages were listed on the website. Also see: <http://www.sdn.undp.org/gpgn/index.php>
4. Stephany Griffith-Jones, Research Fellow and Professor at the Institute of Development Studies, Institute of Development Studies, University of Sussex, Brighton, UK; May 27, 2004, <http://www.ids.ac.uk/ids/news/Archive/Baselmistakes.html>
5. Stephany Griffith-Jones and Stephen Spratt (Head of Research, Intelligence Capital), May 27, 2004.
6. Benton E. Gup, University of Alabama, USA; May 27, 2004.

7. Sunada Sen, Academy of Third World Studies, Jamia Millia, New Delhi, India, May 27, 2004.
8. Paul Bance, Department of Economics, European University Institute, Florence, Italy May 28, 2004.
9. Avinash Persaud, Investment Director, GAM London Ltd, UK Stephen Spratt, Head of Research, Intelligence Capital, May 26, 2004.
10. Djamester Simarmata, Faculty of Economics University of Indonesia, Jakarta, May 28, 2004.
11. Amador Honrado, Jr., Assistant Deputy Secretary, Asian Bankers Association, May 28, 2004.
12. Frank Sammeth, Paris, France, June 10, 2004.
13. Ashima Goyal, Professor, Indira Gandhi Institute of Development Research Mumbai, India, June 11, 2004.
14. Stephen Spratt & Stephany Griffith-Jones, June 14, 2004. _____
15. Jose Joaquin Morte Molina, Council of Europe Development Bank Paris, June 14, 2004.

3. CAPITAL GAMES

BENTON E. GUP

1. INTRODUCTION

Michael Moscow (1996), President of the Federal Reserve Bank of Chicago, said that there are two approaches to regulation: the *command and control approach*, and the *incentive compatible approach*. Under the command and control approach, regulators tell banks what they can do—such as capital requirements—and what they cannot do. He goes on to point out some of the problems with the command and control approach. First, there is *informational asymmetry*, where regulations cannot be enforced if they require credible information about the firm that is not readily available or is overly costly to obtain. A second problem is the law of *unintended consequences* by the regulated firms. Stated otherwise, the regulations may induce unintended behavior among the regulated firms that the regulators did not want. The third problem is *implementation*, which means that the rules may be overly restrictive. Collectively, these problems may result in banks seeking activities that have low regulatory capital requirements and high risks and expected returns, and discourage them from activities that have high capital requirements and lower expected returns. Accordingly, lower risk businesses will tend to move away from the banking sector.¹

The incentive compatible approach provides guidelines and principles that can be used to achieve the desired goals.

Moscow (1996) goes on to say that because of the problems associated with command and control, regulations are evolving toward an incentive compatible approach where that attempts align the incentives of the firm's owners with certain social goal. The 1988 Basel Accord is an example of the command and control approach with one standard—an 8% capital requirement applying to all banks. The New Basel Capital Accord (e.g., Basel II)

contains elements of both command and control and the incentive compatible approaches. It too requires 8% capital, but it also provides alternative means for computing the required capital. Nevertheless, because Basel II is both complex and costly to implement one would expect both *unintended consequences* and *implementation* problems to emerge.

Some of the problems are associated with the complexity that comes about as a result of Basel II's increased emphasis on risk management processes. Comptroller of the Currency John D. Hawke Jr. (February 27, 2003) stated that Basel II is a proposal "of immense complexity—greater complexity, in my view, than is reasonably needed to implement sensible capital regulation." Hawke (March 3, 2003) went on to say that the hundreds of pages of rules were "not written for bankers—or for that matter, by or for conventional bank examiners. They're written for mathematicians and economists—'quants.'" The complexity has costs, "for if legislators, customers, and market participants cannot penetrate the rules, can we expect them nonetheless to love and respect them?"

Hawke (February 27, 2003) went on to say that banks complying with Basel II will have lower capital requirements than smaller "non-Basel" banks which will put the smaller banks at a competitive disadvantage. In fact, a study by French (2003) shows that during most of a typical economic cycle, the risk-based capital requirements for Basel II banks will fall below that required under the Prompt Corrective Action (PCA) guidelines.

The cost for implementing Basel II ranges from an estimated \$10 million for small banks to \$150 or more for large banks.² In addition, there will be ongoing costs for maintaining the systems.

Given the arguments about regulatory structures, complexity, and costs, this article examines how some banks and governments evade the capital regulations when it is in their best interest to do so. Stated otherwise, some banks engage in *regulatory arbitrage*, or as it is called here, capital games. This article describes capital games under both the 1988 Capital Accord, and Basel II. Basel II will required for only about 10 large banks in the U.S, and most of the remaining 7,800+ banks will continue to use the 1988 Capital Accord standards.

2. CAPITAL REQUIRED FOR A LOAN

An FDIC study by Burhouse, *et al.* (2003) explained how the capital standards have changed over time. The amount of capital required for a \$100 commercial loan made prior to 1982 was judgmental—there was no set percentage required. Under the 1988 Basel Accord, the required capital the \$100 loan was \$8. Under the Basel II Advanced Internal Rating Based (IRB) approach, the required amount of capital can range from \$0.37 to \$41.65 depending on the borrower's credit rating, maturity of the loan, the probability of default (PD) reflecting the borrower's financial strength, the loss given default (LGD) indicating the severity of the loss, and other factors.

It follows that banks will avoid holding loans that require them to hold excessive capital. Alternatively, banks are creative, and they will structure loans in ways that will reduce capital charges. For example, a bank may issue a 364-day revolving commercial loan with the option to renew it. Such a loan has a 4% capital requirement because the maturity is less than one year. This loan structure is preferable to the alternative of issuing a 2-year revolving commercial loan that has an 8% capital requirement.

Another choice is for banks to calculate or adjust the PD and LGD to meet their needs. It is important to recognize that two or more banks may evaluate the same loan differently. A Basel

Table 1. Example of Expected Loss (EL)

EL =	PD ×	LGD
1% (Loan 1)	5%	20%
1% (Loan 2)	2%	50%

Committee Discussion Paper—Range of Practice in Banks’ Internal Rating Systems (2002) found that banks consider similar *types* of risk factors when evaluating loans and assigning ratings. Examples of the factors include the borrower’s balance sheet, income statement, and cash flow. The Discussion Paper found that “. . . the relative importance of these factors and the *mix* between quantitative and qualitative considerations differed between banks surveyed, and in some cases, between different borrower types within the same bank.” These and other factors affect the PD and LGD that each bank determines on its own. By way of illustration of the impact of such differences, consider a portfolio consisting of two loans of \$1 million each, with the same repayment terms. As shown in equation 1, the expected loss (EL) on the portfolio is equal to $PD \times LGD$. Suppose that one loan has a PD of 5% and the other has a PD of 2% (see Table 1). The PD for a loan can be based on credit ratings and models, such as those provided by Moody’s and KMV, and assumptions about recovery rates and the distribution of the recovery rates. UBS (February 2003) observed that the guidelines for bankers to use when determining are to ensure that they have a “conservative bias” when considering risk. However, conservatism is not something that is easily assessed and compared, especially when the data are sparse. Kealhofer (2003), managing director of KMV Corporation, argues that their model is better at picking credit defaults than agency ratings. Accordingly, a loan can have different PDs depending on the methods and assumptions used to obtain it.

Similarly, the LGD can be based on different models and assumptions about the recovery rate and the distribution of the recovery rate.

Given this background, suppose that there are two \$1 million loans, loan 1 and loan 2 with different degrees of risk (PD). If we allocate an LGD of 20% to the first loan and 50% to the second loan, then both will have the same EL of 1%.

Expected loss = probability of default \times the loss given default

$$EL = PD \times LGD \tag{1}$$

The capital charge is determined by multiplying the amount that is expected to be outstanding at the time of default, known as EAD, by 8%. Thus, both \$1 million loans have the same capital charge (\$1 million \times 1% = \$10,000.00), although their risks are substantially different. Change the models used to obtain the PDs and the other factors, and the capital charges change as well. It is likely that banks will opt for those models that provide the greatest accuracy, but not the highest capital charges.³

A related issue is that the previous discussion implicitly assumed that we were dealing with loans and model in the United States. Katrina Sherrerd (1998) said “Credit analysis for non-U.S. debt securities is a different kettle of fish from the kind of analysis that suffices for U.S. debt. As fixed-income portfolio managers around the world increase their investment in non-U.S. debt, they face different legal standards and reporting requirements, sometimes

a scarcity of information, and political risk concerns that simply do not exist for the debt of the U.S. government, U.S. agencies, or companies domiciled in the U.S.” Although this statement was written for investment managers, it also applies to banks. Thus, even greater opportunities for regulatory arbitrage may exist in some foreign countries.

Karen Shaw Petrou (2003) argues that the capital treatment of Small- and Medium-Sized Enterprises (SMEs) is an arbitrage problem. SMEs are defined as firms with annual revenues up to \$50 million, far larger than small and medium size firms are defined in the U.S. Under Basel II, they are treated the same as loans to individuals (i.e., retail credit) which has a far lower capital charge than large companies. However, they are riskier than large companies, in part, because they cannot be tracked by external credit rating agencies. Petrou (2003) states that banks in Europe can “arbitrage this low regulatory capital against other lenders who must set aside appropriate economic capital.” The favorable treatment for SMEs came about when German Chancellor Schroeder threatened to take Germany out of the Basel negotiations unless this special capital charge was included. Germany does not have U.S. style government agencies to support small and medium sized enterprises.

Finally, there is a competitive equality problem in the application of Basel II. The Advanced Internal Rating Based (A-IRB) when it is adopted will only be required for about ten of the largest U.S. banks, although others may chose to adopt it because of ratings pressure, and for other reasons.⁴ Stated otherwise, the major league banks use the A-IRB capital standards, and other banks have the choice of being in the major or minor league. The minor league banks will continue to use the Basel I standards.

Some regional banks that this will put them at a competitive disadvantage because they will have higher regulatory capital charges on residential mortgages, certain retail credits, and loans to small businesses than the A-IRB banks.

3. DEBT FOR EQUITY

Selling common stock is the most expensive way to increase bank capital, and it may dilute the existing shareholders’ equity. An alternative is to issue trust preferred securities which have the advantage of increasing capital and the return on equity (ROE) because of the increased financial leverage.⁵ Additionally, they are treated as debt of the issuer for tax purposes, and as equity for bank regulatory purposes.

3.1. Trust Preferred Securities

More than 750 bank holding companies of all sizes have issued \$76 billion in trust preferred stock that provides a tax advantage and counts up to 25% toward their Tier 1 capital subject to the approval of the Federal Reserve.⁶ Trust preferred stock also can be used in Tier 2 capital. Trust preferred stocks are traded under a variety of acronyms such as TOPRS (Trust Originated Preferred Shares), QUIPS (Quarterly Income Preferred Shares, Pooled Trust Preferred Certificates), and Hybrid Preferred Securities.⁷ Trust preferred securities should not be confused with adjustable rate preferred stock (ARPS) or money market preferred stock (MMPS) that are subject to a 15% limit in being counted toward Tier 1 capital for state banks.⁸

Typically, the bank holding company (BHC) organizes a “trust” or special purpose entity (SPE) that is a non-taxpaying subsidiary, such as those listed in Table 2. SPEs also are referred to as “Special Purpose Vehicles,” (SPV) and “Variable Interest Entities (VIE). The trust

Table 2. Issuers of Selected Trust/Hybrid Preferred Securities

ABN Amro Capital Funding Trust VI
Citigroup Capital X
FleetBoston Capital Trust IX
JP Morgan Chase Capital XI
Morgan Stanley Capital Trust V
Wells Fargo Capital Trust III

Source: Schwab Bond Source—Taxable Offering, various issues, 2003.

issues two classes of stock—common and preferred shares. The BHC purchases 100% of the common stock, and outside investors buy the trust preferred stock. The common stock typically represents 3% of the total equity in the SPE. More will be said about SPEs shortly.

The proceeds from the sale of the preferred shares are lent to the bank holding company in exchange for the subordinated debt that is held by the trust. The payment terms of the subordinated debt are identical to the payment terms for the preferred shares. The subordinated debt is the sole asset of the trust, and it is subordinated to all other debts of the bank holding company—it is “deeply subordinated.”

The interest payments on the debt are funded with before-tax dollars, and are used to fund the dividends on the preferred stock. The trust preferred securities have a fixed interest rate, are noncallable for a minimum of five years after issuance. The entire principal of the debentures is due at maturity. Payments of interest may be deferred for up to five years (20 consecutive quarters).

Under generally accepted accounting principles (GAAP) rules, because the BHC owns 100% of the common stock in the SPE, the subordinated debt is eliminated as inter-company debt on the bank holding company’s consolidated financial statements. Thus, the preferred dividends are treated as a tax-deductible expense by the bank holding company as long as the dividends are cumulative.

The trust preferred stock is treated as a minority interest in the bank holding company. The preferred stockholders may have no voting rights or limited voting rights. Although trust preferred securities are treated as debt for tax purposes, they are not treated as debt for financial reporting and debt-rating purposes. In that regard, they are considered in the “mezzanine” section of the balance sheet between debt and equity.⁹

In order to be eligible for Tier 1 capital, the dividend distributions to shareholders of the trust preferred securities must be cumulative for a minimum of five consecutive years.¹⁰ If dividends have not been paid within that time, the preferred shares can be exchanged for junior subordinated debt of the trust, and the investors could declare an event of default against the holding company. However, the claims of the preferred stock holders are subordinated to all of the holding company’s existing indebtedness and general obligations.¹¹ The trust preferred securities must have a maturity of 30 years or more, and the issuer may not redeem them for at least five years in order to qualify as Tier 1 capital. Individual banks are not permitted to count trust preferred securities as part of their Tier 1 capital because of their cumulative dividend feature.

By using trust preferred securities, bank holding companies convert debt to an equity investment that adds to their Tier 1 capital. In addition, they can use trust preferred

securities to retire more expensive debt, to fund acquisitions, and for common stock buyback programs.

Many small banks issue trust preferred securities which are then securitized and sold to other small banks. Because banks are not allowed to have reciprocal cross-holdings of capital, the banks invest in investment pools of other small banks. They find the yields on the trust preferred securities attractive in their investment portfolios, and some of them have investment grade ratings. The bottom line is that the capital being raised by banks is from other banks in the system that are taking advantage of taxes and capital rules to boost their capital and improve their investment yields. Interestingly, small banks on average have excess capital ratios. The average capital/asset ratios in 2002 4th Quarter for banks with assets of less \$100 million was 17%, and for banks in the \$100 million–\$10 billion range was 14.3%.¹²

The OCC has cautioned banks that buy trust preferred securities that there is substantial risk associated with them.¹³ Unlike federal funds that are sold by banks, trust preferred securities are not obligations of a bank. They are issued by subsidiaries of bank holding companies and are deeply subordinated debt. Banks that have not documented their holdings of unrated trust preferred securities are the equivalent of investment grade are in violation of 12 CFR 1.

4. SECURITIZATION

Securitization is a form of structured financing that is used to mitigate the portfolio risk of a concentrated exposure by transferring that risk from a bank to outside investors who are willing to take on the risk.¹⁴ The securitized cash flows are sold to investors under a variety of names, including but not limited to collateralized debt obligations (CDOs), collateralized mortgage obligations (CMOs), mortgage backed securities (MBS), planned amortization classes (PACs), interest-only (IOs) and principal-only (POs) strips. Only securitization in the United States is discussed here. Laws and rules concerning securitization in other countries may differ.

4.1. Benefits

The benefits of securitization include mitigating risk, reduced regulatory capital charges, obtaining lower cost financing, and improving their financial ratios. Richard Spillenkothen (1999), Director of the Division of Banking Supervision and Regulation at the Board of Governors of Federal Reserve System, argues that it is good that financial institutions have become more efficient in identifying and transferring risk to investors who are willing to accept them. However, this process has permitted banks to “cherry pick” the lowest risk assets and securitizes them, “thereby reducing their capital requirements far more than they reduce their remaining risks.” Despite these benefits, the Basel Committee on Banking Supervision Consultative Document on Asset Securitisation (2001) notes that securitization has the potential of increasing the overall risk profile of the bank if it is not carried out in a prudent manner. Ambrose, LaCour-Little, and Sanders (2003) find that the banks tend to retain the riskier loans and securitize the better quality loans.

4.2. Structure

Banks pool bank loans, credit card receivables, and commercial and residential mortgages, and then sell them to a special purpose vehicle (SPV). The sale of loans must be a “true sale,”

in contrast to a collateralized borrowing arrangement. The sale removes the loans from the bank's balance sheet. Thus, one use of securitization is to isolate legal liability and ownership. Nevertheless, the selling bank may still have a high-risk residual interest in the underlying assets.¹⁵ Part of that risk may be what is called "implicit recourse" that also is known as "moral recourse," that is discussed below.

4.2.1. Retained Interests

Examples of retained interests include cash collateral accounts, early amortization provisions, over-collateralization, and servicing rights.¹⁶ In cash collateral accounts, the bank deposits funds with a trustee to be used if the proceeds from the collateralized loans are not sufficient to make payments. Early amortization occurs if there is a negative event, then all payments from loans are applied to the most senior securities. A negative event could be the insolvency of the banks or a downgrading of the banks CAMELS rating by regulators.¹⁷ Over-collateralization refers to the bank transferring 5–10% more loans to the SPE than it is required to hold, depending on the degree of risk of those loans.

To illustrate how retained interest might be a problem, suppose that a bank holds a \$100 loan that has an 8% (i.e. \$8) capital requirement. When the loan is sold, the bank no longer requires the \$8 capital. The bank also books a retained interest of \$20 "gain on the sale." Because of the retained interest, the bank is exposed to a downward valuation of the loan due to inaccurate assumptions or changes in market conditions, as well as overstating its earnings. Further suppose the value of the retained interest falls to \$10. The remaining capital may not cover the entire loss.

An OCC Bulletin (December 14, 1999) said "During recent examinations, our examiners have noted an unacceptable number of national banks with risk management systems or internal control infrastructures insufficient to support the institution's securitization activities. Particularly disturbing is the number of cases where the valuation of retained interests on a bank's balance sheet have not been in compliance with the standards prescribed in Statement of Financial Accounting Standard No. 125, 'Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities.' In addition, several banks have inaccurately reported their risk-based capital by failing to appropriately account for recourse obligations arising from securitization activities."

As previously mentioned, some banks also have *implicit recourse* that arises when an institution provides post-sale support to a securitization in excess of the contractual obligation.¹⁸ Implicit recourse can be used in connection with revolving securitizations, such as those used for credit cards and home equity lines of credit. These securitizations may provide that when certain performance criteria reach specific levels, no new receivables can be sold into the securitization, and the principal on the bonds will begin to payout (i.e. early amortization). Once early amortization occurs, the bank could have difficulties using securitization as a continuing source of funds.

By providing implicit recourse, the bank is signaling the market that it still holds some of the risks associated with securitization. When banking supervisors detect implicit recourse, they may require the bank to bring "back on the balance sheet" all of the assets in question for risk-based capital purposes. In other words, they must increase their capital ratios—which defeats one of the purposes of securitization.

4.2.2. *Special Purpose Entities (SPEs)*

SPEs (also known as variable interest entities (VIEs) do not have to be consolidated on a bank's balance sheets as long as outside investors contribute 97% of the capital, most of which is non-recourse debt. Under previous accounting rules, at least 3% equity risk capital has to come from independent investors in order to keep the partnerships' financial statements off the bank's books. The accounting rules changed in 2003 and now 10% equity capital is required.¹⁹ Nevertheless, the stakeholder who holds most of the SPEs risks or rewards, must consolidate the SPE on its balance sheet, with some exceptions.²⁰

Securitized assets can have their credit enhanced by the originators or third parties through overcollateralization, early amortization, letters of credit, surety bonds, guarantees from insurance companies, and by other means. The originating banks may negotiate with rating agencies to determine what credit enhancements are necessary to get a particular rating. This is important because some regulated investors, such as insurance companies and pension plans, cannot invest in securities that do not have an investment grade rating.

The credit enhancements also protect the investors in the event of defaults on the underlying loans. For all practical purposes, the credit enhancements and residual interests provide the equivalent of "economic capital" for securitized assets.²¹

The amount of economic capital depends on the quality of the loans being securitized, and what happens to those loans. For example, collateralized debt obligations (CDOs) can be divided into three or more levels of risk or tranches. The lowest level of risk takes absorbs the first losses, and if there are sufficient losses, they impinge on the next level of risk. It does not take many losses in a pool of 100 companies to wipe out the lowest tranche. The poor level of economic activity in recent years has resulted in large-scale downgrading of credit ratings and widespread bond defaults in early 2003, amounting to \$160 billion worldwide.²² Thus, the value of the economic capital has been undermined.

The SPEs use investment bankers or underwriters to sell the securitized assets to outside investors. However, some banks sell mortgage loans directly into the secondary market to the Federal National Mortgage Association, Federal Home Loan Mortgage Corporation, the Federal Home Loan Banks, and to private sector issuers (e.g. Prudential, General Electric Capital) and investors. The frequently retain the right to service the mortgage loans. An Interagency Advisory on Mortgage Banking (2003) states that there are risks associated with servicing mortgage loans. The mortgage-servicing assets (MSA) can become impaired when interest rates fall and the loans are prepaid. The impairment can cause earnings volatility and the erosion of capital. The Advisory goes on to talk about the valuation and hedging of MSAs.

5. COVERED BONDS

Covered bonds, issued mostly by financial institutions in the European Union, are full recourse bonds that are secured by a pool of assets, such residential and commercial mortgage loans or public sector loans, which remain on the issuing lending institution's balance sheet.²³ Some covered bonds are "structured." Moody's defines structured covered bonds as a covered bond where securitization techniques have been used to enhance its credit rating, or a secured bond issued against a pool of assets in a jurisdiction where there is no law dealing with covered bonds.²⁴

Covered bonds are also known as “asset covered securities” (ACS) in France and Ireland, Cédulas Hipotecarias in Spain, and Pfandbriefe in Germany. The overcollateralized, high quality, low risk assets back the bonds throughout their life. They are usually issued by specialized lenders.

The collateral behind the bonds is expected to have relatively low risks with respect to credit, interest, and foreign exchange. In addition, in many cases the new collateral of similar quality may be substituted for the original collateral.

What is unique about covered bonds is that the EU standards allow banks that invest in these bonds to have a 10% risk-based capital charge, which is less than the 20% capital charge for investing in other high quality asset backed securities.²⁵

6. RESTRUCTURING NONPERFORMING/DEFAULTED LOANS

There are many conventions for classifying nonperforming loans and provisioning for loan losses. In the U.S., for example, the terms “substandard,” “doubtful,” and “loss” are used. The Basel Committee’s “Quantitative Impact Study 3 Technical Guidance,” (2002, paragraph 399) skirts the term “nonperforming” by defining *default* of an obligor to have occurred when either or both of the following has occurred. 1) The bank considers that the obligor is unlikely to pay its credit obligation to the bank in full, without recourse by the bank to take actions such as repossessing collateral. 2) When the obligor is 90 days or more past due on any material credit obligation to the bank. In some cases the 90 day benchmark is used for retail credits and 180 days for corporate credits.

When a loan is in default, the bank may charge-off the loan, or make a provision for losses which may adversely affect the bank’s earnings or capital depending on the method of provisioning used. Alternatively, banks can avoid charge-offs by restructuring those loans that are or may become nonperforming loans. For example, a bank could make a second loan to a nonperforming obligor that is sufficiently large to cover the payments of the loan that is in default and some of the payments of the second loan.

In a related issue, some banks smooth their earnings by taking provisions for loan losses and charge-offs net of recoveries when it is their advantage to do so.

7. GOVERNMENT INTERVENTION

Large scale failures of financial institutions and systemic crises are to be avoided at all costs. Accordingly, governments and regulators find creative ways to get around capital regulations and to help some financial institutions survive. In this section we examine government intervention in the United States and in Japan.

7.1. United States

Market rates of interest soared in the late 1970s and early 1980s. The average interest rate on conventional existing-home mortgage loans increased from 9.70% in 1978 to 16.55% in 1981.²⁶ After 1982, interest rates declined—but the damage was done to the thrift industry. The thrifts were limited as to the types of investments they could make, and they borrowed short-term funds to make long-term mortgage loans. The thrifts made long-term mortgage loans at low fixed-rates in the 1970s held them in their portfolios. Consequently, they faced higher deposit rates and negative net interest margins when interest rates escalated. This gave

rise to a “thrift crises.” From 1980–1990, about 1,000 thrift failures were resolved.²⁷ Even the Federal Savings and Loan Insurance Corporation (FSLIC) was itself in finance distress.

Sheng (1996) states that “Regulators also granted an array of special capital and regulatory forbearance measures that permitted thrifts to stay in business, sometimes for years, even through they were insolvent.” The measures included lower capital and liquidity requirements, net worth certificates and income certificates to boost the accounting capital, deferrals on loan losses, liberal valuations of intangible assets, and so on. Thus, the thrifts regulatory capital included subordinated debentures, intangibles, deferrals, and unrecognized losses as well as tangible net worth.

Ultimately, FSLIC went bankrupt too, and was liquidated under the Financial Institutions Reform, Recovery and Enforcement Act of 1989 (FIRREA). Estimates of the cost of resolving the thrift crises in 1989 ranged from \$80 billion to \$150 billion.²⁸ Later estimates were over \$200 billion.²⁹ FIRREA restored the capital standards to their 1979 level.

7.2. Japan

The economic bubble in Japan burst in the late 1980s, and their economy suffered throughout the 1990s. In the late 1990s, the Japanese the government undertook reforms to return to economic growth.³⁰ Part of the reform included the disposal of financial institution’s non-performing loans that threatened the stability of their financial system. The non-performing loans undermined banks’ profits and capital. The problem was exacerbated because the land acquired by banks as collateral for real estate loans could not be sold because of depressed real estate prices. The government took several actions to deal with this problem. First, they did not require the banks to write off their bad loans, creating the illusion that that the banks were in better condition than they were. Second, several government-backed and private corporate reconstruction funds were established in 2002 to purchase non-performing loans from the banks. In addition, the Bank of Japan can provide “capital reinforcement” to ensure the stability of the financial system.³¹

Another part of the reform package included using credits against future income tax payments (i.e. deferred tax credits) to boost their Tier 1 capital.³² At the end of September 2001, tax credits accounted for 50% of the Tier 1 capital of the major banks in Japan.³³ Deferred taxes are a part of a bank’s income statement, and it is within a governments “national discretion” whether to count them as part of the Tier 1 capital.

Hakuo Yanagisawa (2002), Minister for Financial Services, Japan, said “the capital injection is just like pouring cold water over the burning efforts by the management at the midst of their process to improve the sound financial status and promote profitability of each financial institution. We should understand that such an action would interrupt their devotion and spoil the sense of their duty towards active steps of structural reform of their own. Having said so, however, I do not mean in any sense that I am indifferent to the serious situations of the Japanese financial system. I believe that we must not allow a Japanese financial crisis to happen. In order to avoid any financial crisis, I will not hesitate to inject public capital into financial institutions when and if necessary.”

8. CONCLUSIONS

Bank regulators impose rules for safety and soundness on banks, and then both banks and the regulators find ways to avoid, bend, or evade the rules when it is in their interest to do

so. This article examined some of the common ways that both banks and regulators engage in capital games. Typically, it is the large complex financial organizations that engage in the games. Small banks, at least in the United States, hold capital far in excess of the regulatory requirements.

Basel II is the newest game on the playing field, and it provides lots of opportunities to reduce capital requirements. In Europe, covered bonds are the latest fad in capital games. In the United States, some asset-backed commercial paper (ABCP) issued by SPEs is exempt from the risk-based capital rules.

As previously noted, bank regulators play capital games too. Examples of such interventions include, but are not limited to the “thrift crises” in the U.S. and the faltering Japanese economy.

Capital games are not necessarily bad. They are steps in the evolutionary process that is going on in our financial system.

ENDNOTES

1. See Frye (2001).
2. Petrou (2003).
3. For a discussion of capital charges under various approaches (1988 Accord, IRB, etc.) see “Basel II: Refinements to the Framework” FitchRatings, February 6, 2003.
4. Ferguson (February 27, 2003).
5. Although not discussed here, National banks may invest in trust preferred securities if they meet the rating and marketability requirements of 12 CFR Part 1. See “Interpretive Letter #777,” April 1997. Also see Harvey, Collins, and Wansley (2003) for a study of the pricing of trust preferred securities.
6. See Powell (2004), Kalser (1997), and the “Commercial Bank Examination Manual” (Section 3020) for details.
7. See Jordan (2000) for details. In February 2003, Citigroup Capital Trust IX offered a Hybrid Preferred Security through Charles Schwab & Co.
8. Financial Institution Letters, “Authority of State Banks to Invest in Trust Preferred Securities, FDIC, FIL-16, 99, February 19, 1999.
9. Frischmann and Warfield (1999).
10. Trust preferred stock issues covered by certain interest rate contracts for hedging are not eligible for Tier 1 capital. See Supervisory Letter, Derivative Contracts Hedging Trust Preferred Stock, March 28, 2002; “Approval of the Use of Certain Preferred Stock Instruments in Tier I Capital, October 21, 1996.”
11. Bank One Capital VI Prospectus (2001).
12. *FDIC Quarterly Banking Profile*, Fourth Quarter, 2002, Table III-A.
13. OCC Bulletin, “Unsafe and Unsound Investment Portfolio Practices,” May 22, 2002.
14. For details about securitization, see Kendall and Fishman (1998), and Aidun (1995). For a discussion about securitization and regulatory arbitrage, see Calomiris and Mason (2003), Higgins and Mason (2003). Calomiris and Mason (2003).
15. Bies (October 8, 2002); Interagency Guidance on Asset Securitization Activities (December 13, 1999).
16. The Interagency Guidance on Asset Securitization Activities (December 13, 1999) points that although servicing rights are a retained interest of the seller, they have different risk-based capital requirements than the other retained interests; “Asset Securitisation,” (2001).
17. “Interagency Advisory on the Unsafe and Unsound Use of Covenants Tied to Supervisory Actions in Securitization Documents,” (May 23, 2002).
18. “Interagency Guidance on Implicit Recourse in Asset Securitizations,” (May 23, 2002); OCC Bulletin, “Interagency Questions and Answers on the Capital Treatment of Recourse, Direct Credit Substitutes, and Residual Interests in Asset Securitizations,” (May 23, 2002); Higgins and Mason (2003) also discuss “implicit recourse,” in connection with securitization.
19. FASB Interpretation No. 46, January 2003, concerning Variable Interest Entities created after January 1, 2003. It is presumed that an equity investment of less than 10% of total assets is insufficient. This does not mean that an equity investment of 10% or more is sufficient. The proper amount of equity depends on the activities of the VIE.
20. See OCC News Release NR 2003-72, (September 13, 2003). An exception is given for asset-backed commercial paper (ABCP). Also see OCC “Agencies Issue Rulemakings to Amend Risk-Based Capital Treatment

of Exposures to Asset-Backed Commercial Paper Programs and Securitizations with Early Amortization Provisions,” Interim Final Rule (September 2003), Footnote 2.

21. “Asset Securitisation,” (2001).
22. “Toxic Waste,” March 15, 2003.
23. “The Market For Covered Bonds In Europe,” 2003; “Basel II Spurring Market Creativity?,” 2003.
24. “European Structured Covered Bonds: Moody’s Rating Approach,” (April 10, 2003).
25. The EU standard for covered bonds is outlined in article 22 (4) of the Undertakings for Collective Investments in Transferable Securities (UCITS) directive. In the U.S., special treatment is given in connection with asset-backed commercial paper (ABCP) programs (See OCC News Release NR 2003-72, (September 13, 2003).
26. *Statistical Abstract of the United States 1989, Table 823.*
27. Sheng, 1996; *Resolving the Thrift Crises*, 1993.
28. Sheng, 1996.
29. Cole, McKenzie, and White, 1995.
30. See “The Challenge of Structural Reform. . . .” Joint Report (June 1998)
31. “Emergency Countermeasure to Deflation,” (February, 2002).
32. “Program for Financial Revival,” October, 2002).
33. Toritani and Jones (2003).

REFERENCES

- Aidun, Christopher K., “A Primer on Asset Securitization,” *Journal of Commercial Lending*, September 1995, 19–32.
- Ambrose, Bent W., and Michael LaCour-Little, and Anthony B. Sanders, “Does Regulatory Capital Arbitrage or Asymmetric Information Drive Securitization,” Presented at the annual meeting of the Southern Finance Assoc., Charleston, S.C., December 5, 2003.
- “Approval of the Use of Certain Preferred Stock Instruments in Tier I Capital, October 21, 1996,” *Federal Reserve Bulletin*, November 1996, 1112–1113.
- “Asset Securitisation,” Consultative Document, Basel Committee on Banking Supervision, Basel, Switzerland, Bank for International Settlements, January 2001.
- Bank One Capital VI, Prospectus Supplement, 7.20% Preferred Securities, October 11, 2000.
- Bartholomew, Philip F., *Resolving the Thrift Crises*, Washington, D.C., Congressional Budget Office, 1993.
- “Basel II: Refinements to the Framework,” Fitch Ratings, Credit Polity, Special Report, February 6, 2003, Comments on Basel II, QIS 3, <http://www.bis.org/bcbs/qis/qis3.htm#resp> (visited 4/18/03).
- “Basel II Spurring Market Creativity?” *Global Risk Regulator*, June 2003, 5.
- Bies, Susan Schmidt, Remarks by Governor Bies at Thunderbird, The American Graduate School of International Management, Glendale, Arizona, “Financial Markets and Corporate Governance in the United States and Other Countries,” February 11, 2003.
- Burhouse, Susan, John Feid, George Finch, and Keith Ligon, “Basel and the Evolution of Capital Regulation: Moving Forward and Looking Back,” *For Your Information*, Federal Deposit Insurance Corporation, January 14, 2003.
- Calomiris, Charles, and Joseph H. Mason, “Credit Card Securitization and Regulatory Arbitrage,” *EconPapers*, Federal Reserve Bank of Philadelphia, No. 03–07, 2003.
- Cole, Rebel A., Joseph A. McKenzie, and Laurence J. White, “Deregulation Gown Awry: Moral Hazard and the Savings and Loan Industry,” appears in *The Causes and Costs of Depository Institutions Failures*, Allin F. Cottrell, Michael S. Lawlor, and John H. Wood, editors, Boston, MA., Kluwer Academic Publishers, 1995, 29–74.
- “Commercial Bank Examination Manual,” Section 3000, Board of Governors of the Federal Reserve System, Washington, D.C., (May 2002). <http://www.federalreserve.gov/boarddocs/SupManual/default.htm#cbem>
- “Emergency Countermeasure to Deflation,” The Ministry of Foreign Affairs of Japan, (February 27, 2002). www.mofa.go.jp/policy/economy/japan/measure0202.html (visited 2/20/03).
- “European Structured Covered Bonds: Moody’s Rating Approach,” International Structured Finance, Rating Methodology, Moody’s Investors Service, April 10, 2003.
- FASB Interpretation No. 46, Consolidation of Variable Interest Entities, an interpretation of ARB No. 51, Financial Accounting Standards Board, January 2003.
- FDIC Quarterly Banking Profile*, Fourth Quarter, 2002, Table III-A <http://www2.fdic.gov/qbp/2002dec/cb3.html>
- Ferguson, Roger W., Vice Chairman of the Board of Governors of the Federal Reserve System, Statement before the Domestic and International Monetary Policy, Trade and Technology Subcommittee on Financial Services, U.S. House of Representatives, February 27, 2003.
- Financial Institution Letters, “Authority of State Banks to Invest in Trust Preferred Securities, FDIC, FIL-16, 99, February 19, 1999.

- French, George, "Estimating the Capital Impact of Basel II in the United States," *For Your Information (FYI)*, Federal Deposit Insurance Corporation, December 8, 2003.
- Frischmann, Peter J., and Terry D. Warfield, "Multiple Motivations and Effects—The Case of Trust Preferred Stock," *Issues in Accounting Education Abstracts*, Vol. 14, No. 2, May 1999.
- Frye, Jon, "Weighting for Risk," *Capital Market News*, Federal Reserve Bank of Chicago, December 2001, 1–3.
- Harvey, Keith D., M. Carry Collins, and James W. Wansley, "The Impact of Trust-Preferred Issuance on Bank Default Risk and Cash Flow: Evidence from Debt and Equity Securities Markets," *The Financial Review*, 38, May 2003, 235–256.
- Hawke, John D., Jr., Comptroller of the Currency, Statement before the Subcommittee on Domestic and International Monetary Policy, Trade and Technology of the Committee on Financial Services, U.S. House of Representatives, February 27, 2003.
- Hawke, John D., Jr., Comptroller of the Currency, Remarks before the Institute of International Bankers, Washington, D.C., March 3, 2003.
- Higgins, Eric J., and Joseph R. Mason, "What is the Value of Recourse to Asset-Backed Securities? A Clinical Study of Credit Card Banks," *Working Papers*, Federal Reserve Bank of Philadelphia, No. 00–06, April 2003.
- "Interagency Advisory on Mortgage Banking," Washington, D.C., Office of the Comptroller of the Currency, Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, Office of Thrift Supervision, February 25, 2003.
- "Interagency Advisory on the Unsafe and Unsound Use of Covenants Tied to Supervisory Actions in Securitization Documents," Washington, D.C., Office of the Comptroller of the Currency, Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, Office of Thrift Supervision, May 23, 2002.
- "Interagency Guidance on Asset Securitization Activities," Washington, D.C., Office of the Comptroller of the Currency, Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, Office of Thrift Supervision, December 13, 1999.
- "Interagency Guidance on Implicit Recourse in Asset Securitizations," Washington, D.C., Office of the Comptroller of the Currency, Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, Office of Thrift Supervision, May 23, 2002.
- "Interpretive Letter #777," 12. U.S.C. 24(7)92, Office of the Comptroller of the Currency, Washington, DC, April 1997.
- Jordan, Paul, "Pooled Trust Preferred Stock," *Capital Market News*, Federal Reserve Bank of Chicago, March 2000, 6–7. www.chicagofed.org/publications/publicpolicystudies/emergingissues/pdf/S&R-2000-2.pdf
- Kalser, Kathy R., "Financial Markets," *Regional Outlook*, Federal Deposit Insurance Corporation, Fourth Quarter, 1997, 19–22.
- Kealhofer, Stephen, "Quantifying Credit Risk I: Default Prediction," *Financial Analysts Journal*, January/February 2003, 30–44.
- Kendall, Leon T., and Michael J. Fishman, *A Primer on Securitization*, Cambridge, Mass., The MIT Press, 1998.
- Moscow, Michael H., "The Regulation of Derivatives," appears in *Derivatives and Public Policy, Proceedings of a Conference*, Chicago, Ill, Federal Reserve Bank of Chicago, 1996, 1–6.
- OCC Bulletin, "Interagency Guidance on Asset Securitization Activities," OCC 99–46. Washington, D.C. Office of the Comptroller of the Currency, December 14, 1999.
- OCC Bulletin, "Unsafe and Unsound Investment Portfolio Practices," OCC 2002–19, May 22, 2002.
- OCC Bulletin, "Interagency Questions and Answers on the Capital Treatment of Recourse, Direct Credit Substitutes, and Residual Interests in Asset Securitizations," OCC 2002–22, May 23, 2002.
- OCC News Release, "Agencies Issue Rulemakings to Amend Risk-Based Capital Treatment of Exposures to Asset-Backed Commercial Paper Programs and Securitizations with Early Amortization Provisions," NR 2003–72, September 13, 2003.
- OCC "Agencies Issue Rulemakings to Amend Risk-Based Capital Treatment of Exposures to Asset-Backed Commercial Paper Programs and Securitizations with Early Amortization Provisions" Interim Final Rule, (September 2003). <http://www.occ.treas.gov/ftp/release/2003-72a.pdf>
- Petrou, Karen Shaw, "Policy Issues in Complex Proposals Warrant Congressional Scrutiny," Testimony before the Domestic and International Monetary Policy, Trade and Technology Subcommittee on Financial Services, U.S. House of Representatives, February 27, 2003.
- "Program for Financial Revival—Revival of the Japanese Economy Through Resolving Non-Performing Loans Problems of Major Banks," The Ministry of Foreign Affairs of Japan/Financial Services Agency, Japan, October 30, 2002. www.mofa.go.jp/policy/economy/japan/program0120.html (visited 2/20/03).
- Powell, Donald E., Chairman, FDIC, Remarks Before the Independent Community Bankers Association, San Diego, CA; FDIC, Press Release PR–22–2004, March 16, 2004.
- "Quantitative Impact Study 3 Technical Guidance," Basel Committee on Banking Supervision, Basel Switzerland, Bank for International Settlements, October 2002.

- “Range of Practice in Banks’ Internal Rating Systems” Discussion Paper, Basel Committee on Banking Supervision, Basel Switzerland, Bank for International Settlements, January 2002.
- Sheng, Andrew, “The United States: Resolving Systemic Crisis, 1981–1991,” appears in *Bank Restructuring: Lessons from the 1980s*, Andrew Sheng, editor, Washington, D.C., The World Bank, 1996, 71–86.
- Sherrerd, Katrina F., “Forward” appears in *Credit Analysis Around the World*, Charlottesville, VA, Association for Investment Management and Research (AIMR), 1998, v.
- Spillenkothen, Richard, Director, Division of Banking Supervision and Regulation, “Banking Supervision and Regulation in the Next Millennium,” Remarks made at the New York State Banking Department, New York, New York, Board of Governors of the Federal Reserve System, Speech, October 25, 1999.
- Statistical Abstract of the United States 1989*, Washington, D.C., U.S. Department of Commerce, 1989.
- Supervisory Letter, Derivative Contracts Hedging Trust Preferred Stock, Board of Governors of the Federal Reserve System, SR-02-10, March 28, 2002.
- “The Challenge of Structural Reform and Pursuing Dynamism in Society and Economy,” Joint Report by the Social and Economic Outlook Committee and Economic Entity Role Committee, Economic Council, Japan, June 1998.
- “The Market for Covered Bonds in Europe,” Deutsche Bank, Global Market Research, March 18, 2003.
- Toritani, Reiko, and Philip Jones, “Japanese Banks: Stormy New Year,” *FitchRatings*, January 16, 2003 (www.fitch.com).
- “Toxic Waste,” *The Economist*, March 15, 2003, 68–69.
- UBS AG, Financial Services Group, “The New Accord, Pillar 1—Quantitative Impact Study 3 Technical Guidance,” Comment letter to the BIS, February 7, 2003, <http://www.bis.org/bcbs/qis/qis3.htm#resp> (visited 4/18/03).
- Yanagisawa, Hakuo, M.P., Minister for Financial Services, Japan, presentation at the Symposium on Building the Financial System of the 21st Century: An Agenda for Japan and the United States Warrenton, Virginia September 20, 2002. <http://www.fsa.go.jp/statement/statement.html> (visited 2/20/03).

4. THE INTERNATIONAL TRANSMISSION OF CAPITAL SHOCKS: IMPLICATIONS OF A REVISED BASEL ACCORD FOR DEVELOPING COUNTRIES

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1. INTRODUCTION

In recent decades, financial sector reforms, technological innovation, and the continued development of new financial products and services have fostered a rapidly increasing integration of worldwide financial markets and institutions. The importance of this integration can not be understated, as recent research has noted the significance of financial system development, particularly as it relates to the banking system, in playing a vital role in the economic development of emerging countries. For example, Barth et al. (2004) note that financial system development may contribute to economic growth by leading to greater efficiency in foreign banking markets, improving the accessibility of foreign individuals and firms to financial goods and services, and providing foreign countries greater access to international capital.

In contrast, while critics recognize the potential benefits of increased financial integration, they also note that financial globalization may result in increased fragility, particularly for developing economies, and the financial crises of the 1980s and 1990s serve as a reminder of this heightened economic vulnerability and its implications for real economic activity. For example, Lindgren et al. (1996) argue that financial sector liberalization is a policy shock, and note that the banking systems in a number of countries have experienced problems following liberalization, while Schmukler (2004) notes that globalization can lead to financial crises being transmitted from one country to another through broad channels of transmission—a financial link being one of these channels.

While it is generally accepted that financial instability has associated with it negative externalities, Crockett (1997) notes that policymakers have a number of options in helping

to promote global stability, one of which is through regulation. Recognizing that financial institutions in general, and banks in particular, play a critical role in the global integration of markets, an important component of the international regulatory effort in recent years has been the work of the Basel Committee on Banking Supervision and the resulting Basel Accord. Adopted in 1988, the risk-based capital standards have as their purpose to make regulatory capital requirements responsive to the credit risk in banks' portfolios of assets and off-balance sheet activities, and to establish among the member countries' banks a uniform definition and minimum regulatory level of capital. Over time, the 1988 Accord has become the standard for banks worldwide, having been adopted in over 100 countries. And while capital ratios in many of these country's banking systems rose in the years following the introduction of the Accord, the standards have not been without problems as their simplified approach has failed to adequately differentiate between the credit risk of assets. Such weaknesses resulted not only in regulatory arbitrage, but over time, in an increasing divergence between economic and regulatory capital requirements, thus making regulatory capital ratios less reliable as a measure of the financial health of banking institutions (Ferguson, 2003).²

Given the current worldwide acceptance of the Basel Accord as the standard for capital regulation, and the fact, as noted by Gup (2005), that many countries are expected to adopt the forthcoming revised standards, a number of important policy questions need further examination. One of the innovative features of the revised Accord is the explicit incorporation of credit ratings into the regulatory capital standards. With regard to global financial markets, such an innovation raises the issue of what the implications of a revised Accord will be for international bank lending. The existing research on the impact of the 1988 standards suggests that the revised Accord may have a significant impact on the asset allocation of internationally-active banks. In examining the 1988 Accord, Berger and Udell (1994) note that the risk-based capital standards may function as a regulatory tax, one which places a higher marginal tax rate on high credit risk assets than low credit risk assets, and as such, creates an incentive for banks to reconfigure their asset allocation. Empirical evidence on implementation of the 1988 standards by Furfine (2001), Jacques and Nigro (1997), Brinkmann and Horvitz (1995), Hall (1993), and Haubrich and Wachtel (1993) confirms that some banks responded to the risk-based requirements by not only decreasing their holdings of high credit risk assets, such as business loans, but also by reallocating their assets towards lower risk-weighted government securities.

Also of importance, the link between regulatory capital requirements and bank lending means that the risk-based standards may have implications for macroeconomic activity (Peek and Rosengren, 2000; Blum and Hellwig, 1995). With regard to the revised Accord, the incorporation of credit ratings into regulatory capital requirements raises the issue of increased procyclicality. Studies by Jacques (2004), Segoviano and Lowe (2002), Lowe (2002), Borio, Furfine, and Lowe (2000), and Altman and Saunders (2001) discuss how a regulatory capital scheme that links minimum capital requirements to credit ratings introduces the possibility of banks responding to changes in ratings by altering their balance sheets, thereby accentuating the business cycle and increasing financial market instability. In addition, recent work by Jacques and Schirm (2004) suggests that the revised Basel Accord may complicate the ability of central bankers to undertake monetary policy.

While existing research suggests how the revised standards may influence bank balance sheets, the forthcoming changes to the Accord may be particularly important in developing

economies for a number of reasons. First, Chami et al. (2003) note that because banks are the primary financial intermediaries in most developing economies, and given the explicit capital-lending link created by the risk-based standards, changes in regulatory capital standards may induce changes in bank lending behavior, with important ramifications for economic activity in developing economies. In support of this argument, Chiuri et al. (2001) provide evidence that enforcement of the 1988 Basel Accord led to significant decreases in credit in developing economies. Second, Ferri et al. (2001) conclude that the revised Accord will reduce capital requirements on corporate loans in OECD countries while simultaneously increasing capital requirements on corporate loans in developing economies. Given the changes in relative capital requirements, the revised standards may prompt banks to reduce the amount of credit supplied to borrowers in developing economies (Tanaka, 2003). Finally, Ferri et al. (2001) note that in developing economies corporate credit ratings are strongly linked to the country's sovereign rating. Given the reliance of the revised Accord on credit ratings, and the fact that sovereign ratings have exhibited significant fluctuations during recent crises, Ferri et al. (2001) conclude that the revised Accord may exacerbate swings in commercial lending in foreign countries, thereby further accentuating foreign business cycles.

The purpose of this paper is to examine, in general, the international lending ramifications of a revised Basel Accord—in particular, how it is likely to influence commercial lending in developing economies. Lending by banks from developed economies is an important source of credit availability in many emerging financial markets, as evidenced by the fact that total foreign bank claims on borrowers in developing economies measured U.S. \$275.1 billion in the fourth quarter of 2003.³ But with regard to the risk-based capital standards, to date, most existing theoretical and empirical studies fail to recognize the potential impact of regulatory capital requirements on international lending. Important exceptions are recent work by Chiuri et al. (2002), Acharya (2001), and Peek and Rosengren (2000, 1997). The Peek and Rosengren studies are particularly enlightening as they provide evidence that the risk-based capital standards play an important role in the international transmission of economic shocks (Peek and Rosengren, 1997), and that the standards resulted in a loan supply shock that had significant economic effects (Peek and Rosengren, 2000). As the revised Accord is not due for implementation until 2007, this paper contributes to the existing literature by providing a theoretical model of the international transmission of capital shocks to developing loan markets under the revised Accord, and comparing those changes to the response of banks under the 1988 Accord.

2. THE REVISED ACCORD

As adopted in 1988, the risk-based capital standards explicitly link regulatory capital requirements to primarily credit risk by assigning risk weights to broad categories of a bank's on-balance sheet assets and off-balance sheet activities. Under the 1988 Accord, the risk-based capital standards contain four risk-weight categories: 0 percent for assets that are considered to be free of credit risk; 20 percent for assets with low credit risk; 50 percent for assets with moderate credit risk; and, 100 percent for high credit risk assets. A bank calculates its total risk-weighted assets as the sum of the dollar value of each asset or off-balance sheet activity multiplied by the corresponding risk weight.⁴ In order to meet minimum regulatory capital

Table 1. Risk Weights Under the 1988 and Revised Accords

	Corporate loans	Sovereign loans	Interbank loans
1988 Basel Accord			
OECD country	100%	0%	20%
Non-OECD country	100%	100%	100%
Revised Basel Accord			
AAA to AA– credit rating	20%	0%	20%
A+ to A– credit rating	50%	20%	50%
BBB+ to BBB– credit rating	100%	50%	100%
BB+ to BB– credit rating	100%	100%	100%
B+ to B– credit rating	150%	100%	100%
Below B– credit rating	150%	150%	150%
Unrated credit	100%	100%	100%

Interbank loan risk weights assume option 1 as detailed in the Basel Committee Consultative Document (2004). Under option 2, a preferential risk weight may be applied to claims on banks with an original maturity of three months or less.

requirements, banks must hold Tier 1 capital equal to at least 4 percent of its risk-weighted and total capital (Tier 1 + Tier 2) equal to at least 8 percent of its total risk-weighted assets.⁵

With respect to international lending, the top portion of Table 1 shows the risk-weight categories for loans to foreign counterparties. In general, the 1988 standards differentiate the capital requirements for international loans along three dimensions: 1) the type of borrowing entity (corporate, sovereign, or bank); 2) the location of the borrowing entity (OECD or non-OECD country); and, 3) the maturity of the loan. With regard to corporate borrowing, all loans, regardless of the credit quality or the location of the borrowing entity, are slotted in the 100 percent risk-weight category and require 8 percent capital at the margin. Thus, under the 1988 standards, loans to risky corporate borrowers in developing economies require the same amount of capital as loans to AAA-rated corporations in developed countries.

Currently, the Basel Committee is undertaking a revision of the Accord in an effort to more closely align regulatory capital requirements with the underlying risks in banks' activities. As proposed (Basel Committee, 2004), the revisions will entail a number of refinements including changes in regulatory capital requirements (Pillar 1), enhanced supervision (Pillar 2), and increased disclosure requirements (Pillar 3). As part of the revisions, two general methods exist for banks to calculate their regulatory capital requirements, one based on external credit ratings and the other based on the use of banks' internal credit risk models.⁶ Under the external ratings approach, the current reliance on risk buckets and risk weights is maintained, with modifications being made to remedy some of the Accord's existing flaws. These changes include applying external credit ratings to bank claims on corporate entities, sovereign governments, and foreign banks, and increasing the number of risk buckets to include a 150 percent risk weight category. Specifically, as detailed in the bottom portion of Table 1, risk weights will be based on credit ratings with weights ranging from 20 percent (a 1.6 percent capital charge) for loans to AA– or better rated corporate borrowers to 150 percent (a 12 percent capital charge) on loans to corporate borrowers rated B+ or lower. In addition, under the revised Accord, the regulatory capital requirements on these assets will vary as the credit rating of the underlying entity changes.

3. THE MODEL

As noted earlier, existing research concludes that the 1988 Accord played a significant role in the transmission of capital shocks in one country to the availability of credit in other countries. This occurred despite a regulatory capital framework that failed to differentiate between the credit risk of corporate borrowers. Viewed from the perspective of capital standards as a regulatory tax, the question becomes how a revised Accord, one which differentiates business loans on the basis of credit quality, will alter the international transmission of capital shocks and what the implications will be for credit availability in foreign countries.

To examine this issue, a one-period theoretical model of a representative bank is developed that incorporates both the 1988 and revised standards. An internationally-active bank is assumed to be headquartered in a developed country (referred to as the domestic country), with a representative asset portfolio comprised of domestic corporate loans (L^D), domestic government securities (S^D), and loans to foreign corporations (L^F).⁷ The foreign loans are assumed to be made to corporations in a developing economy but are denominated in the currency of the lending country.⁸ In addition, the bank balance sheet contains deposits (D^D) and capital (K^D), both of which are assumed to be raised in the domestic market. As such, the traditional balance sheet condition requires:

$$L^F + L^D + S^D = D^D + K^D \quad (1)$$

The domestic and foreign loan markets are assumed to be imperfectly competitive with the bank facing a downward sloping demand curve for loanable funds such that:

$$L^F = f_0 - f_1 r_L^F \quad (2)$$

$$L^D = d_0 - d_1 r_L^D \quad (3)$$

where r_L^F and r_L^D are the interest rates on foreign and domestic business loans, respectively. Given the nature of the respective markets, the bank's loans are influenced by the interest rates it offers with the higher the interest rates the bank sets on loans, the more loans decrease. A priori, f_0 , f_1 , d_0 , and d_1 are expected to be positive, with f_1 and d_1 being larger the more competitive the loan markets.⁹ In addition, the bank may hold domestic government securities. These securities are assumed to have no default risk, with the interest rate equaling r_S^D , and recognizing that the safety of government securities, $r_L^D > r_S^D$ and $r_L^F > r_S^D$.

On the funding side of the balance sheet, the bank holds deposits and capital. Similar to the loan markets, the bank can influence the level of deposits raised in the domestic market by the interest rate it offers, r_D^D . Thus:

$$D^D = c_0 + c_1 r_D^D \quad (4)$$

A priori, c_1 is expected to be positive, as the higher the deposit rate the bank offers, the greater the amount of deposits the bank raises.¹⁰ As a result of the imperfectly competitive nature of the domestic deposit market, the bank faces an increasing marginal cost of funds,

$$\text{as } \frac{dD^D}{dr_D^D} > 0.$$

With regard to capital, given the short run nature of the model, it is assumed that the time period is too short for the bank to adjust its equity capital. This assumption is consistent

with the idea that adjusting equity capital may be costly (Stein, 1998; Myers and Majluf, 1984), and theoretical and empirical evidence by Keeton (1989) and Jacques and Nigro (1997) that, subsequent to the implementation of the 1988 risk-based capital standards, capital-constrained banks found it extremely difficult to raise capital and thus adjusted their portfolios primarily by reallocating or reducing assets. Under the revised Accord, banks must meet the risk-based capital requirement that:

$$K^D \geq \gamma_L^F L^F + \gamma_L^D L^D \quad (5)$$

where γ_L^F and γ_L^D are the risk-based capital requirements on foreign and domestic loans, respectively, while government securities have a risk weight equal to zero. Under the 1988 Basel Accord, γ_L^F and γ_L^D are independent of credit quality with all foreign and domestic commercial loans being slotted in the 100 percent risk-weight category. But the revised Accord is more granular with γ_L^F and γ_L^D being inversely related to the credit quality of the corporate borrower.

The domestic bank seeks to maximize profits (π) such that:

$$\pi = r_L^F L^F + r_L^D L^D + r_S^D S^D - r_D^D D^D \quad (6)$$

Under the conditions detailed in equations (1) through (6), the Lagrangian is formed as:

$$\begin{aligned} \mathcal{L} = & r_L^F L^F + r_L^D L^D + r_S^D S^D - r_D^D D^D + \lambda_1 [L^F + L^D + S^D - D^D - K^D] \\ & + \lambda_2 [f_0 - f_1 r_L^F - L^F] + \lambda_3 [d_0 - d_1 r_L^D - L^D] + \lambda_4 [c_0 + c_1 r_D^D - D^D] \\ & + \lambda_5 [\gamma_L^F L^F + \gamma_L^D L^D - K^D] \end{aligned} \quad (7)$$

with the necessary first-order conditions used to solve for the optimal allocation of L^F , L^D , S^D , D^D , r_L^F , r_L^D , and r_D^D .

4. RESULTS FOR CONSTRAINED AND UNCONSTRAINED BANKS

Given the capital-lending link created by the risk-based capital standards, and the incorporation of credit ratings into the revised standards, one important issue that arises is how international commercial lending will respond to capital shocks under the revised Accord. For the purposes of this model, an adverse shock is assumed to occur in the developed country, independent of macroeconomic or financial conditions in the developing market, but causing the capital of the bank in the developed economy to decrease. Under these conditions, in cases where the revised risk-based capital standards are not binding ($K^D > \gamma_L^F L^F + \gamma_L^D L^D$), it can be shown that:

$$\frac{dL^D}{dK^D} = 0 \quad (8)$$

$$\frac{dL^F}{dK^D} = 0 \quad (9)$$

$$\frac{dS^D}{dK^D} = 1 \quad (10)$$

$$\frac{dD^D}{dK^D} = 0 \quad (11)$$

Given the nonbinding nature of the risk-based capital standard, equations (8) and (9) show that regulatory capital requirements on foreign and domestic loans do not enter the bank profit maximization problem, with the bank choosing to sell securities rather than liquidate loans in the event of an adverse capital shock. Specifically, equations (10) and (11) suggest that the bank responds to the capital shock by undertaking a dollar-for-dollar decrease in domestic government securities, with no change in deposits. The change in deposits equals zero because the bank faces an increasing marginal cost of deposits, while the decrease in securities reflects the buffer stock theory of securities holdings (James, 1995), in this case insulating the higher yielding, but more illiquid, foreign and domestic loans from the shock.

Alternatively, the bank is constrained by the revised Basel Accord if $K^D < \gamma_L^F L^F + \gamma_L^D L^D$. Recognizing the constraint introduced by the revised standards, it can be shown that the bank's balance sheet responds to an adverse capital shock by:

$$\frac{dL^D}{dK^D} = \frac{d_1 \gamma_L^D}{f_1 \gamma_L^{F^2} + d_1 \gamma_L^{D^2}} > 0 \quad (12)$$

$$\frac{dL^F}{dK^D} = \frac{f_1 \gamma_L^F}{f_1 \gamma_L^{F^2} + d_1 \gamma_L^{D^2}} > 0 \quad (13)$$

$$\frac{d(L^D + L^F)}{dK^D} = \frac{f_1 \gamma_L^F + d_1 \gamma_L^D}{f_1 \gamma_L^{F^2} + d_1 \gamma_L^{D^2}} > 1 \quad (14)$$

$$\frac{dS^D}{dK^D} = \frac{-f_1(1 - \gamma_L^F)\gamma_L^F - d_1(1 - \gamma_L^D)\gamma_L^D}{f_1 \gamma_L^{F^2} + d_1 \gamma_L^{D^2}} < 0 \quad (15)$$

$$\frac{dD^D}{dK^D} = 0 \quad (16)$$

The results in the capital-constrained case stand in stark contrast to those for an unconstrained bank as they suggest significant differences in bank behavior. The results in equations (12) through (16) are particularly important as the Basel Committee's recent third Quantitative Impact Study (QIS3) suggests that some banks will experience a significant increase in capital requirements when the revised Accord is implemented (Basel Committee, 2003).

For the constrained bank, re-optimization of the balance sheet requires the bank to choose between raising deposits, reducing assets, reallocating the asset portfolio, or some combination of the above. Similar to the unconstrained case, equation (16) shows that there is no change in deposits, as raising deposits will result in an increase in the marginal cost of funding, yet do nothing to alleviate the constraining nature of the risk-based standards. But in contrast to an unconstrained bank, equation (15) suggests that the bank will respond to the capital shock by increasing its holdings of government securities. Because government securities are considered default free and carry a zero percent risk weight, yet pay an interest rate r_S^D , substituting securities for higher risk-weighted assets helps the bank meet the minimum risk-based requirements while also generating interest income.

Critical to an analysis of how the revised Accord influences credit availability is the question of how the bank's loan portfolio responds to the capital shock. Equations (12) and (13) show that the capital shock causes the bank to not only reduce domestic business lending, but also foreign business loans, with equation (14) showing that the decrease in total lending is

more than dollar-for-dollar with the decrease in capital. The magnitude of the contraction for both types of loans depends, in part, on the risk-based capital charges on domestic and foreign business loans. In this scenario, there is clearly a cost to holding a high risk loan as the revised Accord requires the bank to hold γ_L^F dollars of capital for each dollar of foreign loans and γ_L^D dollars of capital for each dollar of domestic loans, yet at the margin requires no capital for government securities. Given the nature of the constraint, the reduction in lending can be explained by the fact that the higher the risk-based capital charge on a loan, the larger the amount of capital freed up by reducing lending.

With regard to the impact of the revised standards on credit availability in the developing economy, two points are particularly noteworthy. First, consistent with empirical findings by Peek and Rosengren (2000, 1997), equation (13) provides a theoretical foundation for how, under the risk-based capital standards, an adverse shock to a bank's capital spills over to foreign lending markets. Specifically, to the degree that the bank has a significant presence in the developing economy's financial market, the capital shock has a potentially large impact on the supply of bank loans to businesses, as the reduction in business lending in the developing country partially insulates businesses in the developed economy from the full effect of the capital shock. This is consistent with Schmukler's (2004) argument that financial liberalization provides a mechanism for the propagation of economic shocks from developed to developing economies.

Second, consistent with Acharya's (2001) "partial integration" of a developing economy's banking sector, the organizational structure of the foreign and domestic banking systems play a critical role in the degree to which economic shocks are transmitted to a developing economy's credit market. This can be seen by noting the presence of d_1 and f_1 in equation (13). As noted earlier, the more competitive the banking system, the more choices borrowers have in obtaining credit, and the greater the value of f_1 . Beim and Calomiris (2001) note the tendency for financial institutions in developing economies to be state-owned or directed, thus suggesting a less competitive banking system with foreign corporate borrowers having fewer available financing alternatives than in developed economies. In this case, financial liberalization of the credit market in the developing economy serves to make the market more competitive, this being signified by an increase in f_1 . To see the effect of liberalization in this case note that:

$$\frac{d\left(\frac{dL^F}{dK^D}\right)}{df_1} = \frac{d_1\gamma_L^F\gamma_L^{D^2}}{(f_1\gamma_L^{F^2} + d_1\gamma_L^{D^2})^2} > 0 \quad (17)$$

While equation (13) emphasized the international transmission of capital shocks, equation (17) shows that while increasing competition benefits the developing financial market, it also has a cost as, *ceteris paribus*, increasing the competitiveness of the developing credit market also increases the sensitivity of business lending in the developing economy to a capital shock emanating from the developed economy.

5. A COMPARISON WITH THE 1988 STANDARDS

Despite the risk invariant nature of regulatory capital charges on business loans under the 1988 standards, the existing research shows that internationally-active banks may transmit capital

shocks to foreign lending markets (Peek and Rosengren, 1997) and that enforcement of the risk-based standards significantly reduced the availability of credit in developing economies (Chiuri et al., 2002). Thus, given the results in the previous section, the question becomes how the international transmission of capital shocks is likely to be different under the revised Accord and what will be the implications for business lending in developing economies.

To examine this question, note that under the 1988 Accord, $\gamma_L^F = \gamma_L^D = 8$ percent. Letting γ_{L88} denote the risk-based capital charge for foreign and domestic business loans under the 1988 Accord, and rewriting equations (12), (13), and (14), it can be shown that:

$$\frac{dL^F}{dK^D} = \frac{f_1}{(f_1 + d_1)\gamma_{L88}} > 0 \quad (18)$$

$$\frac{dL^D}{dK^D} = \frac{d_1}{(f_1 + d_1)\gamma_{L88}} > 0 \quad (19)$$

$$\frac{d(L^F + L^D)}{dK^D} = \frac{1}{\gamma_{L88}} > 1 \quad (20)$$

With γ_{L88} fixed by the Basel Committee at 8 percent, and invariant with respect to changes in credit risk, the results in equations (18), (19), and (20) mean that the domestic bank's contraction in total lending and lending to domestic and foreign corporate borrowers is determined by the relative magnitude of f_1 and d_1 , and not by differences in the credit risk of foreign and domestic loans. This occurs because given the lack of differentiation of risk weights for corporate borrowers under the 1988 Accord, there is no incentive in a regulatory capital sense, for the constrained bank to liquidate one type of loan more than the other.

In contrast, under the revised Accord, γ_L^F and γ_L^D may be different as the regulatory capital requirements for corporate loans are no longer invariant with respect to differences in credit quality. In particular, as noted earlier, good credit quality firms in developed economies may have risk-based capital charges as low as 1.6 percent. But in developing economies, borrowing entities are more likely to either be unrated (Fischer, 2002) or the credit rating of the sovereign generally acts as a ceiling above which the corporate can not be rated more highly (Beim and Calomiris, 2001). Under these conditions, while good credit quality corporate firms in developed economies may see γ_L^D decrease, it is unlikely that corporate entities in developing economies will be able to take full advantage of the lower risk weights afforded to good credit quality companies under the revised Accord.¹¹ To further compound this difficulty, Monfort and Mulder (2000) find that many developing economies have relatively low sovereign ratings, thus suggesting regulatory capital charges on corporate loans in developing countries under the revised Accord as high as 12 percent. Letting $(\)_{rev}$ and $(\)_{88}$ denote the results with respect to the revised and 1988 standards, it can be shown that:

$$\left(\frac{d(L^F + L^D)}{dK^D} \right)_{rev} - \left(\frac{d(L^F + L^D)}{dK^D} \right)_{88} = \frac{f_1\gamma_L^F(\gamma_{L88} - \gamma_L^F) + d_1\gamma_L^D(\gamma_{L88} - \gamma_L^D)}{f_1\gamma_{L88}\gamma_L^{F2} + d_1\gamma_{L88}\gamma_L^{D2}} \begin{matrix} \geq 0 \\ < 0 \end{matrix} \quad (21)$$

$$\left(\frac{dL^F}{dK^D} \right)_{rev} - \left(\frac{dL^F}{dK^D} \right)_{88} = \frac{f_1^2\gamma_L^F(\gamma_{L88} - \gamma_L^F) + d_1f_1(\gamma_{L88}\gamma_L^F - \gamma_L^{D2})}{(f_1 + d_1)\gamma_{L88}(f_1\gamma_L^{F2} + d_1\gamma_L^{D2})} \begin{matrix} \geq 0 \\ < 0 \end{matrix} \quad (22)$$

Equations (21) and (22) show that the difference in how total lending and lending to foreign borrowers responds to capital shocks under the respective Accords depends critically on the relationship between the risk weights, as well as the nature of the lending markets, both foreign and domestic.

With respect to lending in developing economies, two particular scenarios are noteworthy. First, analysis of the revised Accord by Ferri et al. (2001) suggests that under the revised standards $\gamma_L^F > \gamma_{L88} > \gamma_L^D$. Applying this condition, it is unclear whether equations (21) and (22) will be larger under the revised or 1988 Accords, as the results will depend upon, among other factors, the magnitude of the differentials between γ_{L88} and the risk weights under the revised Accord. Alternatively, Fischer (2002) suggests that under the external ratings approach $\gamma_L^F = \gamma_{L88} > \gamma_L^D$ as corporate borrowers in developing economies are more likely to be unrated. Under this condition, both (21) and (22) are positive, thus suggesting that the revised Accord will make total lending by a capital constrained bank more responsive to a capital shock. In this case, the results in equation (22) are particularly disconcerting as they show that under certain conditions, a capital shock in the developed economy causes the developed country's bank to undertake a larger credit contraction in the developing financial market under the revised Basel Accord than would have occurred under the 1988 standards.

6. CONCLUSION

The Basel Committee on Banking Supervision is currently in the process of revising the 1988 Basel Accord. While the purpose of the revisions is to more closely align regulatory capital requirements with the underlying risks in banks' activities, critics have raised a number of concerns with the revised Accord including how it will influence bank lending and macroeconomic activity in developing economies.

One area of the revised Accord that has received insufficient attention in both the theoretical and empirical work is the degree to which the standards transmit economic shocks from one country's financial market to another. For developing economies, this issue may be particularly important, as their financial markets are often less developed and businesses in these countries are often more reliant on banks for financing than comparable firms in developed countries.

This paper serves to partially bridge the gap in the existing literature by developing a simple one-period theoretical model of a representative internationally-active bank in a developed economy that lends to corporations in both developed and developing economies. The results suggest that the degree to which the revised Accord is constraining on banks is a critical factor in how the revised Accord will impact bank lending in developing markets. Specifically, unconstrained banks are shown to respond to a capital shock in the developed economy by reducing securities rather than loans, while banks constrained by the revised standards are shown to decrease lending in both developed and emerging financial markets. Thus, while the revised Basel Accord may have the beneficial effect of reducing the volume of high risk loans, and in doing so increase the safety and soundness of commercial banks, the revised standards may also have the negative effect of transmitting economic shocks to foreign lending markets, and in doing so, reduce credit availability and decrease the level of macroeconomic activity in those countries.

The results of this study are also consistent with recent empirical work on the effects of the 1988 Accord, in that they show that under the standards capital constrained banks

may transmit the effects of domestic capital shocks to foreign lending, thereby reducing the availability of credit to corporate borrowers in those countries. But while shocks may be propagated to developing financial markets under both versions of the Accord, the findings of this study also show that under certain conditions regarding the difference in risk weights and the structure of loan markets, foreign business lending will contract more under the revised Accord than under the 1988 standards, thus increasing financial instability. This issue should be of considerable concern to international policymakers and regulators, as empirical research on the 1988 Accord has already shown that it had a significant effect on credit availability in emerging markets.

Finally, a word of caution is in order. Because the revised Accord is not due for implementation until 2007 at the earliest, it is not clear in practice how internationally-active banks will revise their asset allocation. But the results of the Basel Committee's most recent quantitative impact study suggest that some internationally-active banks will see a significant increase in their required regulatory capital levels. However, such studies are exercises in comparative statics, ignoring, as noted by Saidenburg and Schuermann (2004), the Lucas-style critique that the implementation of the revised Accord, in and of itself, will influence bank portfolio composition and capital levels. Rather, if banks increase their buffer stocks of capital without a corresponding increase in risk in response to implementation of the revised Accord, then they are less likely to become constrained as a result of capital shocks, thereby mitigating some of the potentially negative effects noted earlier. Under these conditions, the revised Accord may have less impact on the international transmission of shocks and the availability of credit in developing economies than did the 1988 standards.

ENDNOTES

1. The views expressed are those of the author and do not necessarily reflect those of the U.S. Department of the Treasury. My thanks to editor Benton Gup for the idea underlying this paper, and Dan Nolle, Dave Schirm and Walter Simmons for their helpful comments. A special thanks to Matthew Watt for his expert editorial assistance.
2. For a discussion of regulatory capital arbitrage, see Jones (2000) and Jackson et al. (1999).
3. See Bank for International Settlements (2004) for details.
4. For off-balance sheet activities, the dollar value of the activity is converted to an on-balance sheet equivalent by the use of credit conversion factors. The on-balance sheet equivalent is then multiplied by the corresponding risk weight in the calculation of total risk-weighted assets.
5. Under the risk-based capital standards, capital has two definitions. Tier 1 capital is comprised mainly of common stock and noncumulative perpetual preferred stock, while Tier 2 capital includes cumulative perpetual preferred stock, term subordinated debt, and the allowance for loan and lease losses.
6. External credit ratings are part of the standardized approach. Internal ratings are used in the foundation internal ratings based approach and the advanced internal ratings based approach. This study focuses on the standardized approach. The revised Accord also applies capital charges based for operational and market risk. This study is only concerned with the effects of the revised standards as it relates to credit risk. For more information on the various approaches see Basel Committee (2004).
7. For simplicity it is assumed that the domestic bank makes loans in the developing economy without establishing a branch, agency or subsidiary in the foreign country, or buying a foreign bank. Saunders and Cornett (2000) note a number of different forms of bank entry into foreign countries.
8. Because of this assumption, no allowance is made for incorporating foreign exchange rate risk into the model.
9. Peek and Rosengren (1995) note that under perfect competition, the sensitivity of loan demand with respect to changes in interest rates will be infinite. While the loan demand equations in this model and their model are generally similar, the same conclusion would hold with respect to d_1 and f_1 in this model.
10. It is also the case that the more competitive the market for deposits, the greater is c_1 , with it being infinite under perfect competition as noted by Peek and Rosengren (1995).

11. Fischer (2002) is careful to note that this may not occur for banks using the internal ratings based approach. This then raises competitive equity issues between banks on the standardized approach and those using the advanced internal ratings based approach regarding the amount of capital that must be held against business loans.

REFERENCES

- Acharya, V.V., Competition Among Banks, Capital Requirements and International Spillovers, *Economic Notes*, Vol. 30, No.3, November 2001, 337–358.
- Altman, E. and A. Saunders, An Analysis and Critique of the BIS Proposal on Capital Adequacy and Ratings, *Journal of Banking and Finance*, Vol. 25, No. 1, January 2001, 1721–1742.
- Barth, J.R., G. Caprio, and D.E. Nolle, Comparative International Characteristics of Banking, *Economic and Policy Analysis Working Paper*, Office of the Comptroller of the Currency, No. 2004-1, January 2004.
- Bank for International Settlements, Consolidated Banking Statistics for the Fourth Quarter of 2003, April 2004.
- Basel Committee on Banking Supervision, International Convergence of Capital Measurement and Capital Standards: A Revised Framework, June 2004.
- Basel Committee on Banking Supervision, Quantitative Impact Study-3, Overview of Global Results, May 5, 2003.
- Beim, D.O. and C.W. Calomiris, *Emerging Financial Markets*, McGraw-Hill Irwin Publishing Co., 2001.
- Berger, A.N. and G.F. Udell, Did Risk-Based Capital Allocate Bank Credit and Cause a 'Credit Crunch' in the United States? *Journal of Money, Credit, and Banking*, Vol. 26, No. 3, August 1994, 585–628.
- Blum, J. and M. Hellwig, The Macroeconomic Implications of Capital Adequacy Requirements for Banks, *European Economic Review*, Vol. 39, No. 2, April 1995, 739–49.
- Borio, C., C. Furfine, and P. Lowe, Procyclicality of the Financial System and Financial Stability: Issues and Policy Options, *Bank for International Settlements conference Marrying the Macro- and Microprudential Dimensions of Financial Stability*, BIS Papers No. 1, October 2000, 1–57.
- Brinkmann, E.J., and P.M. Horvitz, Risk-Based Capital Standards and the Credit Crunch, *Journal of Money, Credit and Banking*, Vol. 27, No. 3, August 1995, 848–863.
- Chami, R., M.S. Khan, and S. Sharma, Emerging Issues in Banking Regulation, IMF Working Paper WP/03/101, May 2003.
- Chiuri, M.C., G. Ferri, and G. Majnoni, The Macroeconomic Impact of Bank Capital Requirements in Emerging Economies: Past Evidence to Assess the Future, *Journal of Banking and Finance*, Vol. 26, No. 5, May 2002, 881–904.
- Chiuri, M.C., G. Ferri, and G. Majnoni, Enforcing the 1988 Basel Capital Requirements: Did it Curtail Bank Credit in Emerging Economies? *Economic Notes*, Vol. 30, No. 3, November 2001, 399–419.
- Crockett, A., Why is Financial Stability a Goal of Public Policy? *Maintaining Financial Stability in a Global Economy*, a symposium sponsored by the Federal Reserve Bank of Kansas City, August 1997, 7–36.
- Ferguson, R., Remarks at the Risk Management Association's Conference on Capital Management, Washington, D.C., April 9, 2003.
- Ferri, G., L. Liu, and G. Majnoni, The Role of Rating Agency Assessments in Less Developed Countries: Impact of the Proposed Basel Guidelines, *Journal of Banking and Finance*, Vol. 25, No. 1, January 2001, 115–148.
- Fischer, S., Implications of Basel II for Emerging Market Countries, William Taylor Memorial Lecture No. 7, Group of Thirty, September 2002, 7–20.
- Furfine, C., Bank Portfolio Allocation: The Impact of Capital Requirements, Regulatory Monitoring, and Economic Conditions, *Journal of Financial Services Research*, Vol. 20, No. 1, September 2001, 33–56.
- Gup, B., Insights From a Global Survey on Bank Capital, in *Capital Markets, Globalization, and Economic Development*, B. Gup ed., Kluwer Publishing Co., forthcoming 2005.
- Hall, B., How Has the Basle Accord Affected Bank Portfolios? *Journal of the Japanese and International Economies*, Vol. 7, No. 4, December 1993, 8–40.
- Haubrich, J.G. and P. Wachtel, Capital Requirements and Shifts in Commercial Bank Portfolios, *Economic Review*, Federal Reserve Bank of Cleveland, Vol. 29, No. 3, 1993, 2–15.
- Jackson, P., C. Furfine, H. Groeneveld, D. Hancock, D. Jones, W. Perraudin, L. Radecki, and M. Yoneyama, Capital Requirements and Bank Behaviour: The Impact of the Basle Accord, *Basle Committee on Banking Supervision Working Papers*, No. 1, April 1999.
- Jacques, K.T., Procyclicality, Bank Lending, and the Macroeconomic Implications of a Revised Basel Accord. U.S. Department of the Treasury working paper, August 2004.
- Jacques, K.T. and P. Nigro, Risk-Based Capital, Portfolio Risk, and Bank Capital: A Simultaneous Equations Approach, *Journal of Economics and Business*, Vol. 49, No. 6, November/December 1997, 533–547.
- Jacques, K.T. and D. Schirm, The Effectiveness of Monetary Policy Under a Revised Basel Accord, *The New Basel Capital Accord*, Benton Gup editor, Thomson South-Western Publishing Co., 2004, 217–238.

- James, C., Discussion, *Federal Reserve Bank of Boston Conference Series, Is Bank Lending Important for the Transmission of Monetary Policy?* Conference Series No. 39, June 1995, 76–79.
- Jones, D., Emerging Problems with the Basel Capital Accord: Regulatory Capital Arbitrage and Related Issues, *Journal of Banking and Finance*, Vol. 24, No. 1–2, January 2000, 35–58.
- Keeton, W.R., The New Risk-Based Capital Plan for Commercial Banks, *Economic Review*, Federal Reserve Bank of Kansas City, December 1989, 40–60.
- Lindgren, C.J., G. Garcia, and M.I. Saal, *Bank Soundness and Macroeconomic Policy*, International Monetary Fund, 1996.
- Lowe, P., Credit Risk Measurement and Procyclicality, *Bank for International Settlements Working Paper*, No. 116, September 2002.
- Monfort, B. and C. Mulder, Using Credit Ratings for Capital Requirements on Lending to Emerging Market Economies: Possible Impact of a New Basel Accord, IMF Working Paper WP/00/69, March 2000.
- Myers, S. and N. Maljuf, Corporate Financing and Investment Decisions When Firms Have Information That Investors do not Have, *Journal of Financial Economics* Vol. 13, No. 2, June 1984, 187–221.
- Peek, J. and E. Rosengren, Collateral Damage: Effects of the Japanese Banking Crisis on Real Activity in the United States, *American Economic Review*, Vol. 90, No. 1, March 2000, 30–45.
- Peek, J. and E. Rosengren, The International Transmission of Financial Shocks: The Case of Japan, *American Economic Review*, Vol. 87, No. 4, September 1997, 495–505.
- Peek, J. and E. Rosengren, Bank Lending and the Transmission of Monetary Policy, *Federal Reserve Bank of Boston Conference Series, Is Bank Lending Important for the Transmission of Monetary Policy?* Conference Series No. 39, June 1995, 47–68.
- Saidenburg, M. and T. Schuermann, The New Basel Capital Accord and Questions for Research, *The New Basel Capital Accord*, Benton Gup editor, Thomson South-Western Publishing Co., 2004, 97–124.
- Saunders, A., *Financial Institutions Management: A Modern Perspective*, Irwin McGraw-Hill Publishing Co., 3rd edition, 2000.
- Schmukler, S.S., Financial Globalization: Gain and Pain for Developing Countries, Federal Reserve Bank of Atlanta *Economic Review*, second quarter 2004, 39–66.
- Segoviano, M.A. and P. Lowe, Internal Ratings, the Business Cycle and Capital Requirements: Some Evidence From an Emerging Market Economy, *Bank for International Settlements Working Paper*, No. 117, September 2002.
- Stein, J.C., An Adverse-Selection Model of Bank Asset and Liability Management with Implications for the Transmission of Monetary Policy, *RAND Journal of Economics*, Vol. 29, No. 3, Autumn 1998, 466–486.
- Tanaka, M., The Macroeconomic Implications of the New Basel Accord, *CESifo Economic Studies*, Vol. 49, No. 2, Summer 2003, 217–232.

5. DESIGNING BANKING SECTOR SAFETY NETS: THE AUSTRALIAN EXPERIENCE

KEVIN DAVIS¹

1. INTRODUCTION

At the start of 2004 Australia and New Zealand were the only two countries in the OECD which did not have some explicit form of deposit insurance. Given the trend world wide towards inclusion of deposit insurance as an integral component of the “safety net” associated with banking regulation it is of interest to examine why the Antipodean approach has, to date, been different. Indeed, a wide ranging official review of Australian financial sector regulation conducted in 1997 (Wallis, 1997), explicitly recommended against introduction of deposit insurance.

More recently, however, the topic has reemerged as a matter for public policy debate, driven, perhaps unusually, not by developments in the banking sector, but by Australian experience in the insurance industry. In March 2001, one of Australia’s largest insurance companies, HIH, failed with a shortfall of assets relative to policy and other liabilities estimated to be in the order of AUD 4 billion (USD 2 billion at the exchange rate of the time). Although there was no policy holder protection scheme in existence, the Australian government (after a delay of several months) introduced a taxpayer funded compensation scheme for retail customers of the failed institution. The resulting cost to taxpayers is in the order of AUD 800 million. In addition, two State governments assumed liability for payments to certain beneficiaries under compulsory third party insurance policies (workers compensation, auto insurance etc) written by HIH², substantially increasing the cost borne by government.

This experience prompted a government initiated review of the case for deposit insurance, and several possible reasons can be identified. First, the HIH Royal Commission report (HIH Royal Commission, 2003) recommended the introduction of a policy holder guarantee

scheme, thereby putting the issue of financial sector safety net arrangements firmly in the public policy debate. Second, as a result of the Wallis Report's recommendations, Australia has an integrated prudential supervisor, The Australian Prudential Regulation Authority (APRA), responsible for supervising deposit taking institutions, life and general insurance, and superannuation (pension) funds. To consider introducing a guarantee scheme as part of the safety net relevant to some financial products provided by institutions supervised by APRA without at least considering the merits of similar schemes for products (such as deposits) provided by other institutions would seem shortsighted. This appears to be particularly so when the widespread international use of deposit insurance schemes is compared with the relatively limited use of policy holder protections schemes.

In addition to these specifically Australian features, the continued international growth of deposit insurance schemes since the Wallis Report, and the "best practice" pronouncements of international agencies such as the IMF and World Bank in favor of (well designed) deposit insurance, perhaps suggested a need to review whether the negative view of the merits of deposit insurance of the Wallis Report was still warranted.

Following what has become common Australian practice towards the process of financial reform, the Australian Government initiated a Study of Financial System Guarantees in September 2003 to provide opportunity for public consultation and debate on the topic, before any policy changes would be considered. A focus of the Study was which, if any, financial products (including insurance and deposits) had characteristics which would warrant the introduction of guarantee schemes providing limited coverage to retail customers. This chapter draws on that study (Davis, 2004) to review the issues involved in a consideration of whether deposit insurance is warranted as a component of a financial system safety net for Australia.³

The case, it is argued, is finely balanced, with the relative weights to be attributed to various arguments important and, in the absence of strong empirical evidence, open to debate. It is suggested here that, on balance, a case exists for introduction of some form of deposit insurance scheme (with characteristics to be outlined subsequently), but it should be noted that this conclusion is at variance to the views generally expressed by executives of deposit taking institutions and their industry associations as part of the public consultation process. It is unlikely that a policy decision on the issue will be made until some time in 2005.

The remainder of this chapter is structured as follows. Section 2 provides an overview of the Australian deposit taking sector and the approach to regulation, depositor protection, and failure resolution which has been followed to date. Section 3 draws on that experience to review the merits of the arguments for and against introducing deposit insurance into the Australian financial system. Section 4 considers some features of the type of scheme which might be appropriate given the institutional characteristics of the deposit taking sector. Section 5 provides concluding remarks.

2. INDUSTRY STRUCTURE, REGULATION AND DEPOSITOR PROTECTION

The deposit taking sector in Australia consists of three segments: banks, building societies and credit unions. All are subject to common licensing and regulation by APRA under the category of approved deposit-taking institutions (ADIs), with banks differentiated within that category primarily by a minimum capital size requirement. In practice, size, financial sophistication, range of activities, balance sheet structure, and organizational form (joint

Table 1. The ADI Market, June 2003

Classes of ADIs	Number of ADIs	Total Assets ¹ as per cent of ADI Sector
<i>Domestic banks</i>	13	79.0
Major banks	4	66.0
Other	9	13.0
<i>Foreign banks</i>	37	17.2
Subsidiaries	13	7.2
Branches	24	10.0
<i>Other ADIs</i>	201	3.7
Building societies	14	1.2
Credit unions	187	2.5
Total	251	100.0

¹ Assets in Australia.

Source: Davis (2004, Table B, p 175).

stock versus mutual ownership) are characteristics which distinguish the three segments, but all are effectively banking institutions raising deposit funds from the public. The term ADI will be used henceforth.

Table 1 shows the structure of the ADI sector in Australia at June 2003. The dominance of the four major banks is readily apparent, with the heavily skewed size distribution suggesting to some commentators a potential problem for any ADI wide contributory deposit insurance scheme.

What is also noteworthy about the sector structure, particularly for considering depositor protection issues, is the relationship between domestic deposit liabilities and assets in Australia (transactions with residents on the domestic book of the institution⁴) of the different groups. The Australian banks have Australian assets significantly in excess of Australian deposit liabilities. For the major banks only some 50 percent of the funding of Australian assets comes from Australian deposits with the remainder due to equity and other regulatory capital, subordinated debt issues and overseas borrowings (through branches and subsidiaries). The difference is much less for building societies and credit unions, but the buffer of Australian assets over Australian liabilities is significant and larger than might be suggested by a focus solely on capital ratios.

These figures assume major importance in examining the nature of depositor protection existing in Australia because of the operation of *depositor preference* legislation found in the *Banking Act*. Specifically, Subsection 13A (3) of the *Banking Act* provides that⁵:

‘If an ADI becomes unable to meet its obligations or suspends payment, the assets of the ADI in Australia are to be available to meet that ADI’s deposit liabilities in Australia in priority to all other liabilities of the ADI’.

Further provisions of the *Banking Act* require an ADI to hold assets in Australia greater than deposits in Australia.

Given the existence of depositor preference and the current structure of bank balance sheets, there is, in aggregate, a very substantial buffer of claimants on Australian assets who rank behind Australian depositors. At this time, the severity of failure required for Australian depositors of a major bank to lose money is so extreme, that the probability of losses to

Table 2. ADI Balance Sheet Characteristics (June 2003)

	Major Banks Per cent	Other Domestic Banks Per cent	Foreign Bank Branches ¹ Per cent	Building Societies Per cent	Credit Unions Per cent
Total Assets/Total Liabilities	108	108	100	108	109
Australian assets/Australian deposit liabilities (excluding CD's)	213	193	204	112	116
Australian assets/Australian deposit liabilities (including CD's)	179	148	148	111	116
Number of Institutions	4	9	24	14	187

¹The ratios for foreign bank subsidiaries are not markedly dissimilar.
Source: Davis (2004, Table F, p 183).

Australian depositors and the likely extent of any such losses are very small. Thus the focus of some commentators on the skewed asset distribution of ADIs as an impediment to pooling of risks for a deposit insurance fund misses the critical point that risks to such a fund are not closely related to the asset size of the institutions involved.

These aggregate figures do, however, disguise some variability across banks, and it is possible that changes in the relative cost of alternative sources of funds could cause the future structure of bank balance sheets to be markedly different (even for the four majors). For example, one relatively recent entrant into banking in Australia had (at end July 2004) a ratio of Australian assets/Australian deposit liabilities of 118 (significantly less than the industry average), on a balance sheet size of \$20 billion, while another of size \$2 billion had a ratio of 114.⁶

Even in these latter cases, and for Building Societies and Credit Unions, current balance sheets indicate a significant buffer of capital and other subordinated liabilities to provide protection to Australian depositors as shown in Table 2.

Complementing the depositor preference rules is the application of the Basel Capital Accord to all ADIs, requiring capital to exceed eight per cent of risk weighted assets. For the non-bank ADIs and smaller banks with primarily Australian operations and few non-deposit liabilities, the requirement to comply with this minimum capital ratio is potentially more relevant for assessing the level of depositor protection than is the operation of depositor preference rules. The effectiveness of such capital regulation in protecting depositors, however, depends on the veracity of asset valuations and the enforcement of minimum requirements, rather than forbearance, by the supervisor.

Examination of the historical record over several decades, without knowledge of subsequent regulatory changes, would not give significant comfort in this regard. In the late 1980s and early 1990s, two large State Government owned banks failed, the largest building society failed⁷, and two relatively large credit unions failed. In no case did Australian depositors lose money, but that reflected the facts of government ownership (and thus liability), taxpayer funded bail-outs, and in the case of one credit union the operation of a (now defunct) State industry-based "stabilization" fund.

The structural problems mitigating against adequate supervision of the ADI sector were attended to during the course of the 1990s, firstly by creation of a national supervisor for non-bank ADIs (rather than relying on state government based supervision) and subsequently by the creation of APRA in 1998, with responsibility for all ADIs as well as insurance and superannuation. Strict quarterly reporting requirements, involvement of external auditors

in the supervisory process, application of the Basel Capital Accord, and other regulatory restrictions involving such things as large exposures and liquidity management requirements are among the regulatory requirements faced by ADIs. Although there is no legal requirement to enforce “prompt corrective action” by the supervisor in dealing with troubled institutions, APRA’s inability to foresee the troubles facing HIH and its eventual (costly) failure, have led to improvements in the governance and incentive arrangements for APRA which are designed to prevent forbearance and induce prompt action whenever potential breaches of minimum capital requirements are suspected.⁸

In summary, Australia’s financial supervisory and safety net structure has not included deposit insurance. Current strong capital adequacy requirements and depositor preference provisions, allied with strict supervisory activities, could be seen as suggesting little need for introduction of such a scheme. At the same time it can be argued that an implicit insurance scheme already exists—despite government disavowal—prompted in part by a history of measures taken to protect (at least some) customers of failed financial institutions. Whether the current approach (which can be characterized as either implicit guarantees or as a case-by-case government response to compensation following failure) is preferable to introduction of an explicit scheme providing limited deposit insurance to retail customers is considered in the following section.

3. ASSESSING THE CASE FOR CHANGE

The case for introducing deposit insurance as a component of safety nets has been reviewed by many authors, including recently by Demigurc-Kunt and Kane (2002) who noted that “deposit insurance is neither always good nor always bad. It can be a useful part of a country’s overall system of bank regulation and financial markets”. They argue that poorly designed schemes can create significant risks for taxpayers if institutional arrangements inhibit market discipline and do not provide appropriate incentives for regulators to prevent forbearance towards weak institutions.

This perspective highlights the fact that a cost benefit analysis of the case for introducing deposit insurance has two major components. On the one hand, from an *ex post* perspective, a deposit insurance scheme is simply a mechanism for redistributing across society the losses which have occurred as a result of an ADI failure. Whether such redistribution is necessary or desirable (which may depend on the type of scheme involved) is one relevant component of the cost benefit analysis (as are the administrative and compliance costs of operating such a scheme). On the other hand, such an *ex post* perspective is, by itself, inadequate, since it ignores the potential behavioral consequences, and their economic effects, which may arise from the existence (and design) of a deposit insurance scheme. The cost benefit calculation thus also needs to incorporate an assessment of behavioral responses and their consequences such as those examined by Demigurc-Kunt and Kane.

3.1. Loss Redistribution

Any assessment of the need for and merits of redistribution of losses involved in a deposit insurance scheme needs to take account of the counterfactual. If there were no explicit deposit insurance scheme and an ADI failure occurred how would the failure be resolved and what losses would be incurred by its depositors?

In the absence of a government bailout, depositors would face two potential types of loss. One is the possibility that assets of the failed institution are inadequate to meet depositor claims. (Remember that depositors rank ahead of other claimants under depositor preference legislation, so that the failed institution's assets may still be sufficient to meet depositor claims in full). The second is temporary loss of access to their deposit funds, and a period of uncertainty about what financial loss might be incurred.

These latter transition costs depend very much on how the regulatory failure management process operates. In some cases, it may be that the institution's decline is sufficiently orderly that the regulator (APRA) is able to facilitate a transfer of business or use other resolution processes which enable (at least some) depositors continued easy access to their funds. In others, however, the extent of potential insolvency may be sufficiently unclear as to create difficulties for arranging an orderly exit of the institution with minimal transition costs for depositors. In these circumstances an explicit deposit insurance scheme has the advantage that it enables immediate payouts to insured depositors (typically involving transfers of accounts to other institutions, rather than explicit cash payouts), with the insurer becoming a substitute claimant on the failed institution. Given a lack of experience and some uncertainty about how well existing failure management mechanisms would operate for ADIs in a distress situation in Australia under current regulatory arrangements, the clearer specification of such mechanisms which is associated with an explicit scheme is one significant advantage.⁹

The possibility and scale of financial losses to depositors at a failed institution in the absence of an explicit scheme also depends upon government policy. Here, despite an avowal of *caveat emptor*, Australian governments have shown a tendency to use taxpayers' funds to at least partly compensate some individuals facing financial loss from financial institution failure.¹⁰ The responses to the HIH insurance failure in 2001, and to the failure in 2002 of a medical insurance fund (UMP/AMIL), are recent cases in point.¹¹ In the late 1980s—early 90s, the State Governments of Victoria and Western Australia respectively bailed out depositors of a large building society and credit union operating in their states. Failures of the State Government owned banks in Victoria and South Australia at the start of the 1990s, also saw depositors protected by those Governments as owners. Consequently, no depositor has lost money from the failure of an Australian ADI since depositors in the Primary Producers Bank of Australia lost minimal amounts in 1931.

This past experience suggests that it is at least arguable that public expectations and political proclivities are for Australian governments to protect (at least) some groups of depositors from loss due to ADI failure. If this is so, the introduction of explicit deposit insurance would not necessarily involve significant change to the losses eventually faced by those groups at a failed ADI, but would have the benefit of providing greater clarity regarding their exposure to potential losses. A potentially more important benefit is that the contingent liability for funding the compensation to those depositors would be shifted from the taxpayer to the contributors to the deposit insurance scheme (who are also, in an *ex ante* sense, the potential beneficiaries from the scheme).¹²

A further inference which might be drawn from past experience and practice is that there exists a public policy objective that retail customers of some financial institutions who are unable to assess counterparty risk should be protected from such loss. Three factors provide support for such an inference. The first is the observed tendency for bail outs. The second is the existence of a separate regulatory and supervisory body (APRA) with a

mission “to establish and enforce prudential standards and practices designed to ensure that, under all reasonable circumstances, financial promises made by institutions we supervise are met within a stable, efficient and competitive financial system”.¹³ While such a mission clearly stops short of guaranteeing deposits, there is a difficult political balance in having a government authority charged with that supervisory role and simultaneously claiming that *caveat emptor* should apply if failure does occur. The existence of a regulatory body specifically for a group of financial institutions reflects both the special role of such institutions in the economy and the problems which many customers face in assessing the financial strength and health of such institutions.

The third factor supporting the view that public policy places great weight on depositor protection lies in the existence of explicit depositor preference legislation (Banking Act, 1959, subsection 13A (3)) which places Australian depositors as the most senior claimants on a failed ADI. Together with subsection 13A (4) of the Banking Act which requires ADIs to hold assets in Australia exceeding deposit liabilities in Australia, this creates a significant buffer of more junior claimants and protection for depositors.

While depositor preference provides an illustration of the political desire for existence of a safety net to protect Australian depositors from loss, it also creates the possibility that it serves as an effective substitute for explicit deposit insurance, thus rendering the latter unnecessary. If Australian ADI balance sheets were, for example, structured such that the possibility of a failure of the scale needed to inflict losses upon depositors were exceptionally small, the case for an explicit scheme, on grounds of protection from financial loss, might be weakened. For example, the short term probability of failure of a hypothetical ADI with assets of \$100m, deposits of \$25m, other debt liabilities of \$70m and equity of \$5m, may be relatively high, while the probability of a shortfall of assets relative to deposit liabilities would be extremely small.

For some Australian ADIs, with their current balance sheet structures as shown in Table 2, the short term probability of failures which are large enough to create financial losses for depositors is indeed extremely small. At the same time, the assessment of the merits of a scheme needs to consider more general circumstances. First, not all ADIs currently operate with such a large buffer of non-deposit funding. Second, new ADI institutions with low non-deposit funding may emerge over time and gain significant market share. Third, over a longer horizon, non-deposit funding may prove sensitive to perceptions of ADI solvency leading to marked declines in the relative share of non-deposit liabilities at times of stress and potential failure. Fourth, at least some part of the explanation for relatively high use of non-deposit funding may lie in the existence of the depositor preference requirements themselves. By subordinating such claims to those of depositors, the cost of such funding is increased, but this effect may be moderated if deposit funding is a small part of total non-equity funding. Introducing explicit deposit insurance by itself would not change this, but would provide the opportunity to consider whether depositor preference remains warranted as a component of the safety net.

The figures in Table 2 suggest that, based on current balance sheet structures, the pure insurance (loss redistribution) arguments for introducing a deposit insurance scheme are not overly strong. Even for those institutions which rely heavily on deposit funding, capital ratios which exceed minimum requirements and regulatory oversight suggest low probability of failures which would lead to significant losses for depositors. At the same time this suggests

that the pure insurance costs of a scheme, and resulting premium rates for participants, would be relatively low. If both potential benefits and costs associated with the loss redistribution function are small, greater importance may attach to the assessment of other benefits and costs associated with introduction of a scheme.

Among the other costs are the administrative and compliance costs associated with any scheme. These costs include the resource costs associated with supervision and investigation by the deposit insurer. In Australia, such activities are undertaken by APRA and funding for those activities raised by levies on ADIs. Hence the incremental costs of supervision and investigation are potentially minimal (if not zero). Other administrative costs depend upon the type of scheme adopted, and there is scope for scheme design which would keep such costs very low. Finally, compliance and reporting costs would appear to be little changed from those currently incurred as a result of the supervisory process.

3.2. Behavioral Consequences and their Economic Effects

Two main types of potential behavioral effects can be identified, one beneficial and one detrimental. The beneficial effect often underpins the argument for explicit deposit insurance as a mechanism for reducing bank runs and systemic financial crises. As demonstrated by Diamond and Dybvig (1983), the “sequential servicing” characteristic of bank deposits and liquidity production activities of banks, exposes even initially solvent banks to the possibility of destructive runs. In addition, the inability of depositors to distinguish specific from general factors affecting bank solvency creates the risk of contagion. Deposit insurance is one potential solution to this problem.

In practice, the limits placed on deposit insurance coverage, with the objective of encouraging market discipline by larger (wholesale) depositor stakeholders with the capacity to assess risk, works to reduce the force of this argument. Banks remain at risk of runs induced by actions of wholesale depositors or other creditors. Nevertheless, the protection afforded to retail depositors has the beneficial effect of reducing the possibility of runs or contagion arising from this source.

The detrimental effect most commonly pointed to is the potential for *moral hazard* involving increased risk taking, to exploit the benefits of a guarantee, with potentially adverse consequences for financial system stability. Demigurc-Kunt and Detragiache (2000) note a positive correlation between the existence of deposit insurance and financial sector instability from an international study, but point to the important role of weak institutional and regulatory structures in leading to that result.

It is worth examining the moral hazard argument in more detail, to see how institutional arrangements in the Australian financial sector affect its practical significance. To do so, note that incentives for risk taking and /or reduced monitoring could, in principle, arise for ADI stakeholders such as insured depositors, uninsured depositors, other creditors, ADI owners, ADI managers, and ADI supervisors. Such incentives need to be compared with those arising under the alternative, current, regulatory structure and safety net.

To the extent that the current regulatory structure is viewed by retail depositors as involving implicit guarantees over ADI deposits, a move to an explicit scheme would not be expected to lead to any significant increase in incentives for risk taking and reduced monitoring by retail, insured, depositors. If instead, retail depositors perceive that *caveat emptor* prevails, it is possible that explicit insurance could lead to greater willingness to place deposits with

ADIs offering higher than average interest rates without concern for, or need to assess, the default risk of the ADI. Whether retail depositors have the ability (or access to reliable, understandable information) to effectively assess such risk is a moot point. More generally for such an outcome, it is necessary that governance and regulatory arrangements give incentives to, and permit, ADI management to increase risk taking in this manner. This is considered shortly.

For depositors who would not be insured under an explicit scheme and for other creditors, the introduction of a limited explicit scheme may lead to increased monitoring and sensitivity to ADI risk, if current perceptions are of implicit guarantees and potential bail outs if an ADI fails. Gropp and Vesala (2001) interpret observed changes in interest rate margins in European countries following the introduction of explicit schemes as evidence of such reactions consistent with replacement of a system of implicit guarantees. If *caveat emptor* is believed to currently apply, there would not appear to be any strong arguments to suggest that the risk sensitivity and monitoring of such stakeholders would be significantly affected.

Textbook analysis of the moral hazard arising from deposit insurance focuses upon the benefits accruing to ADI owners (equity holders) from increased risk taking when the pricing of deposit insurance is not appropriately risk related or is underpriced. Removal of such adverse incentives for increased risk taking can be achieved by ensuring risk based pricing of deposit insurance, although the ability to successfully implement risk based pricing when ADIs have private information has been questioned (Chan, Greenbaum and Thakor, 1992).

In the absence of risk based pricing, ADI owners can benefit if ADI managers take actions which increase the value of the implicit put option reflected in the deposit insurance contract. However, given the separation between ownership and management which prevails in Australian ADIs because of dispersed ownership, the ability of owners to direct management to act in such a way is extremely limited. Indirect incentives may nevertheless exist through the contracting and governance arrangements and through equity market forces. It is therefore necessary to consider the incentives for management to increase risk taking to exploit the deposit insurance scheme and the constraints which exist to prevent them from doing so.

Whether an ADI's management with minimal equity stake in the ADI has incentives to increase risk to exploit deposit insurance depends upon issues such as compensation design, reputational considerations, governance arrangements and entrenchment. As Macey and O'Hara (2003) note, "managers are not perfect agents of risk-preferring shareholders. Managers are fixed claimants to that portion of their compensation designated as salary. In addition, managerial incentives for risk-taking are reduced, since managers have invested their nondiversifiable human capital in their jobs." Nevertheless, stock market pressures and equity linked compensation structures may give rise to some incentives to increased risk taking which is not counteracted by discipline from other fixed claimants such as depositors. If that is the case, the role of the ADI regulator becomes important in limiting moral hazard.

Some authors, such as Kane (2002) have focused on the possibility that regulatory authorities may face inadequate incentives and accountability arrangements which cause them to engage in forbearance towards troubled institutions. The critical issue here, however, is the design of such arrangements rather than the existence or non-existence of an explicit scheme *per se*.

In summary, while moral hazard is a potential issue arising from introduction of an explicit deposit insurance scheme, there appears to be little reason to believe that it is a necessary consequence which cannot be ameliorated by careful scheme design (including risk based pricing and limited coverage) and attention to governance and incentive arrangements within ADIs and the prudential regulator.

3.3. Other Consequences

In addition to loss redistribution and behavioral effects which might arise from introduction of an explicit scheme, several other important consequences need to be considered. Insured depositors are saved the resource costs of attempting to monitor the solvency of ADIs, which are, arguably, sufficiently high for retail depositors as to make effective monitoring impossible. Deposit insurance can also affect competitive dynamics in the ADI industry and more broadly. To the extent that implicit guarantees are believed to exist but apply only to some groups of ADIs, resulting competitive inequities could be reduced. At the same time, entry of new ADIs might be facilitated (perhaps excessively so) since potential customers would place less emphasis on a history of prudent management when deposit insurance applies also to new entrants and provides them with some instant “charter value”. Competition between ADIs and other financial institutions could also be enhanced if implicit guarantees over bank non deposit liabilities are perceived to exist and are effectively removed.

Much of the preceding discussion has involved considering whether implicit guarantees already exist for ADIs. Even if government protection of depositors does not involve automatic implicit guarantees, there is still the potential for governments to intervene and compensate depositors at failed institutions on a case by case basis in response to political pressure. An explicit guarantee scheme does not preclude similar political reaction, but does provide a clear, pre specified, “line in the sand” behind which a government can stand to resist political pressure for more widespread compensation involving costs to the taxpayer.

3.4. An Assessment

On balance, the case for introduction of deposit insurance in Australia is finely balanced, primarily because the safety net provided by depositor preference provisions (combined with current balance sheet structures) works to limit potential losses to Australian depositors if an ADI fails. Nevertheless, the scope for significant future changes to occur in (existing and future entrant) ADI balance sheet structures suggests that a possible role for some such redistribution mechanism should not be ruled out on these grounds. Provided that those institutions which create little risk of calls on such a scheme incur appropriately minimal costs from operation of such a scheme, their low probability of costly failure does not, of itself, create a case for not introducing such a scheme covering all ADIs.

Given the current role of depositor preference in weakening the case for explicit deposit insurance, it is the other considerations which, in this author’s view, tip the balance in favor of such a scheme. Important among these is a perception that implicit guarantees are believed to prevail by much of the community and that this belief is more strongly held in the case of large institutions. Shifting to an explicit limited guarantee could then have potentially beneficial effects for market discipline, competition and government resolve not to engage in more widespread bail outs at tax-payer expense. Also important is the opportunity provided by an explicit scheme to reduce potential disruption to affected insured depositors when an

ADI fails. Finally, removing an anomaly that has a prudential supervisor monitoring ADIs on behalf of retail consumers who are unable to do so effectively, but who are still exposed to losses if the institution fails would seem to have merit.

In practice, finance industry lobby groups and senior management have generally expressed strong opposition to introduction of a deposit insurance scheme. Although concerns about moral hazard are often mentioned, more emphasis should be placed on perceptions about necessity and cost. One reason is concerns about the total cost of such a scheme. A second reason is the fear that their institutions and customers will incur an unfair share of costs—generally premised on their perception that their institution will not be one which fails. A third possible reason is that (at least) some ADIs already have “free” deposit insurance (and competitive advantages) because of the existence of implicit guarantees.

Since the significance of such concerns depends upon the precise nature of any scheme introduced, it is important to consider briefly the type of scheme which might warrant introduction.

4. DESIGNING AN EFFECTIVE AND ACCEPTABLE SCHEME

Historical experience, industry structure, current balance sheet structures, and an effective regulatory and supervisory process all suggest that the number of Australian ADIs which might fail and create claims on a deposit insurance fund within a time frame of, say, a decade, is quite small. In such circumstances, there are cost minimization grounds for considering adoption of some form of a “post funded” scheme. In such schemes, immediate compensation to insured depositors at a failed institution is funded by the scheme temporarily borrowing from the Government budget or using pre-arranged lines of credit and ADIs are subsequently levied to pay off that debt. In a financial sector where ADI failures are expected to be rare events (less than one or two per decade), and where failure management remains the responsibility of the prudential supervisor, a legislated and well designed post funded scheme can remain largely dormant for much of the time and be “brought off the shelf” as required to facilitate payments to insured depositors and determine and collect levies in the event of a failure. The scheme replaces insured depositors as a claimant on the fund and, with other creditors, awaits the outcome of (and perhaps has some influence on) the failure management process undertaken by APRA. Ongoing administration costs are minimized and the risks of expense generating activities by managers of the pool of funds accumulating under a pre-funded scheme¹⁴ are reduced.

Conventional wisdom appears to favor pre-funded schemes, but it is important to be aware of the key differences between pre and post funded schemes. In fact, at the level of theory, they are very similar. A pre-funded scheme typically has a target level of reserves (such as 1.25 per cent of insured deposits for the US FDIC), achieved by levying annual premiums on ADIs until that target level is reached. When depleted by an ADI failure the fund is built up again from annual premiums on remaining ADIs. A post-funded scheme operates in essentially the same way except that the target level of funds is zero, with the fund debt following a failure gradually reduced by levies on remaining ADIs. Unlike a private insurer, where capital (the fund balance) determines the probability of fund insolvency and ability to meet claims, a government backed deposit insurance scheme with guaranteed access to credit and the ability to compulsorily impose future levies on ADIs, does not necessarily have the same requirements for a minimum capital level.

From this perspective the main difference is simply that a pre funded scheme involves the fund managing a stock of assets which would otherwise be retained by and managed by the individual ADI contributors.¹⁵ Ownership of that stock of assets and entitlement to returns on the assets may vary between the two schemes, but this depends on precise structuring of the scheme. Macroeconomic asset market consequences of ongoing portfolio choice and portfolio adjustments involved in financing payouts also might vary, but not necessarily. Both schemes involve payments by remaining ADIs following a failure to restore the fund to its desired target level, and there is no reason to expect that a more rapid restoration (and thus higher annual rate of payment) would be required under one scheme relative to the other.

What then are the differences between pre and post funded schemes which lead to the widespread preference for pre funded schemes. One concern is whether risk based premiums can be applied in the case of a post-funded scheme. In principle, and in practice, there is no reason to believe that this cannot be done. It would require the regulatory authority to annually assess and advise ADIs of their current risk grading and implications for levies (perhaps based on an historical average of risk grades and asset size) should they be required. Perhaps more relevant, in this regard, is the concern that ADI managers may not be as sensitive to risk based contingent liabilities as they would be to risk related annual premiums involving ongoing cash outflows. Assessing the merits of that concern is difficult, but such behavior is difficult to reconcile with a view of ADI managers as financial sophisticates able to recognize the essential similarity between the two situations. Although one difference is that the contingent liability disappears for institutions which have failed, ADI managers contemplating increased risk taking with increased risk of failure are still faced with the non zero probability that failure of another institution would leave them exposed to higher levies because of a higher risk rating.

Another reason for aversion to post funded schemes appears to arise from notions of equity and fairness. In a post funded scheme no contributions have been received from the failed ADI prior to its failure. To the extent that failure is driven by external events rather than excessive risk taking by the ADI in question this concern has little basis. For example, if a thousand ADIs all operated with economic capital such that the risk of failure was 1 in 500 p.a., there would be an average of two failures p.a. drawn randomly from the population. Ex post the stakeholders in failed ADIs may lose less than if premiums had been paid prior to failure and payouts were the same in both cases, but this difference can be resolved by adjusting the payout arrangements to involve only partial coverage of insured deposits. If on the other hand, failure reflects increased risk taking relative to the average, the argument may have some merit. Assuming that regulators could identify such risk taking (as is necessary if risk based pricing in a pre funded scheme is to occur), this suggests a role for possible regulatory action such as increased capital requirements. Alternatively, when combined with concerns about the lack of ADI management sensitivity to risk related contingent liabilities associated with post funding, it may suggest a role for some small amount of risk related pre funding.

Also relevant to the choice between pre and post funding is the question of whether there are resulting differences in the ability of regulators to pursue alternative methods of resolving troubled institutions. With pre-funding it may be possible to use fund assets to facilitate a transfer of business of a distressed institution as a least cost resolution method, which may not be as administratively feasible when post-funding is used. Here a key issue relates to the

governance arrangements of a scheme and its interaction with the prudential regulator in decision making regarding the resolution process.

A further consideration relevant to the choice between pre and post funding lies in the problems in determining appropriate contribution levels in a financial system where failures have been infrequent such that reliable estimates of the probability of failure and loss given failure are hard to estimate with confidence. In such circumstances, post funding may have some advantages in terms of industry acceptability.

On balance, and contrary to international trends, there appears to be a case for a post funded scheme. Some small amount of pre-funding could be envisaged for reasons discussed above, although the potential for this to increase administrative costs needs to be recognized.

5. CONCLUSION

Judged by the history of the past seventy years, in which no Australian depositor has lost money from an ADI failure, it might be thought the performance of the existing regulatory structure and safety net indicate no need for the introduction of deposit insurance in Australia. However, to adopt that view is to ignore the possibility that the existing system has imposed costs which could be reduced by an alternative approach. Such costs include the possible distortions to competitive neutrality resulting from implicit guarantees, their effects on market discipline, and contingent (and in some cases actual) obligations for taxpayers.

Nevertheless, the alternative of a limited deposit insurance scheme is not without potential costs including redistributive effects due to errors in pricing, administrative costs, and moral hazard. However, it has been argued here that careful scheme design, allied with the institutional and regulatory structure of the Australian financial sector can reduce such costs and tip the balance in favor of introducing an explicit scheme.

To some commentators, the heavily skewed distribution of the ADI industry in which four major banks hold 66 per cent of ADI assets is seen a potential impediment to an effective scheme. However, concerns that such size differences create excessive concentrations of risk and thus prevent the operation of a fairly priced deposit insurance scheme incorrectly associate asset size with risks imposed on a scheme which provides limited insurance of a subset of (deposit) liabilities.

On balance, it appears that a post funded scheme has some advantages over a pre funded scheme in the Australian context—although (it has been argued) many of the oft-claimed differences are more imagined than real. These advantages include minimization of administrative and compliance costs in an environment where failures are expected to be few and far between. Also important, however, is the likelihood of less industry opposition to a post funded scheme in which risks of growth of bureaucracy and concerns about the setting of unfair premiums (given uncertainty about true insurance costs) are reduced. Given the conspicuous lack of support for (and in many cases strong opposition to) introduction of an explicit scheme by senior executives in the Australian ADI industry, the fact that, on close examination, many of the perceived differences between pre and post funded schemes are imaginary is a blessing in disguise.

ENDNOTES

1. I would like to take this opportunity to thank the officers of the Australian Treasury, Reserve Bank of Australia, and Australian Prudential Regulation Authority who worked with me on the *Study of Financial System Guarantees* (Davis, 2004) on which this chapter is based.

2. HIH only operated in those markets in the states where private rather than government insurance was possible.
3. A recent perspective from the Reserve Bank of New Zealand on the rationale for the absence of deposit insurance in New Zealand can be found at <http://www.rbnz.govt.nz/banking/Regulation/0154814.html>
4. For the definition of a bank's domestic book see <http://www.apra.gov.au/Statistics/Monthly-Banking-Statistics.cfm>
5. This provision does not apply to branches of foreign banks.
6. The banks referred to are ING Australia and Elders Rural Bank respectively. Source: APRA Monthly Banking Statistics, <http://www.apra.gov.au/Statistics/Monthly-Banking-Statistics.cfm>
7. Kane and Kaufman (1993) provide an analysis.
8. Details of the changes made in the Australian Prudential Regulation Authority Amendment Act 2003 can be found in APRA (2003).
9. APRA has a range of failure management powers including directions powers, external administration powers, compulsory transfer of business powers, and the ability to apply to the Federal Court for wind-up and appointment of a liquidator who would be subject to direction by the court.
10. Another tendency has been to provide compensation to individuals who face losses from lack of (or under) insurance following bushfires and other natural disasters.
11. See Davis (2004, Appendix 4.3) for details.
12. It is, of course, possible that governments may choose to bail out uninsured depositors, thus weakening the force of these arguments.
13. See <http://www.apra.gov.au/aboutAPRA/>
14. In a pre funded scheme, ADIs are charged regular premiums to build up a stock of fund reserves out of which payments to insured depositors can be made in the event of a failure.
15. In both cases, ADIs have contingent liabilities to make future payments as determined by the scheme manager which are necessary to restore the fund to its target balance.

REFERENCES

- APRA, A new act: A Review of APRA's New Governance Structure, *APRA Insight*, 3rd Quarter/4th Quarter 2003, 2–5. <http://www.apra.gov.au/Insight/Insight-3rd-Quarter-2003.cfm>
- Chan, Y., Greenbaum, S.I., Thakor A.V., Is Fairly Priced Deposit Insurance Possible, *Journal of Finance*, Vol. 47, No.1, 1992, 227–445.
- Davis, K., *Study of Financial System Guarantees*, March 2004. <http://fsgstudy.treasury.gov.au/content/default.asp>.
- Demirguc-Kunt, A., Detragiache, E., Does Deposit Insurance Increase Banking System Stability? An Empirical Investigation, *IMF Working Paper*, January 2000.
- Demirguc-Kunt, A., Kane, E.J., Deposit Insurance Around the Globe: Where Does it Work?, *Journal of Economic Perspectives*, Vol. 16, No. 2, 2002, 175–195.
- Diamond, D.W., Dybvig, P.H., Bank Runs, Deposits Insurance and Liquidity, *Journal of Political Economy*, Vol. 91 (3), 1983, 401–419.
- Gropp, R., Vesala, J., Deposit Insurance and Moral Hazard: Does the Counterfactual Matter?, *European Central Bank Working Paper*, No. 47, March 2001. <http://www.ecb.int/pub/wp/ecbwp047.pdf>.
- HIH Royal Commission, The Failure of HIH Insurance. <http://www.hihroyalcom.gov.au/finalreport/index.htm>
- Kane, E.J., Using Deferred Compensation to Strengthen the Ethics of Financial Regulation, *Journal of Banking and Finance*, Vol. 26, September 2002, 1919–33.
- Kane, E.J., Kaufman, G.G., Incentive Conflict in Deposit-institution Regulation: Evidence from Australia, *Pacific-Basin Finance Journal*, Vol. I, 1993, 13–29.
- Macey, J.R., O'Hara, M., The Corporate Governance of Banks, *FRBNY Economic Policy Review*, April 2003, 91–107.
- Wallis, S., *Financial System Inquiry Final Report*, Australian Government Publishing Service, March 1997.

6. GLOBALIZATION AND THE GROWTH OF INTERNATIONAL STOCK EXCHANGES

WILLIAM L. MEGGINSON AND NATALIE L. SUTTER

1. INTRODUCTION

Recent economic research shows that large, efficient capital markets promote rapid economic growth. Research by Levine (1997), Demirgüç-Kunt and Maksimovic (1998), Levine and Zervos (1998), Rajan and Zingales (1998), Subrahmanyam and Titman (1998), Beck, Levine, and Loayza (2000), Henry (2000a and b), Wurgler (2000), Bekaert and Harvey (2000), and others have documented a direct link between capital market development and economic growth.

Capital market-based finance has been increasing in importance, both absolutely and relative to financial intermediary-based finance, in developed and developing countries over the past two decades. Capital markets are winning the contest with financial intermediaries to become the dominant sources of external financing for companies throughout the developed world. Capital markets seem likely to dominate the future of corporate finance in both developed and developing countries.

While experience and observation have driven much of the reassessment of the optimal role of capital markets in capital finance, academic research has also been important since it now strongly favors capital markets over banks. The most important paper in the stream of research documenting that capital markets are essential for good corporate governance is the influential survey article by Levine (1997). Additional papers by Levine and Zervos (1998), Rajan and Zingales (1998), Demirgüç-Kunt and Maksimovic (1998), Henry (2000b), and Bekaert and Harvey (2000) all provide direct or indirect support for the capital market optimality hypothesis. The “law and finance” literature developed by La Porta, López-de-Silanes, Shleifer, and Vishny (1997, 1998, 2000, and 2002) also emphasizes the importance of

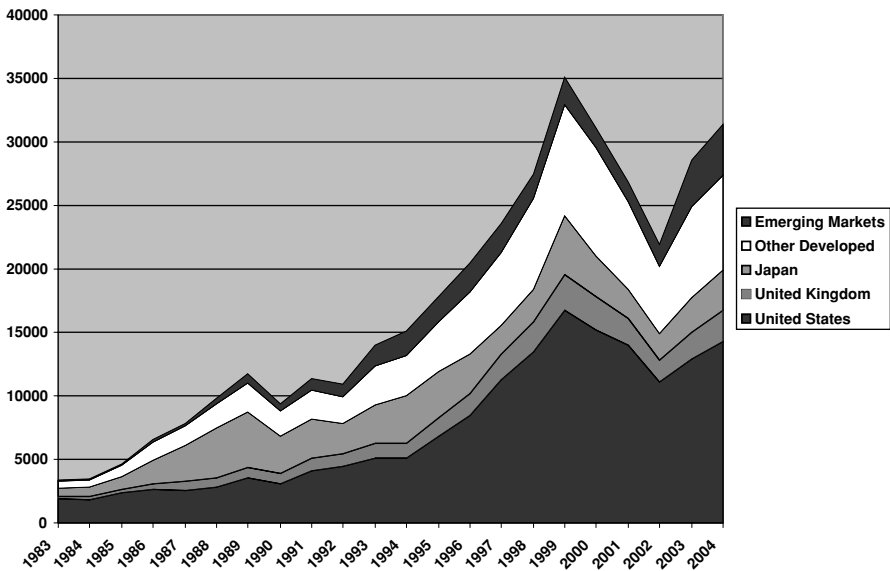


Figure 1. World Stock Market Valuation, 1983–July 2004

Data Sources: 1983–1999, the World Bank/International Finance Corporation's *Emerging Markets Factbook* (various issues), Washington, DC; 2000–2004 data from the Statistics section of the World Federation of Exchange's website (www.world-exchanges.org).

legal protection for investors in developing national stock and bond markets. Other empirical studies of the impact of financial development on economic growth have documented that the size of the financial system (banks and capital markets) is not as important for growth as is the system's efficiency. Therefore, we examine not only the magnitude of stock market but also the dynamics in liquidity, measured by the turnover ratio.

In this chapter, we look at the raw data as well as the academic literature in an effort to explain the rapid growth and subsequent decline of the value of stock markets around the world over the past two decades. We now turn to documenting the astonishing rise of capital market-based financing since the early-1980s.

2. THE RISE OF CAPITAL MARKETS SINCE THE EARLY-1980s

Table 1 describes the growth in stock market capitalization and the value of shares traded on the world's stock exchanges over the 20-year period from 1983 to 2003. Figure 1 expresses graphically the growth in market capitalization over the same period. These years encompassed a period of very rapid growth in the capitalization of markets in every country except Japan. Over this period, global stock market capitalization reached an astonishing \$37 trillion in early 2000. After March 2000, however, the total market capitalization of the world's stock exchanges declined by a third, to about \$22.7 trillion by the end of 2002. Since then, world market capitalization has rebounded some, reaching \$31 trillion at the end of 2003.

Total world market capitalization increased over ten-fold (to \$36 trillion) between 1983 and year-end 1999, and the total market capitalization of the US market increased almost

Table 1. The Growth of World Stock Market Capitalization and Trading Volume, 1983–2003

This table details the growth in the aggregate market capitalization and trading volume, in \$US millions, over the 21-year period 1983–2003. Market capitalization figures are year-end values, translated from local currencies into US\$ at the contemporaneous exchange rate, while trading volumes represent the total value of all trades executed during the year.

Market Capitalization	1983	1989	1990	1995	1998	1999	2000	2001	2002	2003
Developed Countries	3,301,117	10,967,395	8,795,239	15,861,615	25,065,373	32,956,939	29,469,651	25,175,064	20,810,990	28,132,283
United States	1,898,063	3,505,686	3,059,434	6,857,622	13,451,352	16,635,114	15,214,416	13,826,485	11,055,455	14,266,023
Japan	565,164	4,392,597	2,917,679	3,667,292	2,495,757	4,546,937	3,157,222	2,264,528	2,069,299	2,953,098
United Kingdom	225,800	826,598	848,866	1,407,737	2,374,273	2,933,280	2,612,230	2,164,716	1,856,194	2,460,064
Developing Countries	83,222	745,278	604,420	1,910,688	1,899,090	3,073,871	2,146,187	2,013,027	1,884,390	3,051,159
Total World	3,384,339	11,712,673	9,399,659	17,772,303	26,964,463	36,030,809	31,615,838	27,188,091	22,695,380	31,183,442
World Excluding US	1,486,276	8,206,987	6,340,225	10,914,681	13,513,111	19,395,695	16,401,422	13,361,606	11,639,925	16,917,419
US as % of World	56.08%	29.93%	32.55%	38.59%	49.89%	46.17%	48.12%	50.85%	48.71%	45.75%
Trading Volume										
Developed Countries	1,202,546	6,298,778	4,616,473	9,180,430	20,706,817	28,154,198	47,039,722	35,497,183	30,057,436	31,033,074
United States	797,123	2,015,544	1,751,252	5,108,591	13,148,480	18,574,100	31,804,236	22,240,645	18,206,831	17,322,982
Japan	230,906	2,800,695	1,602,388	1,231,552	948,522	1,849,228	2,641,068	1,834,418	1,688,261	2,221,254
United Kingdom	42,544	320,268	278,740	510,131	1,167,382	1,377,859	4,558,663	4,520,183	4,001,340	3,609,718
Developing Countries	25,215	1,169,219	898,233	1,038,064	1,909,510	2,866,867	3,890,276	2,120,950	2,224,926	2,296,627
Total World	1,227,761	7,467,997	5,514,706	10,218,494	22,616,328	31,021,065	50,929,998	37,618,133	33,130,669	33,329,701
World Excluding US	430,638	5,452,453	3,763,454	5,109,903	9,467,848	12,446,965	19,125,762	15,377,488	14,923,839	16,006,719
US as % of World	64.92%	26.99%	31.76%	49.99%	58.14%	59.88%	62.45%	59.12%	54.95%	51.97%

Data Sources: 1983–1999, the World Bank/International Finance Corporation's *Emerging Markets Factbook* (various issues), Washington, DC; 2000–2003 data from the Statistics section of the World Federation of Exchange's website (www.world-exchanges.org).

nine-fold (from \$1.9 trillion to \$16.6 trillion) over the same period. The growth in markets outside the United States was even greater. The total capitalization of non-US stock markets increased twelve-fold between 1983 and 1999, rising from \$1.49 trillion to almost \$19.4 trillion. The total market capitalization of developing country stock exchanges increased by 36 times between 1983 and 1999, rising from a mere \$83 billion to \$3 trillion over that sixteen year period. Between early 2000 and year-end 2002, all markets fell in value, with the economies of Western Europe falling by 38 percent and Japan falling by 55 percent. Between year-end 2002 and year-end 2003, all markets rebounded somewhat, to above their year-end 2001 levels, with total world market capitalization almost reaching its year-end 2000 level.

As impressive as the rise in market capitalization between 1983 and 1999 was, trading volumes increased even more. The total value of shares traded worldwide increased over twenty-five-fold between 1983 and 1999, rising from \$1.2 trillion to \$31 trillion. Volume then increased an additional 64 percent during 2000, reaching an incredible \$51 trillion, or roughly 145 percent of global GDP. As before, non-US markets experienced the greatest increases (except during 2000), with the value of shares traded on markets in developing countries rising from a mere \$25 billion in 1983 to almost \$3.9 trillion at the end of 2000. This 156-fold increase in market liquidity was probably largely due to two factors: the increasing popularity of “emerging market” investing among Western investors, particularly institutional investors such as pension and mutual funds, and the impact of large scale share issue privatization programs. Between 2000 and 2002, trading volumes declined worldwide, as did market capitalization. However, value traded has not rebounded as much as market capitalization in the past couple of years.

Table 2 measures the rise of stock market capitalization and trading volumes by expressing them as a percentage of national and world gross domestic product. The aggregate market capitalization of the world's stock markets increased from 48.0 percent of global GDP in 1990 to 105.1 percent in December 2000. Even taking account of the subsequent decline in value to three-fourths of world GDP at the end of 2002, the past dozen years have witnessed dramatic growth in stock market valuation relative to global output. These overall figures hide even more dramatic individual stories, regarding both absolute valuation levels and rapid increases in relative valuation. Examples of strikingly high ratios of stock market capitalization to GDP in 2000 were found in the United States (154 percent), South Africa (163 percent), Singapore (166 percent), the Netherlands (176 percent), the United Kingdom (182 percent), Switzerland (331 percent), and Hong Kong (383 percent). Equally revealing are countries with relatively low valuation ratios, including Japan (65 percent), Germany (68 percent), Italy (72 percent), and most developing countries. Examples of countries that experienced dramatic increases in market capitalization relative to GDP between 1990 and 2000 include China (0.5 to 54 percent), Brazil (3.5 to 38 percent), Israel (6.3 to 58 percent), Australia (35 to 96 percent), Italy (14 to 72 percent), Spain (22 to 90 percent), France (26 to 112 percent), Sweden (41 to 144 percent), and Switzerland (70 to 331 percent). These stock market valuation increases over this period far exceeded any comparable growth in corporate profits or national output, and instead reflect a fundamental reassessment of the value of a nation's common equity. The fact that all of these countries, except Switzerland, executed very large share issue privatization programs suggests that these programs have played a significant role in promoting stock market development.

Table 2. Stock Market Capitalization, Trading Volume and Turnover as a Percent of GDP, 1990 vs 2000 vs. 2002

Country or Region	Market Capitalization as % of GDP			Volume of Shares Traded as % of GDP			Turnover Ratio (Value shares traded as % of capitalization)	
	1990	2000	2002	1990	2000	2002	1990	2002
Low Income	19.8%	23.6%	22.6%	4.7%	32.8%	17.8%	53.8%	159.1%
Middle Income	21.2	41.2	35.3	8.0	37.7	16.0	78.3	49.2
Argentina	2.3	58.3	100.9	0.6	2.1	1.3	33.6	2.2
Brazil	3.5	38.0	27.4	1.2	17.0	10.7	23.6	35.0
Chile	45.0	85.6	74.2	2.6	8.6	4.9	6.3	7.4
China	0.5	53.8	36.6	0.2	66.8	26.3	158.9	85.7
Egypt	4.1	29.1	29.0	0.3	11.3	2.8	–	16.1
Hungary	1.5	26.3	19.9	0.3	26.6	9.0	6.3	46.5
India	12.2	32.4	25.7	6.9	48.4	38.6	65.9	225.8
Indonesia	7.1	17.5	17.3	3.5	9.3	7.5	75.8	42.0
Israel	6.3	58.1	43.8	10.5	21.2	53.3	95.8	51.7
Korea	43.8	32.5	52.2	30.1	121.3	166.2	61.3	303.3
Malaysia	110.4	130.4	130.7	24.7	65.2	29.1	24.6	17.5
Mexico	12.5	21.8	16.2	4.6	7.9	4.4	44.0	31.6
Philippines	13.4	69.0	50.0	2.7	11.0	4.0	13.6	14.8
Russian Federation	0.0	15.5	35.8	–	8.1	10.4	–	30.1
South Africa	122.8	162.8	177.5	7.3	61.6	75.6	–	78.9
Thailand	28.0	24.1	36.3	26.8	19.0	37.5	92.6	98.2
Turkey	12.6	34.8	18.5	3.9	89.6	38.5	42.5	163.4
Venezuela	17.2	6.7	4.2	4.6	0.6	0.1	43.0	6.4
High Income	51.7	120.6	83.4	31.4	181.1	145.2	59.5	148.0
Australia	35.2	95.6	93.1	13.0	58.0	72.0	31.6	77.2
Hong Kong, SAR	111.5	383.3	286.7	46.3	232.3	130.4	43.1	43.5
France	25.9	111.8	67.6	9.6	83.7	65.3	–	88.0
Germany	21.0	67.8	34.6	29.7	57.1	62.1	139.3	140.5
Italy	13.5	71.5	40.3	3.9	72.5	45.6	26.8	109.1
Japan	95.6	65.2	53.2	52.5	55.6	39.4	43.8	71.0
Netherlands	40.6	175.6	96.1	13.6	185.7	110.6	29.0	123.7
New Zealand	20.5	37.3	37.1	4.5	21.6	12.8	17.3	38.3
Singapore	93.6	165.7	117.2	55.3	99.2	64.5	–	39.3
Spain	21.7	90.3	70.7	8.0	176.5	155.3	–	211.1
Sweden	41.1	144.4	73.7	7.4	171.6	90.9	14.9	96.2
Switzerland	70.1	330.5	207.1	29.6	254.1	245.6	–	100.5
United Kingdom	85.9	182.2	119.0	28.2	129.7	173.7	33.4	135.4
United States	53.2	153.5	106.4	30.5	323.9	244.4	53.4	202.5
Europe EMU	21.6	89.9	52.4	14.2	83.1	67.4	–	123.2
World	48.0	105.1	74.6	28.5	153.8	122.8	57.2	131.9

Source: World Bank Group. 2004. *World Development Indicators 2004*. Washington, DC.

Table 2 also presents two measures of stock market volume for these same countries and regions. The first, volume of trading as a percent of GDP, simply measures the total value of shares traded as a fraction of GDP, while the turnover ratio is defined as the total value of shares traded during a year divided by prior year-end market capitalization. Both ratios show that market liquidity exploded between 1990 and 2000 (measured by trading volume) and between 1990 and 2002 (turnover). The volume of trading increased almost six-fold between 1990 and 2000 for the world as a whole (from 29 to 154 percent of world GDP) and for high-income countries (from 31 to 181 percent), while volume of trading

increased almost eight-fold (from 4.7 to 33 percent of GDP) for low-income countries. Several middle-income countries witnessed truly spectacular increases in trading volumes, including China (0.2 to 67 percent of GDP), South Africa (7.3 to 62 percent), Turkey (3.9 to 90 percent), and Korea (30 to 121 percent). As impressive as these gains are, however, they are dwarfed by the rise in trading volumes in developed economies such as the Netherlands (14 to 186 percent of GDP), Spain (8 to 177 percent), Sweden (7.4 to 172 percent), Hong Kong (46 to 232 percent), Switzerland (30 to 254 percent), and the United States (31 to 324 percent). From 2000 to 2002, these gains fell somewhat, with world trading volume as a percent of GDP falling from 154% to 123%, with each income group of countries falling by similar percentages. Low income countries fell from 33% to 18%. The middle income group fell from 38% to 16%, and high income countries' trading volume as a percent of GDP fell from 181% to 145%.

The trading volume measure is obviously inflated by the dramatic increase in average stock values between 1990 and 2000, so the turnover ratio is perhaps a better measure of the true increase in the frequency of trading and thus the true liquidity of a nation's stock market. This measure, not surprisingly, shows a much smaller increase than does the value of shares trading, though the ratio more than doubles between 1990 and 2002 for the world and for both low-income and high-income countries. Additionally, several individual countries experienced dramatic increases in turnover, although other countries see a net decline. In these cases, share valuations increased sharply, increasing the value of shares traded, but the frequency of trading either remained constant or fell. However, most large countries experienced significant increases in the turnover ratio, with the most notable increase being that of the United States, where the value of shares traded as a percent of prior year's capitalization increased from 53 to 202.5 percent. In summary, the Great Bull Market of the 1990s dramatically increased the overall capitalization and volume of trading of the world's stock markets, and much of the growth that occurred between 1990 and 2000 remains intact today.

Another way of measuring the rise of capital markets is to examine whether their share of annual corporate financing activity has grown relative to that of other sources of funding. Table 3 details the phenomenal growth in the total value of securities issuance over the period 1990–2002. This table clearly shows that the annual volume of global security issues has surged over the past dozen years, both worldwide and in the United States. Worldwide offerings of debt and equity securities totaled \$504 billion in 1990 (and barely \$300 billion in 1988); by 2001, this figure had increased eight-fold to \$4.11 trillion, before dropping slightly to \$3.90 trillion in 2002. And these figures do not include privatizations, since these are almost always secondary issues that do not raise capital for the firm itself. Even though security offerings by United States issuers accounted for two-thirds or more of the global total throughout this period, that still implies that non-US security issues increased from \$191 billion in 1990 to \$1.20 trillion in 2001 (and \$1.12 trillion in 2002). Such a massive increase in global security issuance is unprecedented in modern financial history, though domestic bond issues often surge during major wars. The rise in non-US offerings also completely dwarfs the increase in bank financing since 1990.

We conclude this examination of the growing importance of capital markets by briefly summarizing the most incredible increase in the total volume of merger and acquisition

Table 3. Worldwide Securities Issues, 1990–2003

This table details the total value, in billions of U.S. dollars, and number (in parentheses) of securities issues worldwide (including the United States) for selected years in the period 1990–2003. The data are taken from early-January issues of the *Investment Dealers' Digest*.

Type of Security Issue	1990	1993	1997	1999	2000	2001	2002	2003
Worldwide offerings	\$504	\$1,503	\$1,816	\$3,288	\$3,268	\$4,112	\$3,902	\$5,327
[debt & equity]	(7,574)	(9,969)	(15,669)	(21,724)	(14,659)	(16,450)	(14,070)	(19,729)
Global debt (2000-01)	184	479	635	1,114	2,624	3,610	3,600	4,939
Internat'l debt (1990-99)	(1,376)	(2,701)	(4,066)	(4,122)	(10,827)	(14,033)	(12,099)	(17,309)
High-grade corp debt (2001-2)	172	388	475	1,069	946	1,367	1,174	1,743
Eurobonds (1990-2000)	(1,213)	(2,162)	(2,804)	(3,893)	(3,858)	(3,589)	(3,623)	(6,139)
Yankee bonds (2000-02)	13	59	150	302	47	36	58	94
Foreign bonds (1990-99)	(81)	(270)	(1,177)	(2,706)	(112)	(84)	(210)	(441)
Global equity [excluding US]	7	19	34	139	335	141	194	145
U.S. Issuers worldwide ^a	(132)	(309)	(302)	(817)	(2,662)	(1,534)	(1,290)	(1,412)
[debt & equity]	313	1,049	1,196	2,103	1,958	2,916	2,790	3,397
All debt	(6,141)	(7,378)	(11,644)	(17,115)	(15,686)	(11,791)	(9,721)	(12,341)
	—	—	—	—	1,726	2,678	2,627	3,210
Long-term straight debt ^b	109	386	726	713	(7,824)	(11,009)	(9,043)	(11,470)
	(1,016)	(3,637)	(9,098)	(7,601)	744	1,239	1,008	1,248
High-yield corporate debt	1	55	114	95	43	78	(3,517)	(4,231)
	(7)	(345)	(769)	(434)	(196)	(303)	(255)	(491)
Collateralized securities (asset and mortgage-backed)	175	475	378	579	488	939	1,157	1,481
Convertible debt and preferred stock	(4,542)	(1,285)	(1,557)	(3,027)	(1,201)	(1,818)	(1,841)	(2,378)
Common stock ^c	5	15	15	40	56	112	60	96
	(43)	(162)	(83)	(143)	(161)	(223)	(137)	(282)
Initial public offerings ^c	14	86	119	175	223	126	104	90
	(362)	(1,374)	(1,341)	(1,069)	(955)	(559)	(540)	(589)
	5	41	44	64	73	40	27	16
	(174)	(707)	(625)	(531)	(429)	(107)	(97)	(88)

Note: ^aFrom 1998, all figures include Rule 144A offers on U.S. markets.

^b Years 1999–2003 are long-term straight debt only, excluding asset-backed debt. Before 1999, figures are for investment grade debt.

^c Excludes closed-end fund. Data for 1990–2000 are not comparable to 2001 due to definition change.

activity that occurred between 1990 and 2000. The total value of announced mergers and acquisitions on US stock markets rose from less than \$200 billion in 1990 (and less than \$160 billion in 1991) to over \$3.45 trillion in 2000. Even though the 1980s were considered a very active period for M&A, the 1990s dwarfed that decade's total as well as any other in American history. The total value of M&A for the decade topped \$5 trillion, with two-thirds of that occurring in 1998 and 1999 alone. While takeovers have always played an important role in the United States, the rise in M&A activity in Europe during the 1990s was even more dramatic. From less than \$50 billion annually in the late-1980s, the total value of M&A involving a European target reached \$592 billion in 1998, before more than doubling to \$1.22 trillion in 1999—rivaling the US total. As noted, the global value of M&A activity in 2000 reached \$3.45 trillion, or about ten percent of world GDP. As with market capitalization, the total value of M&A activity in the United States and other developed economies has contracted sharply since 2000, though 2002's global total of \$1.2 trillion was still the fifth most active year in history. If and when stock valuations recover to early 2000 levels, it seems likely that M&A activity will once more take off.

3. PRIVATIZATION'S IMPACT ON STOCK MARKET GROWTH

Privatization programs have significantly, often dramatically, impacted the development of most non-US stock markets. Share issue privatizations have also truly transformed share ownership patterns of investors in many different countries.

While it is very difficult to establish a direct, cause and effect relationship between SIP programs and stock market development, indirect evidence suggests that the impact has been very significant. At the end of 1983, the total market capitalization of the handful of British, Chilean, and Singaporean firms that had been privatized by then was far less than \$50 billion. By the end of May 2000, the 152 privatized firms listed in either the *Business Week* "Global 1000" ranking of the most valuable companies in developed-nation stock markets or in the *Business Week* "Top 200 Emerging Market Companies" ranking had a total market capitalization of \$3.31 trillion. This was equal to approximately 13 percent of the combined market capitalization of the firms on the two lists, but was equal to over 27 percent of the non-US total. This is because American firms accounted for 484 of the Global 1000 firms—and \$13.1 trillion of the \$23.9 trillion Global 1000 total capitalization in May 2000.

The total valuation of privatized companies fell sharply during 2001 and 2002, declining to \$2.83 trillion in May 2002. However, the valuations of non-privatized companies declined even more, to \$17.74 trillion. By May 2003, the total valuation of the 195 privatized firms on the two *Business Week* lists had rebounded to \$3.24 trillion, but the value of the 1005 non-privatized companies on the combined 2003 lists continued to decline, falling to \$14.58 trillion. Therefore, the privatized companies significantly increased their proportional share of year 2003 global stock market value from 14.5 to 18.2 percent, and raised their share of the non-US total valuation increased even more, from 30.4 percent to 38.6 percent. By May 2004, the Global 1000 list contained 151 privatized companies, worth \$3.175 trillion. These companies comprised 15% of the Global 1000 companies' total market valuation of \$21 trillion. This implies that investors who purchased privatization share offerings have fared

Table 4. Market Values of the Largest Publicly-Traded Privatized Firms

Stock market value of the 35 most valuable (largest market capitalization) publicly-traded privatized firms as of May 31, 2004. Data are from Morgan Stanley Capital International, as reported in "The Business Week Global 1000," *Business Week* (July 26, 2004). Emerging market companies are in *italics*. National stock market valuations are from the May 2004 total market values (except France and the Netherlands, which are the June 2003 total market values) found on the World Federation of Exchanges website (www.world-exchanges.org).

Company	Country	Global 1000 rank	Country rank	Market value US\$ millions	Market value as % national market
BP	Great Britain	7	1	\$193,054	7.80%
Total	France	23	1	122,945	12.42
NTT DoCoMo	Japan	32	2	92,165	2.86
ENI	Italy	37	1	82,072	13.49
Nippon Telegraph & Telephone	Japan	40	3	79,016	2.45
Telefonica	Spain	45	1	72,078	10.02
<i>Gazprom</i>	<i>Russia</i>	<i>47</i>	<i>1</i>	<i>70,784</i>	<i>Na</i>
Deutsche Telekom	Germany	48	1	70,535	6.91
Aventis	France	59	2	63,654	3.79
France Telecom	France	64	3	59,284	3.53
<i>China Mobile (Hong Kong)</i>	<i>China (HK)</i>	<i>70</i>	<i>1</i>	<i>56,664</i>	<i>8.05</i>
BNP Paribas	France	71	4	55,724	3.32
Enel	Italy	86	2	49,606	8.16
E.ON	Germany	89	4	48,116	4.71
ING Groep	Netherlands	92	2	46,576	13.90
TIM (Telecom Italia Mobiliare)	Italy	93	3	46,528	7.65
Banco Bilbao Vizcaya Argentaria	Spain	102	3	44,844	6.24
Telefonica Moviles	Spain	103	4	44,580	6.20
Telecom Italia	Italy	105	4	43,987	7.23
Telestra	Australia	112	2	42,264	7.21
Societe Generale	France	126	7	37,198	2.22
Axa	France	131	8	36,612	2.18
Credit Agricole	France	132	9	36,276	2.16
Assicurazioni Generali	Italy	147	5	33,143	5.45
National Australia Bank	Australia	149	3	32,465	5.54
Unicredito Italiano	Italy	159	5	29,619	4.87
Commonwealth Bank Australia	Australia	162	5	29,291	5.00
BT Group	Great Britain	164	14	28,903	1.17
Statoil	Norway	172	1	27,568	26.31
<i>Petrobras</i>	<i>Brazil</i>	<i>177</i>	<i>1</i>	<i>27,181</i>	<i>14.02</i>
Repsol YPF	Spain	182	5	25,926	3.60
<i>Surgutneftegas</i>	<i>Russia</i>	<i>183</i>	<i>2</i>	<i>25,849</i>	<i>Na</i>
RWE	Germany	194	10	24,657	2.42
National Grid TransCo	Great Britain	196	17	24,398	0.99
Banca Intesa	Italy	201	7	24,059	3.96

much better since March 2000 than have investors in other types of companies, for whom this has been a financially painful period indeed.

It is almost certainly the case that privatized firms have had an even greater impact on the development of non-US stock markets than these aggregate numbers suggest, because they are generally among the largest firms in these markets. The largest privatized firms by themselves often account for sizeable fractions of the total capitalization of national stock markets, even in advanced economies such as Italy (13.49 percent and 8.16 percent for the two largest firms), Spain (10.02 percent), the Netherlands (13.90 percent), and Australia

(7.21 percent). In emerging markets such as Mexico (14.86 percent), China (8.05 percent), Brazil (14.02 percent), and Russia, individual privatized firms often account for very large fraction of the total national market capitalization.

Tables 5 and 6 present similar rankings for the non-US firms in the two *Business Week* lists, but details which of the ten most valuable companies in a nation's stock market are privatized firms. These tables clearly reveal the relative importance of SIPs in most non-US stock markets. Privatized firms are the most valuable companies in 12 of the 21 developed markets on the Global 1000 list and in 12 of 20 Top 200 Emerging Markets. Privatized companies have the highest market values in four of the largest non-US markets—Britain, France, Germany, and Italy—as well as in three of the largest emerging markets—China, India, and Brazil. They are the second most valuable firms in Finland, Taiwan, South Africa, and Malaysia. Privatized companies are the first and second most valuable companies in two countries, Brazil and Indonesia, and they occupy the three (or more) top slots in France, Italy, Norway, Portugal, China, Russia, India, Poland, Hungary, and the Czech Republic.

In an attempt to measure what part of the increased liquidity of world stock markets is driven by privatization, Boutchkova and Megginson (2000, henceforth B&M) generate the turnover ratios for individual markets and regress these on the number of privatization deals for each country in a particular year. B&M specifically pick the turnover ratio, defined as the total value of trading divided by prior year-end total market capitalization, as their measure of stock market liquidity because it reflects increases in both the value of shares traded and the stock market capitalization measures—rather than just measuring absolute growth in trading volume. In other words, it is a conservative measure of the growth in liquidity. Furthermore, as Levine and Zervos (1998) point out, liquidity is one of the few robust stock market-based predictors of long-run economic growth.

B&M find that each privatization deal leads to a 2.3 percent increase in a national market's turnover ratio in the first post-divestment year, and a 1.7 percent increase the following year. Even with these strong results, B&M cannot show econometrically that privatization programs have been the primary cause of the growth, documented above, in the liquidity of stock and bond markets outside the United States. Conventional causality tests require a system of equations specifying the precise relationship between market liquidity and the scale and format (asset sale versus share offering) of privatization programs. Absent such a fully developed model of the privatization/market development relationship, they implicitly assume that privatization is exogenous to the level of stock market development, yet this seems unlikely to be completely true. In fact, Megginson, Nash, Netter, and Poulsen (2004) show that a government's decision to privatization is exogenous to the level of stock market development. This implies that governments choose share offerings as a means of developing their stock markets. On the other hand, B&M's sample consists only of countries with sufficiently liquid markets to allow governments to employ share offerings as their privatization method, so by construction they only examine the effect of privatization on stock market liquidity after some critical level of liquidity has been reached. Thus the decision to privatize, conditional on that critical level of market development, can be assumed to be independent of liquidity. Given that privatization is exogenous in our setting, and the significance of the privatization coefficients in the liquidity regression estimates, B&M conclude that privatization improves stock market development. A more general framework, where all countries

Table 5. How Many of the Most Valuable (Largest Market Capitalization) Firms in Developed Countries are Privatized Companies?

Country	Largest Firm	Second Largest	Third Largest	Fourth Largest	Fifth Largest	Sixth Largest	Seventh Largest	Eighth Largest	Ninth Largest	Tenth Largest
Australia		X	X		X					
Austria		X	X							
Belgium			X				X			
Britain	X									
Denmark				X						
Finland		X	X	X			X		X	
France	X	X	X	X			X			X
Germany	X		X	X			X	X		
Greece	X		X	X			X	X		
Italy	X	X	X	X	X	X	X			
Japan		X	X							
Netherlands		X				X	X			
New Zealand	X									
Norway	X	X	X	X						
Portugal	X	X	X							
Singapore	X				X					
Spain	X		X	X	X	X	X			X
Sweden			X	X						
Switzerland							X			

Source: Information is from Morgan Stanley Capital International, as reported in "The Business Week Global 1000," *Business Week* (July 26, 2004).

Table 6. How Many of the Most Valuable Firms in Emerging Market Countries are Privatized Companies?

Country	Largest Firm	Second Largest	Third Largest	Fourth Largest	Fifth Largest	Sixth Largest	Seventh Largest	Eighth Largest	Ninth Largest	Tenth Largest
Argentina	X									
Brazil	X	X				X	X			X
Chile				X	X	X				
China	X	X	X	X						
Czech Republic	X	X	X							
Hungary	X	X	X							
India	X	X	X					X		
Indonesia	X									
Israel			X	X						
Korea			X	X		X				
Malaysia		X								
Mexico		X	X							
Pakistan	X									
Poland	X	X	X	X						
Russia	X	X	X	X	X	X	X	X	X	X
South Africa		X								
Taiwan		X								
Thailand	X				X					
Turkey	X			X						

Source: Information is from Morgan Stanley Capital International, as reported in the Top 200 Emerging-Market Companies list, "The Business Week Global 1000," *Business Week* (July 26, 2004).

are in the sample regardless of their level of financial development, and where both market liquidity and the privatization decision are modeled endogenously, would provide more rigorous conclusions, but must await future researchers.

One aspect of privatization programs which has to date attracted surprisingly little academic interest is its observed ability to massively increase the total number of shareholders in a country. In many cases, a single privatizing share issue will yield over 1,000,000 shareholders, usually in countries with little tradition of share ownership by individual investors. In fact, governments explicitly design SIP offers to attract individual citizen/investors, and they favor certain groups (especially the employees of companies being privatized) with preferential share allocations and pricing. Many governments have also voiced a desire to promote an “equity culture” amongst their citizenry—meaning a greater willingness to support entrepreneurship through share ownership—as one of the chief rationales for adopting privatization programs. B&M therefore examine the pattern of share ownership in privatized firms, and also study how this ownership structure evolves over time.

The fact that governments are able to entice large numbers of investors to return for subsequent share offerings suggests that share issue privatization programs are indeed creating stock markets capable of absorbing large new stock issues, just as the governments had hoped.

4. INVESTOR PROTECTION AND GROWTH OF STOCK MARKETS

While several authors have commented on the importance of legal systems to effective corporate governance, the works of La Porta, Lopez-de-Silanes, Shleifer, and Vishny (hereafter LLSV) have had unprecedented impact due to their number and the fact that the papers have been published in very prestigious academic journals. Using a sample of 49 countries, LLSV (1997) show that countries with poorer investor protection—measured both by the character of legal rules and the quality of law enforcement—have smaller and less liquid capital markets. This is true for both debt and equity markets, suggesting that stock and bond markets are complements rather than supplements, and both require the proper legal infrastructure to reach maturity. LLSV (1997) also show that French civil law countries offer much poorer investor protection than do common law countries, and LLSV (1998) describe why this is so. They examine the investor protection characteristics of the world’s four basic legal systems (English common law, French civil law, German civil law, and Scandinavian law), and find that the common law countries offer by far the greatest protection to non-controlling investors. Further, LLSV (1998) document (and provide a rationale for) the fact that ownership concentration is highest in countries offering poor investor protection, which is consistent with the idea that small, diversified shareholders are unlikely to be important in countries that fail to protect outside investors. In a specific investigation of the ownership structures of the largest publicly traded companies in the world’s developed economies, La Porta, Lopez-de-Silanes, and Shleifer (1999) show that dispersed ownership structures are common only in the U.S., Japan, and Britain. Effective family control over even the largest companies, often exercised through pyramidal share ownership structure, is the norm everywhere else. La Porta (2000) also find that dividend policies in different nations are related to the agency costs of different ownership structures. Table 7 reproduces key results from LLSV (1997) showing the impact of a nation’s legal system on economic growth and financial market size and depth.

Table 7. Law and Finance—English Common Law Systems Promote Capital Market Growth

This table details the relationship between the type of legal system upon which a country's commercial code is based and the size of that nation's capital markets for selected countries in 1994. Column 2 is the ratio of the stock market capitalization held by minority (non-controlling) shareholders to GDP, and column 3 provides a similar measure for private sector debt (bank loans and bonds). Column 4 presents the country's average annual GDP growth rate over 1970–1993 and column 5 is the ratio of the number of domestic firms in a country to its population, in millions. Columns 6–8 present summary measures of the law and order traditions in a country (column 6) and of how well its legal code protects the rights of shareholders (column 7) and creditors (column 8). *Source:* Rafael LaPorta, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert Vishny, "Legal Determinants of External Finance," *Journal of Finance* 52 (July 1997), pp. 1131–1150.

Country (1)	External cap/GDP (2)	Debt/GDP (3)	GDP growth rate (4)	Domestic firms/Pop (5)	Rule of Law (6)	Antidirector rights (7)	Creditor rights (8)
Australia	0.49	0.76	3.06%	63.55	10.00	4	1
Canada	0.39	0.72	3.36	40.86	10.00	4	1
Israel	0.25	0.66	4.39	127.60	4.82	3	1
United Kingdom	1.00	1.13	2.27	35.68	8.57	4	4
United States	0.58	0.81	2.74	30.11	10.00	5	1
English origin average	0.60	0.68	4.30%	35.45	6.46	3.39	3.11
Belgium	0.17	0.38	2.46%	15.59	10.00	0	2
France	0.23	0.96	2.54	8.05	8.98	2	0
Greece	0.07	0.23	2.46	21.60	6.18	1	1
Italy	0.06	0.55	2.82	3.91	8.33	0	2
Spain	0.17	0.75	3.27	9.71	7.80	2	2
French origin average	0.21	0.45	3.18%	10.00	6.05	1.76	1.58
Austria	0.06	0.79	2.74%	13.87	10.00	2	3
Germany	0.13	1.12	2.60	5.14	9.23	1	3
Japan	0.62	1.22	4.13	17.78	8.98	3	2
Korea	0.44	0.74	9.52	15.88	5.35	2	3
Switzerland	0.62	—	1.18	33.85	10.00	1	1
German origin average	0.46	0.97	5.29%	16.79	8.68	2.00	2.33
Denmark	0.21	0.34	2.09%	50.40	10.00	3	3
Finland	0.25	0.75	2.40	13.00	10.00	2	1
Norway	0.22	0.64	3.43	33.00	10.00	3	2
Sweden	0.51	0.55	1.79	12.66	10.00	2	2
Scandinavian origin average	0.30	0.57	2.42%	27.26	10.00	2.50	2.00
Sample average (44 countries)	0.44	0.59	3.79%	21.59	6.85	2.44	2.30

Empirical studies by LLSV and others support their proposition that a nation's legal system influences the optimal ownership structures of publicly listed companies, and that ownership structure "matters." La Porta (1999) find that the size of a nation's government is related to its efficiency, honesty (the legal system again), and the demographic make-up of its citizenry. LLSV (2002) document that countries with the greatest legal protection for investors also assign the highest valuation to publicly-traded shares. The clear implication of this finding is that individual investors are more willing to entrust their savings to capital market investments when they are confident that their wealth will not be expropriated by insiders. Demirgüç-Kunt and Maksimovic (1998) show that in countries whose legal systems score high on an efficiency index, a greater proportion of firms use long-term external financing. Since their measure of efficiency is different from LLSV's, the results are not a direct test of the LLSV hypothesis that common law countries offer better investor protection than civil law countries (especially since France receives higher efficiency scores than Britain). Nonetheless, Demirgüç-Kunt and Maksimovic document that an active stock market and large banking sector are associated with externally financed firm growth, and that companies in countries with weak financial sectors are unable to fund maximum achievable growth. Finally, though Coffee (1999) takes issue with LLSV's focus on the transcending importance of a nation's system of corporate law—he emphasizes differences in national securities laws and regulations—he agrees that the commercial legal system is a vitally important part of an effective corporate governance system.

The past three decades have witnessed a nearly incredible increase in the liquidity and efficiency of capital markets in the United States, Great Britain, Switzerland, and the Netherlands. Most other countries have experienced far less dramatic growth in trading volume and securities issuance volume (though capitalization has increased comparably). Not coincidentally, the four countries listed above all have large funded (private) pension systems and the largest number of active institutional investors, especially pension funds. These investors bring a number of active institutional investors, especially pension funds. These investors bring a number of significant strengths to the market with them. They are sophisticated financial analysts, they command significant (often vast) resources, and they have the clout to demand that corporate managers perform effectively and attend to shareholders' interests. Countries wishing to develop an effective corporate governance system should both encourage the growth of domestic institutional investors and attract participation by foreign institutions.

5. CONCLUSION

Recent financial history can be encapsulated in a phrase: the rise of global capital markets.

Our research documents the following key points: (1) the fraction of total domestic credit provided by the banking sector, as a percent of GDP, has increased only modestly since 1990 for the world as a whole, as well as for most major country groupings. During the 1990–2000 period, stock market capitalization as a percent of GDP increased from 48 to 105 percent for the world as a whole, though it has declines by perhaps a third since then, and from 52 to 121 percent for high income countries. (2) Share issue privatizations (SIPs) contributed significantly to the nearly eleven-fold increase, from \$3.4 trillion to \$35.0 trillion, in the total capitalization of the world's stock markets that occurred between 1983 and 2000. During that same period, the aggregate valuation of SIPs grew from less than \$50 billion to over

\$3.3 trillion—about 13 percent of the world's total, but over 27 percent of the non-U.S. total. Though the aggregate valuation of the world's stock markets declined to about \$18 trillion by year-end 2002, privatized firms have fared much better than other companies and they now account for a significantly higher fraction of total non-U.S. market value (38.6 percent in May 2003) than in 2000. SIPs also played a significant role in the even more dramatic increase in global stock market trading volume, from \$1.23 trillion in 1983 to \$33.1 trillion in 2002. (3) Privatizations have significantly improved stock market liquidity during the last ten years. On average, each additional privatization deal is associated with a 2.3 percent increase over the first year and a 1.7 percent increase over the second year in the turnover ratio of the respective stock market.

From 1990 to 2000, stock markets all over the world increased in value (measured both by market capitalization and trading volume, in absolute measures, and when standardized by GDP) at an unprecedented rate. The large number of SIPs and the large number of new investors these privatizations bring to the market are largely responsible for this increase, especially in the developing markets. But following 2000, the world markets again fell in tandem. There was no massive government takeovers of private firms, so what was the cause of this decline? It is a testament to the increasingly global nature of capital markets and national economies. Recessions or economic downturns are no longer felt by only the country (and possibly its neighbors). They have become global events.

REFERENCES

- Beck, Thorsten, Ross Levine, and Norman Loayza, "Finance and the Sources of Growth," *Journal of Financial Economics* 58, pp. 261–300 (2000).
- Bekaert, Geert and Campbell Harvey, "Foreign Speculators and Emerging Equity Markets," *Journal of Finance* 55, pp. 565–613 (2000).
- Boutchkova, Maria K. and William L. Megginson, "Privatization and the Rise of Global Capital Markets," *Financial Management* 29, pp. 31–76 (2000).
- Coffee, John C., Jr., "Privatization and Corporate Governance: The Lessons from Securities Market Failure," *Journal of Corporation Law* 25, pp. 1–39 (1999).
- Demirgüç-Kunt, Asli and Vojislav Maksimovic, "Law, Finance, and Firm Growth," *Journal of Finance* 53, pp. 2107–2137 (1998).
- Henry, Peter Blair, "Do Stock Market Liberalizations Cause Investment Booms?" *Journal of Financial Economics* 58, pp. 301–334 (2000a).
- Henry, Peter Blair, "Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices," *Journal of Finance* 55, pp. 529–564 (2000b).
- La Porta, Rafael, "The Quality of Government," *Journal of Law, Economics, and Organization* 15, pp. 222–279 (1999).
- La Porta, Rafael, "Agency Problems and Dividend Policies around the World," *Journal of Finance* 55, pp. 1–33 (2000).
- La Porta, Rafael, Florencio López-de-Silanes, and Andrei Shleifer, "Corporate Ownership around the World," *Journal of Finance* 54, pp. 471–517 (1999).
- La Porta, Rafael, Florencio López-de-Silanes, Andrei Shleifer, and Robert W. Vishny, "Legal Determinants of External Finance," *Journal of Finance* 52, pp. 1131–1150 (1997).
- La Porta, Rafael, Florencio López-de-Silanes, Andrei Shleifer, and Robert W. Vishny, "Law and Finance," *Journal of Political Economy* 106, pp. 1113–1155 (1998).
- La Porta, Rafael, Florencio López-de-Silanes, Andrei Shleifer, and Robert W. Vishny, "Investor Protection and Corporate Governance," *Journal of Financial Economics* 58, pp. 3–27 (2000).
- La Porta, Rafael, Florencio López-de-Silanes, Andrei Shleifer, and Robert W. Vishny, "Investor Protection and Corporate Valuation," *Journal of Finance* 57, pp. 1147–1170 (2002).
- Levine, Ross, "Financial Development and Economic Growth: Views and Agenda," *Journal of Economic Literature* 35, pp. 688–726 (1997).
- Levine, Ross and Sara Zervos, "Stock Markets, Banks, and Economic Growth," *American Economic Review* 88, pp. 537–558 (1998).

- Meggison, William L., Robert C. Nash, Jeffrey M. Netter, and Annette B. Poulsen, "The Choice between Private and Public Markets: Evidence from Privatization," *Journal of Finance* (2004, forthcoming).
- Rajan, Raghuram G. and Luigi Zingales, "Financial Dependence and Growth," *American Economic Review* 88, pp. 559–586 (1998).
- Subrahmanyam, Avanidhar and Sheridan Titman, "The Going Public Decision and the Development of Financial Markets," *Journal of Finance* 54, pp. 1045–1082 (1998).
- Wurgler, Jeffrey, "Financial Markets and the Allocation of Capital," *Journal of Financial Economics* 58, pp. 187–214 (2000).

7. GLOBALIZATION OF THE BOND AND STOCK MARKETS: THE JAPANESE CASE—AN INTERNATIONAL PERSPECTIVE

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1. INTRODUCTION

By almost any economic standard, the post-war economic development of Japan can be characterised as a success. In particular during the second half of the eighties, this success gave rise to many publications which declared Japan the new economic and financial superpower of the world (van Rixtel, 2002). Especially with respect to financial services, Japan was increasingly perceived as a threat, as its banks established important positions in overseas markets and the behaviour of Japanese investors could determine the success or failure of sovereign paper auctions in many parts of the world (Burstein, 1988; Viner, 1988; Düser, 1990). The globalization of Japanese finance started to become a topic of intense academic discussion. After the “first wave” of Japanese goods such as television sets and cars flooding foreign markets, a “second wave” of Japanese financial services and even a “third wave” consisting of the advance of Japanese financial conglomerates abroad were observed (Wright and Pauli, 1987; van Rixtel, 1989).

However, with the economic and financial crisis that took hold of Japan during the past 15 years or so, the financial globalization of Japan became less of an issue, as Japanese policymakers concentrated first and foremost on domestic issues. Possibly the major exception was the introduction of the “Big Bang” deregulation package towards the end of the nineties, which incorporated certain reform measures aimed at improving the position of Tokyo as an international financial centre. As a result of the collapse of the “Bubble” economy, Japanese banks became saddled with huge amounts of non-performing loans and in effect many retreated from overseas markets. The parallel fall in stock prices reduced significantly the interest of foreign investors to invest in Japan. The turnabout in Japan’s economic and

especially its financial fortunes became reflected in a growing number of publications that doubted the “superpower” status of the Japanese financial system (Wood, 1993; Dattel, 1994; van Rixtel, 1997; Katz, 1998; Posen, 1998).

As history always takes its turn, the recent economic and financial stabilisation of Japan seems to have changed the strong inward focus of Japan’s policymakers, financial institutions and markets during the crisis years to a somewhat more outward oriented look. In other words, there appears to be renewed interest in the globalization of the Japanese financial system and the position of Tokyo as an international centre of finance (Ministry of Finance, 2003; Japan Center for International Finance, 2004). Therefore, in our view, it seems to be the right moment to address the process of globalization in relation to Japan’s financial markets in both qualitative and quantitative terms.

Globalization has always been a topic of high interest to policy makers, economists, and academics, but particularly in the past few years, it has been at the centre of heated debates (Stiglitz, 2002; Wolf, 2004). In our view, globalization can be defined as the expansion of domestic markets and activities into a world-wide system (Rutherford, 2002). Today, globalization means that increasingly economic activity takes place within world-wide markets, often electronically. Globalization encompasses the internationalisation of products and services by firms. It has enabled investments in financial markets to be carried out on an international basis and has come about as a result of major improvements in computer and telecommunication technology and important deregulation processes. In general, it appears that countries that take advantage of free movements of goods and services, capital and labour, can thrive on aggregate activity. However, sound macroeconomic policies are necessary and consequences for financial markets and financial stability need to be closely watched (Bordo, 2002; Wolf, 2004). Not surprisingly, globalization, and particularly financial globalization, has received considerable attention from central bankers (Matsushita, 1996; Greenspan, 1998; Issing, 1997; Trichet, 2004).

This chapter focuses on the impact of globalization on the bond and stock markets, the two most important financial markets, from a predominant Japanese perspective. The case of Japan is compared with that of the United States and Germany. These three industrialised economies had the three most important floating exchange rates in the post-Bretton Woods era. In addition, they are the three biggest economies and visible traders of the world (The Economist, 2004). For example, Japan, the United States and Germany together accounted for around 30% of world exports in 2003.

We start with a selective review of globalization studies and follow with some key facts of financial globalization in Japan, followed by the United States and Germany. Our focus is particularly on Japan, and consequently we discuss in much greater detail the globalization of its financial markets. On the basis of a number of indicators, we show that, from a more structural perspective, the globalization of the Japanese financial system has been stalled to some extent in recent years. However, the empirical analysis based on the movement of bond and stock market prices shows that the Japanese bond and stock markets have been significantly affected by globalization. The worldwide process of globalization of the bond and stock markets is for around 50% reflected in domestic developments in the Japanese bond and stock markets. The impact of globalization on financial markets in Japan is found to be somewhat less than in the United States and Germany. Our results suggest that globalization has particularly occurred directly after the collapse of the Bretton Woods system in the stock

market and some time later in the bond market. These findings imply that globalization had, has and will have an impact on the most important financial asset prices not only in Japan, but in the US and Germany as well and thus on economic growth in these countries.

2. GLOBALIZATION STUDIES

This section describes a selective review of recent studies on financial market globalization.² We describe the main findings of the literature examining the globalization of financial markets, in particular financial liberalisation and integration, and its impact on economic growth.

While ample evidence exists that financial liberalisation and integration positively affect economic growth, this relation is not in all cases robust (Klein and Olivei, 1999; Levine, 2001; Edison et al., 2002a and 2002b; McLean and Shrestha, 2002; Agenor, 2003; Kaminsky and Schmukler, 2003; Klein, 2003; Fratzscher and Bussiere, 2004). There is some evidence that the positive impact of globalization is conditional upon the existence of relatively developed domestic financial institutions and a sound macroeconomic policy. For example, Bailliu (2000) finds evidence that capital inflows foster higher economic growth, above and beyond any effects on the investment rate, but only for industrialised economies where the banking sector has reached a certain level of development. These results suggest that the domestic financial sector plays a pivotal role in ensuring that international capital flows do indeed promote economic growth in developing countries. Also the open economy's choice of the monetary regime might play a role (Obstfeld and Taylor, 2002).

From a historical perspective, Bordo and Murshid (2002) argue that financial market shocks were more globalised before 1914 compared to the present. Also Lothian (2002) concludes that the globalization of financial markets is not a new phenomenon but that it began much earlier and has continued, albeit with periodic interruptions and reversals, for many centuries. Goetzmann et al. (2001) show that international equity market correlation coefficients have changed over time, with peaks in the late 19th century, the Great Depression, and the late 20th century. Periods of free capital flows are associated with high correlations. Rousseau and Sylla (2001) show that the correlation between financial factors and economic growth was the strongest over the 80 years preceding the Great Depression.

Transmission of financial crises or shocks as well as contagion in financial markets have also taken a lot of attention in the academic literature (for an overview of the literature see: Hartman et al., 2003). With respect to Japan, Peek and Rosengren (1997) investigated the international transmission of financial shocks by assessing the impact of the sharp decline in Japanese stock prices during the nineties on the US economy, through its influence on US branches of Japanese banks. They conclude that the contraction in Japanese bank lending caused by the decline in Japanese stock prices was transmitted internationally to the US, as US branches of Japanese banks reduced lending at the time of declines in their parents' capital positions. In another paper, Peek and Rosengren assess more specifically the impact of the Japanese banking crisis on economic activity in the US (Peek and Rosengren, 2000). By identifying the banking problems in Japan as an exogenous loan supply shock to the US, they find a clear negative effect on construction activity in major commercial real estate markets in the US.

With respect to other investigations of the international transmission of financial shocks and contagion, Dungey et al. (2002) found that financial turbulence like the LTCM crisis

led to higher volatility in the developing markets. They also found that contagion effects are widely distributed across both developed and developing countries. Peiro et al. (1998) examined the relationship between the New York, Tokyo and Frankfurt stock markets. They concluded that New York is the most influential stock market, in the sense of affecting the other markets, and Tokyo is found to be the market the most sensitive to external developments. Kim and Rogers (1995) examined stock price spill-overs and the impact of market liberalization measures between Korea, Japan and the United States. They confirm that volatility spill-overs from developing to emerging markets are the most significant ones. King and Wadhvani (1990), in the same vein, showed that empirical evidence suggests that an increase in volatility leads in turn to an increase in financial contagion. They confirmed that after the October 1987 stock market crash, the correlation between various stock markets increased significantly. Finally, Domanski and Kremer (2000) employ the switching ARCH methodology to investigate the co-movements between bond and stock market returns. They conclude that contagion leads to a significant increase in the cross-market correlation during states of financial market turmoil and hence, contagion differs from mere “interdependence” in the sense that it demands a stronger-than-normal market linkage during periods of high market volatility.

The remainder of this chapter differs in two markedly ways from previous studies. First, the globalization studies mentioned above typically analyse a large set of emerging and/or industrialised countries. In contrast, our study focuses on the three major industrialised countries, i.e. the United States, Germany and Japan, with special attention to the latter. We exclusively examine the interlinkages between three advanced economies with the world’s leading currency areas. Second, the direct impact of financial market globalization on economic growth is not examined. Instead, we concentrate on the impact of globalization on the prices of the most important financial markets, i.e. the bond and stock markets. These financial asset prices, in turn, are known to affect economic growth. The period analysed is the post-Bretton Woods era, which is the most relevant period for the current international financial system.

3. THE JAPANESE EXPERIENCE

This section describes the experience of Japan with financial globalization together with that of the United States and Germany. To be able to understand Japan’s experience with financial globalization in comparative perspective, this section starts with an analysis of the process of financial reform in Japan.

3.1. Financial Reform and the Globalization of the Japanese Financial System

3.1.1. Financial Reform

Until the end of the sixties, the pace of financial reform in Japan was slow. From 1973, this changed by the transition to the floating exchange rate system and the rise of inflation throughout the world. Furthermore, the first oil crisis that marked the end of the high growth period in Japan resulted in large issues of government bonds to finance the rising public borrowing requirements. The shift to lower economic growth and higher levels of public debt, combined with the increasing accumulation of financial assets by individuals, the growth of internal reserves of Japanese companies and increasing monetary growth,

raised the degree of interest rate sensitivity in the private non-financial sector (Suzuki, 1987; Eijffinger and van Rixtel, 1992; van Rixtel, 2002). Furthermore, the Japanese financial structure changed slowly but steadily, as the dependence of non-financial firms on bank borrowing was reduced, and other sources of corporate finance such as internal finance and direct finance became more important (Calder, 1993; Horiuchi, 1996). As regards the latter, this implied a development towards corporate financing through the money and capital markets, in particular the Eurobond markets, in which the issuance conditions for Japanese companies were significantly less restrictive than in Japan itself.³ Furthermore, the shift to the floating exchange rate system stimulated the globalization of finance and resulted in a substantial increase of international capital flows. Finally, the rapid progress of computer and information technology resulted in lower costs of financial innovations and higher profit opportunities for financial institutions.

The process of financial reform resulted in a gradual decrease of the degree of regulation of the Japanese financial system. The traditional segmentation of the activities of financial institutions became increasingly blurred, as banks and securities companies started to operate more and more on each other's business territories. Furthermore, the city and major regional banks diverted their operations towards smaller- and medium-sized companies, forcing the smaller banks and credit co-operatives to look for new business opportunities, as will be explained in the next section. Also the traditional segmentation between short- and long-term lending by respectively commercial banks and long-term financial institutions was in practice not followed anymore. All in all, the Japanese financial system started to move slowly but steadily towards a universal banking system. In addition, the regulatory authorities embarked on a carefully orchestrated path of abolition of interest rate controls, and also the regulation of the entry of financial markets was gradually lifted. Finally, the degree of international openness of the Japanese financial system was improved, and international capital could move easier in and out of Japan.

This process of financial reform, thus starting towards the end of the seventies and still ongoing, has been of the utmost importance for the globalization of the Japanese financial system. Due to the abolition of foreign exchange regulations, capital could flow in and out of the country more easily and swiftly, a process that was further aided by the lifting of interest rate controls. Further financial liberalisation measures made Japanese financial markets more attractive for foreign financial institutions and investors.

3.1.2. Globalization

In the context of this chapter, the most important aspect of the financial reform process was the globalization of the Japanese financial system, in other words the gradual but increasing development of international financial relations of Japan with the rest of the world, including the opening of national financial markets to non-residents. Under financial globalization, Japanese financial markets have become more and more integrated with world markets, and both Japanese financial institutions and corporations can now freely choose among various national financial systems to conduct their financial transactions. In Japan, in particular the enactment of a new Foreign Exchange and Foreign Trade Control Law in December 1980, which provided freedom of international transactions unless explicitly prohibited (freedom in principle), promoted this process. However, the new law failed to liberalise completely international financial transactions, as broad discretion was given to the ministries to introduce

exceptions to the principle of the free movement of international capital flows (Oda, 1998). With respect to the money markets, the process of financial globalization in Japan has been stimulated by two important reforms.

First, the removal in June 1984 of the so-called “swap” limits or “yen conversion” limits, which restricted the amount of foreign currency that could be converted into yen by financial institutions, increased arbitrage between interbank markets and the Euroyen-markets – the financial markets outside of Japan where instruments denominated in yen are being traded. Second, the internationalisation of Japanese money markets was stimulated by the abolition in April 1984 of the so-called “real demand” doctrine, which allowed forward exchange transactions only for trade (or real) finance. As a result of the globalization of the Japanese financial system and the development of the Japanese economy, Japanese financial institutions advanced into the ranks of the world’s largest banks and securities houses (Wright and Pauli, 1987; van Rixtel, 1989; Düser, 1990). Instrumental to this development were the protected domestic financial markets, de-facto largely closed to foreign financial institutions.

Furthermore, because of certain regulatory and institutional factors such as fixed equity trading commissions, rigidities in domestic bond markets and the relative scarcity of attractive domestic instruments, foreign institutions seldom raised funds in the Japanese financial markets and residents often preferred to use overseas capital markets (Takeda and Turner, 1992). Also the liberal attitude of the Japanese monetary authorities with respect to the international financial activities of Japanese financial institutions supported their international advance. For example, Japanese banks were allowed to operate as universal bank in various countries with universal banking systems and consequently could conduct various activities such as securities business through securities subsidiaries, which were not permitted in Japan. By using low-spread/high-volume strategies aimed at gaining market share and acquiring established institutions in global financial centres, Japanese financial institutions became major players in the international financial markets, in particular in the Euro-markets. These markets gained increasingly importance for the issuance of debt securities and equity-linked products by Japanese corporations. However, due to the further liberalisation of the Japanese financial system, the collapse of the “Bubble” economy and subsequent banking crisis in Japan, and the greater emphasis on rates of return than on market share, reinforced by the need to meet the BIS capital adequacy ratios, Japanese banks cut back sharply their Euro-market operations in the early 1990s.

It has been widely accepted that during the seventies the Japanese monetary authorities often changed their stance towards capital controls, depending on exchange rate objectives (see for example: Frankel, 1984; Takeda and Turner, 1992; Takagi, 1995). When the yen was under depreciating pressures, measures were taken to encourage capital inflows and to discourage capital outflows; and conversely when the yen came under heavy upward pressure. During the eighties, the liberalisation of international capital flows was more fundamental than the ad-hoc measures of the seventies. As a result, capital outflows were considerably strengthened. However, the liberalisation of domestic financial markets was much slower, a development which discouraged capital inflows into Japan’s financial markets. This so-called “sequencing” of financial reform would, other things being equal, probably had a temporary mitigating effect on the value of the yen (Takeda and Turner, 1992).

The process of financial reform, including financial globalization, received a major boost by the announcement of Prime Minister Ryutaro Hashimoto of the so-called “Big Bang”

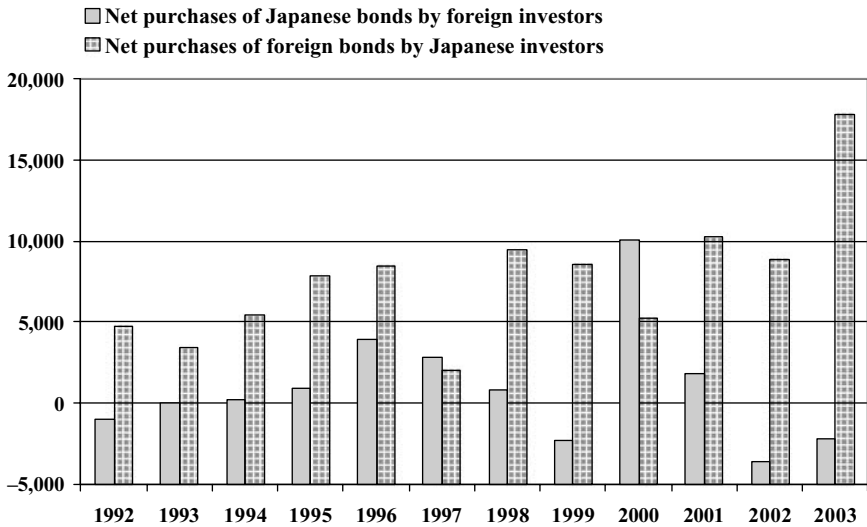
financial reform package in November 1996, which would be implemented during a three-year period from April 1998 until March 2001 (Ministry of Finance, 1997 and 1998; Hall 1998; Oda, 1998; van Rixtel 1998; Ito and Melvin, 1999; Honda, 2003). The main goal of the “Big Bang” was to establish “free, fair and global” financial markets, including further deregulation of financial activities, improved competition, transparent rules and the introduction of legal, accounting and supervisory frameworks that could meet international standards. One of the main reasons for the introduction of this deregulation initiative was the fear of the Japanese authorities that the position of Tokyo as international financial centre and the international role of the yen would be further hollowed out compared with other regional financial centres such as Hongkong and Singapore. Tokyo was increasingly losing market share due to the ongoing economic and banking crises, high transaction costs and the relatively high degree of market regulation. For example, the monthly turnover of the Tokyo Stock Exchange had dropped from relative parity with the monthly turnover of the New York Stock Exchange in the early nineties to about one fifth. When the first elements of the “Big Bang” package were introduced in April 1998, all remaining restrictions on foreign exchange transactions were removed (Gibson, 1998). A new version of the Foreign Exchange and Foreign Trade Control Law became effective, and the term “control” was dropped from the title of the law, as cross-border capital transactions were completely liberalised (Oda, 1998; Japanese Bankers Association, 2001). Regulations on foreign payments were relaxed and the system of authorised foreign exchange banks was abolished, and the related Foreign Exchange Bank Law was rescinded.

3.2. The Current Globalization of the Japanese Financial System

This subsection provides a summarised overview of the current degree of globalization of the Japanese bond and stock markets. Turning first to the former, the left panel of Chart 1 shows the net purchases by foreign investors of Japanese bonds and by Japanese investors of foreign bonds. The figures reveal two opposite trends. On the one hand, foreign investors have become significant net sellers of Japanese bonds in 2002 and 2003. On the other hand, Japanese investors started to invest heavily in foreign bonds at the beginning of the new century, reaching an absolute record in 2003. In order to improve the participation of foreign investors in the domestic Japanese bond markets, the “Study Group on the Internationalisation of Japan’s Financial and Capital Markets”, established by the Ministry of Finance, advised to extend tax benefits, simplify personal identification procedures and improve settlement systems (Ministry of Finance, 2003).

An important indicator for the degree of globalization of a country’s bond markets is the issuance of bonds denominated in its national currency by foreign entities. In left panel of Chart 2, the issuance of so-called Samurai bonds and non-resident euro-yen bonds are shown. The former are bonds denominated in yen and issued by foreign entities in Japan, whereas the latter are yen-denominated bonds issued by entities non-resident in Japan in the international Euromarkets predominantly concentrated in London. The figures show clearly that foreign issuers of bonds prefer to issue in the free and liberalised Euromarkets for yen-denominated debt securities instead of issuing bonds denominated in yen in the Japanese bond markets. Various reasons can be put forward for this trend (Batten and Szilagyi, 2003; Ministry of Finance, 1998 and 2003; Rhee, 2004). First, issuance costs, including taxes, and administrative burdens in the yen-denominated Eurobond markets are much lower. Second,

Bonds



Stocks

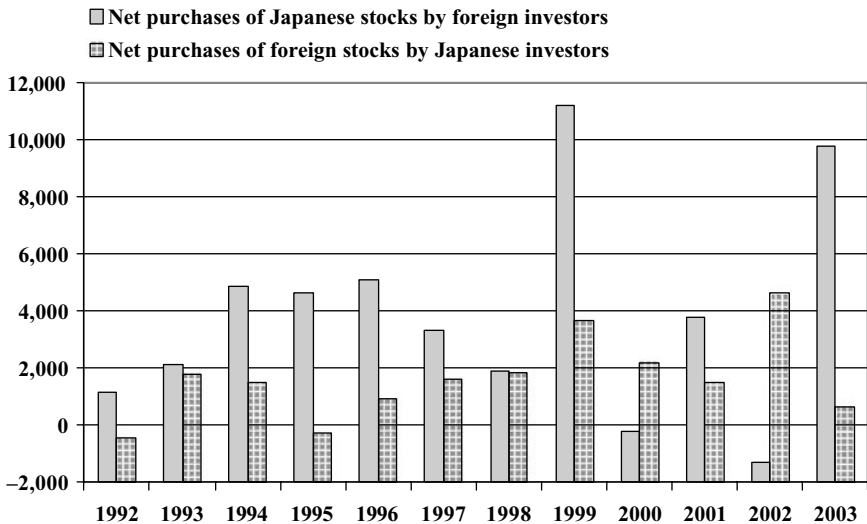
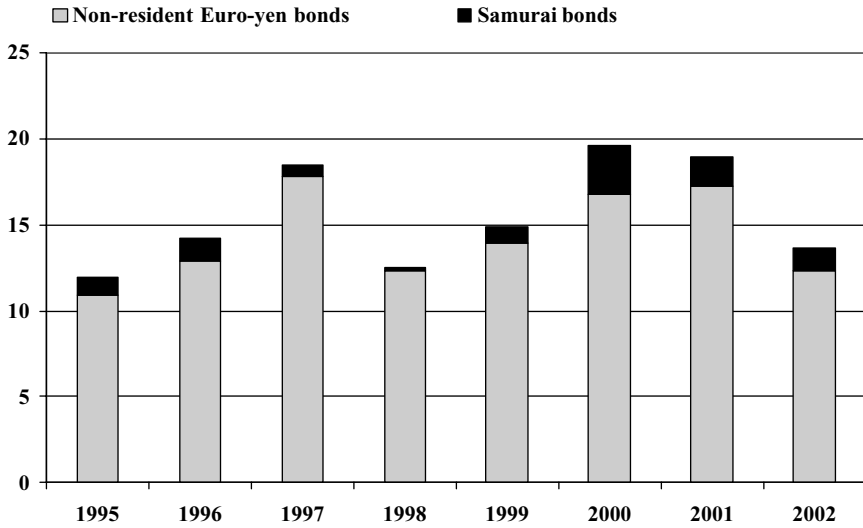
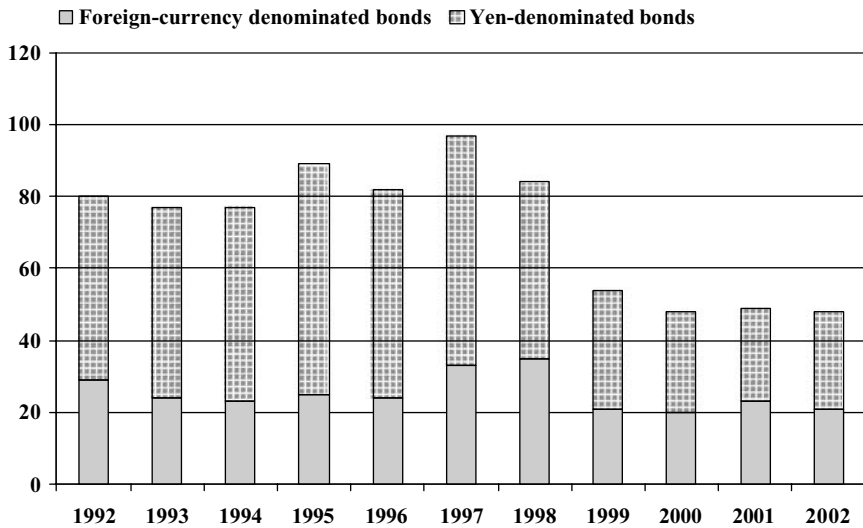


Chart 1. Net purchases of bonds and stocks by foreign and Japanese investors.

Source: Tokyo Stock Exchange (2004).

*(Yen trillion)***Bonds issued by foreign institutions****Offshore markets****Chart 2.** Yen-denominated bonds issued by foreign institutions and size of Japan's offshore markets.

Source: Ministry of Finance (2003).

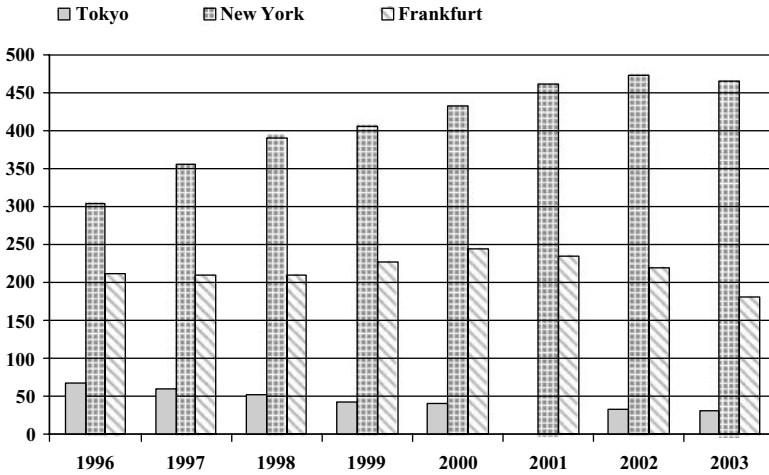
these markets offer much greater flexibility in issuance terms and conditions than the domestic Japanese bond markets. Third, clearing and settlement procedures are much more flexible in the Eurobond markets; in general, their institutional infrastructure is superior compared with that of the Japanese markets. Finally, the Japanese bond markets suffer from an insufficient internationalisation of the yen and a lack of participation by foreign institutions. A large number of proposals to revitalize the fund procurement function of the Samurai market have been made recently (see the various studies mentioned above). Some improvements implemented in 2003 related to the work of the “Study Group on the Internationalisation of Japan’s Financial and Capital Markets” and included the lifting of the requirement of listing at a Japanese stock exchange and the permission for foreign issuers to participate in the private-placement market in Japan (Ministry of Finance, 2003).

Regarding other aspects of the globalization of financial markets, the right panel of Chart 2 provides an overview of the development of bond market activity related to Japan’s Offshore Market (JOM), established in December 1986. The rise or decline of offshore markets is an interesting indicator to assess the degree of globalization of domestic financial markets, as in principle these markets are among the most liberalised and free financial markets for foreign participants in a particular financial system. It is rather clear that Japan’s offshore markets have not been an unequivocal success: in 2002, the amounts outstanding of both foreign currency and yen denominated bonds in these markets were around half of their peaks achieved in 1997. Turning to the stock market, the left panel of Chart 3 shows that the number of foreign companies listed at the Tokyo Stock Exchange has significantly and consistently dropped over the past eight years. Both in the absolute number of foreign companies listed in 2003 and decline in foreign listings since 1996, Tokyo is by far the worst performer. In terms of newly listed foreign companies, Japan ranks also considerably below one of its main Asian competitors, i.e. Singapore. Regarding the role of the Japanese stock market as a source of corporate finance in terms of the total amount of funds procured by all listed firms (including Japanese and foreign) both as initial public offerings (IPO’s) and secondary public offerings (SPO’s), it has remained generally in fifth place in the world since the mid-nineties (Ministry of Finance, 2003).

The right panel of Chart 1 provides an overview of the net purchases of Japanese stocks by foreign investors and of foreign stocks by Japanese investors. It is shown that in both 2000 and 2002, foreign investors were net sellers of Japanese stocks. It is clear that with the uncertainty about the development of the Japanese economy and the resolution of the banking crisis, the volatility of net purchases of Japanese equity by foreign investors increased considerably. The “Study Group on the Internationalisation of Japan’s Financial and Capital Markets” has made several recommendations, including strengthening the co-operation between Japanese and foreign stock exchanges and extending trading hours, in order to promote non-resident investment in the Japanese stock market (Ministry of Finance, 2003). The net purchases of foreign stocks by Japanese investors increased steadily from the mid-nineties onwards, reaching record figures in 2002, but then fell sharply in 2003. This could possibly be explained partly by the enhanced prospects of recovery of the Japanese economy and stabilisation of the banking problems.

For reference purposes, the right panel of Chart 3 shows stock market capitalisation as a percentage of GDP in Japan, the United States and Germany. The figures for Japan clearly show the rise and collapse of the “Bubble” in the second of the eighties and first half of

Foreign companies listed



Stock market capitalisation

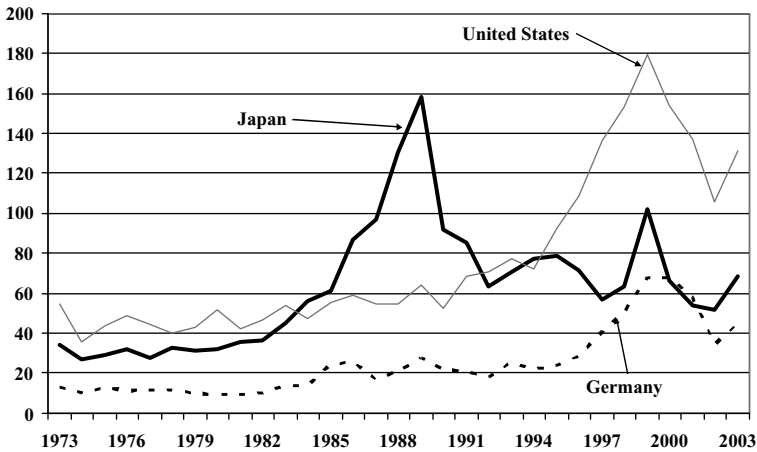


Chart 3. Number of foreign companies listed at the major stock exchanges and stock market capitalisation in percentage of GDP.

Sources: left-panel Ministry of Finance (2003) for 1996–2002 and Tokyo Stock Exchange (2004) for 2003, right-panel Global Financial Data.

the nineties. Since around 1996–1997, the development of market capitalisation in the three countries is rather similar, suggesting increased co-movement of stock prices. The US stock market is now clearly the largest, with the Japanese and German stock markets at relatively par levels. Furthermore, all three countries experienced the development of the so-called “New Economy Bubble” towards the end of the 20th century, when optimistic anticipations

of big rewards being made possible by technological developments such as the Internet and E-commerce drove stock prices to very high levels.

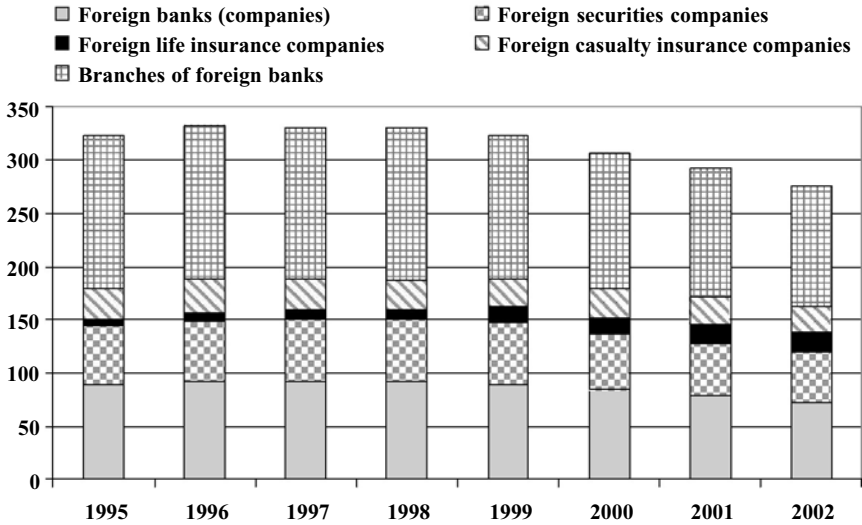
Finally, the degree of globalization of a financial system can be measured by the development of the number of participating foreign financial institutions and of the number of domestic firms which have physical presence in overseas financial markets. The left panel of Chart 4 indicates that, with the only exception of insurance companies, there has been a trend of a diminishing presence of foreign financial firms in Japan since the mid-nineties, particular of foreign banks and securities firms. Around the announcement and subsequent introduction of the first elements of the “Big Bang” financial reform package in 1996–1998, there was a slight increase or stabilisation in the number of foreign financial institutions in Japan, as it raised expectations of improved business opportunities and possible greater market shares (see: Harner, 2000). A number of foreign firms established business tie-ups or alliances with Japanese financial institutions and some foreign banks (re)listed at the Tokyo Stock Exchange. A major success-story was the takeover of the failed Long-Term Credit Bank of Japan by a consortium led by Ripplewood Holdings from the USA in March 2000 into the new Shinsei Bank (see Tett, 2004). Furthermore, foreign financial institutions managed to establish obtain a solid position in the Japanese life insurance market: the number of foreign life insurance companies increased from 6 in 1995 to 18 in 2002, and their market share grew from 13% in 1992 to 34% in 2001 (Ministry of Finance, 2003). For the rest, however, it looks like a considerable number of foreign financial firms reached the conclusion that it was more profitable to withdraw from Japanese financial markets and that more has to be done before Tokyo’s position as an international financial centre is truly attractive. This assessment is shared by the conclusions of a recent questionnaire conducted by the Japan Center for International Finance (JCIF) among foreign financial institutions operating in Japan. The main conclusion was that respondents “. . . appreciate the direction of the reforms, but feel that the degree of liberalisation and internationalisation is inadequate, and that the progress of the reforms is too slow” (JCIF, 2004). Thus, to a considerable extent and in spite of some moderate improvements, this assessment is still in line with conclusions reached in similar questionnaires conducted by the JCIF respectively 16 and 20 years ago (JCIF, 1988 and 1984). Also the conclusion of MoF’s “Study Group on the Internationalisation of Japan’s Financial and Capital Markets” is rather clear: “. . . It cannot be denied that the status of Japan as an international financial centre has been declining in recent years” (Ministry of Finance, 2003; see also Reszat, 2003).

Finally, the right panel of Chart 4 shows the presence of Japanese banks abroad. For all three categories of overseas presence, i.e. foreign branches, representative offices and offices, there has been a substantial decline. This was mainly due to severe rationalisation measures, implemented in light of the banking crisis in Japan. These measures were often compulsory in order to obtain public financial support. All in all, the figures point at a significant withdrawal of Japanese banks from overseas markets.

3.3. Financial Globalization in a Comparative Perspective

Table 1 provides a summary overview in comparative terms of the main financial liberalisation measures with respect to the capital account and the stock market in Japan, the United States, and Germany. Broadly speaking, capital account restrictions were in place in these countries in the (early) 1970s, but, in comparison, stock markets were more liberalised in general.

Foreign financial institutions in Japan



Overseas presence of Japanese banks

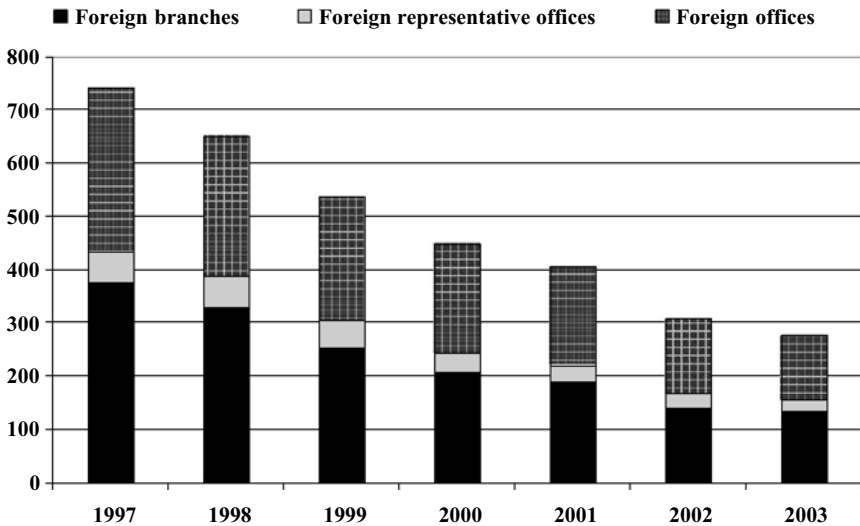


Chart 4. Number of foreign financial institutions operating in Japan and of Japanese banks operating abroad. Sources: left-panel Ministry of Finance (2003) for 1996–2002 and Tokyo Stock Exchange (2004) for 2003, right-panel Global Financial Data.

Table 1. Financial liberalisation measures with respect to the capital account and stock market

	Capital account	Stock market
Japan	<p>In 1973, a floating exchange rate regime was introduced and yen conversion controls on banks were partially eased. In 1977, “voluntary” restraint on foreign securities investments by banks abolished; acquisition of foreign equities and bonds by residents belonging to foreign companies permitted. In 1979, controls on capital inflows were eased. In January, the prohibition regarding non-residents’ purchases of yen-denominated bonds with remaining maturity of one year or less was entirely lifted. In December 1980, the new Foreign Exchange and Foreign Trade Control Law was implemented, and “in and out” international transactions became free in principle. The Japanese authorities implemented further important reforms in the 1980s. These reforms included improvements in access of foreign financial institutions to Japanese financial markets. Furthermore, starting in July 1980, Japanese corporations were allowed to issue bonds abroad, provided that advance notice was given. In April 1984, the “real demand” doctrine was abolished, followed in June by the “yen conversion” limits (see subsection 3.2). In December 1986, the Japan Offshore Market was established. Deregulation continued during the 1990s and was completed to a large extent in the mid-1990s. In June 1995, so-called “recycling” restrictions on yen-denominated bonds issued by non-residents in overseas markets abolished. In April 1998, a revised Foreign Exchange and Foreign Trade Law was enforced, as part of the financial “Big Bang” (see further subsection 3.2).</p>	<p>In 1973, there were no restrictions on the repatriation of income. Acquisitions of securities for portfolio investment could be made freely through designated securities firms. In other occasions, a prior notification, without a waiting period, was required. In 1976, foreign ownership limits applied. In principle, acquisitions by foreign investors were subject to validation or license. However, acquisitions of stocks for portfolio investment were automatically approved by the Bank of Japan. All these acquisitions had to be made against yen proceeds from the sale of foreign exchange if the investor wished to obtain resistance rights upon validation. In 1985, controls on outflows were eased.</p>
United States	<p>In 1973, corporations were allowed to borrow abroad but subject to ceilings, which were released in July. In June, the minimum reserve to be held by Federal Reserve member banks against Euro-dollar borrowings in excess of amounts permitted as reserve-free base, introduced in 1972, was reduced from 20% to 8%. It was further reduced in April 1975, from 8% to 4%, and in December 1977, from 4% to 1%. In August 1978, the reserve requirements on loans by foreign branches of US banks to US residents (under Regulation M) of 1% was abolished.</p>	<p>In 1973, capital, income, and profits were freely transferable abroad. There were no restrictions on foreign portfolio and direct investment. Foreign portfolio investment in excess of 10% of the voting securities of a US corporation was considered direct investment and had to be reported to the Department of Commerce. Portfolio investments by non-residents had to be reported to the Treasury Department.</p>
Germany	<p>In 1973, banks were subject to high minimum reserve requirements on the level of their foreign liabilities with maturities of less than four years. Banks’ foreign currency borrowings that were immediately reinvested abroad were exempted from the minimum reserve</p>	

(continued)

Table 1. (continued)

Capital account	Stock market
<p>requirements. Cash deposit requirements were applied to certain borrowing made by residents from non-residents. The prior approval of the central bank was required for sales to non-residents of all domestic money market paper and of fixed-interest securities of German issuers with less than four years remaining to maturity. No special exchange rate regime for capital account transactions existed. In February 1974, Bundesbank approval requirements were lifted for all borrowing abroad made by residents. In March 1980, Germany lowered the minimum maturity for domestic fixed-interest securities eligible for sale to non-residents from four to two years, and in November, it was further reduced to one year. In December, the Bundesbank concluded with the major commercial banks a gentlemen's agreement over voluntary curbs on capital exports. In March 1981, restrictions to the sale of German money market paper and fixed-interest rate securities to non-residents were lifted. This implied a de-facto abolition of the remaining restrictions on capital transactions. The agreement on voluntary restrictions on capital exports was ended.</p>	<p>In 1973, previous approval for non-resident's direct investment in Germany was required. However, non-residents could freely repatriate capital and income. In 1974, this approval was no longer required.</p>

Source: Kaminsky and Schmukler (2003) and Takahashi and Kobayakawa (2003)

Capital account liberalisation predominantly took place between the mid-1970s and mid-1980s in Japan, the United States, and Germany (Edison et al., 2002 and 2002b). Overall, Japan liberalised its bond and stock markets later than the United States and Germany. All in all, one may expect a larger increase in the degree of globalization of the bond market in the 1970s and 1980s than of the stock market, given the earlier liberalisation of the latter. As regards the domestic financial sector, credit controls and regulated bank interest rates were in place in Japan until the early 1990s (see subsection 3.1; for more details see: Eijffinger and van Rixtel, 1992; van Rixtel, 2002; Kaminsky and Schmuckler, 2003). No such regulated interest and credit controls were any more effective in Germany in the post-Bretton Woods era. In the United States, Regulation Q, which placed ceilings on deposit interest payments, was in place between 1973 and 1982.

In recent decades, the foreign assets and liabilities of advanced economies have grown rapidly relative to GDP, with the increase in the gross cross-holdings far exceeding changes in the size of net positions. Moreover, the portfolio equity and foreign direct investment (FDI) categories have grown in importance relative to international debt stocks (Lane and Milesi-Ferretti, 2003). However, from a historical perspective, the size of net capital flows has not increased that much (Okina et al., 1999). International capital flows have been in the

post Bretton-Woods era even at lower levels than before World War I, at least as measured by the current account balances of twelve countries in terms of GDP (Bordo et al., 1998).

The nature of international capital flows has, however, dramatically changed. Nowadays, capital flows predominantly relate to the industrial and services private sectors, whereas before World War I, it was the public sector or state guaranteed firms such as railroads and mining companies, i.e. entities with tangible and therefore relatively transparent assets. Furthermore, before World War I, international capital flows were predominantly related to bonds, whereas now the balance between bonds and equity is around fifty-fifty. While trade liberalisation has continued for a longer period, more dramatic changes have occurred in recent years in the financial sphere (Greenspan, 1998). World financial markets undoubtedly are far more efficient today than ever before. Advances in communication and information technology have allowed the development of new financial instruments and risk-management techniques, enabling today a wider range of financial and non-financial firms to manage their financial risks more effectively.

4. EMPIRICAL ANALYSIS

This section presents an empirical analysis of the globalization of the bond and stock markets. The case of Japan is compared with the experiences of the United States and Germany. The exchange rates of these three industrialised economies have formed the world's main currency areas after the collapse of the Bretton Woods system, i.e., the Japanese yen, the US dollar, and the D-Mark (later replaced by the euro). We look at both government bond yields and stock market returns, i.e. the first moment of the most important asset prices, as well as at bond and stock market volatility, i.e. the second moments of bond and stock prices.

4.1. Bond and Stock Market Prices

4.1.1. Principal Component Analysis

Inspired by Fase and Vlaar (1998) and Bordo and Murshid (2002), our globalization measures for bond and stock market prices are based on so-called principal component analyses. Principal component analysis transforms a set of correlated series into a smaller subset of uncorrelated series, each describing a common factor of the original series. This is done in a manner that aims to capture most of the variation in the data. For the three countries considered here, i.e. Japan, the United States and Germany, three principal components can be extracted. These principal components are ordered by the fraction of the total variance that they explain. The first principal component represents the best possible one-dimensional image of the multidimensional space of the three original country series. The explanatory power of the first principal component will be larger, the closer the correlations between the original series, or the more strongly they reflect the same feature. Hence, the fraction of the variance that can be attributed to the first principal component provides a good measure of the overall degree of co-movement in the data. In our case, the first principal component is interpreted as a measure for financial globalization.

The principal components can be based on both the correlation matrix and the covariance matrix. In our analysis, the former will be applied, as all series are weighted equally. An important condition for the use of this technique is that the original series are statistically stationary. As this is the case only for changes in bond and stock market prices, we examine

the monthly change in the long-term government bond yield and the monthly growth rate of the total stock market return index, i.e. the monthly stock market return.

The sample period for bond and stock market prices starts in 1967 since ten-year government bond yields are not available before for Germany and Japan. In fact, we use for Japan the seven-year government bond yield between 1967 and 1971. This period starts just before the collapse of the Bretton Woods system, formally in 1973 and de-facto in 1971 after the “Nixon shock”. Our sample period broadly matches with the second wave of globalization as argued by Baldwin and Martin (1999) and Bordo and Murshid (2002). They define two waves of globalization: the pre-World War I classical gold standard era of 1820/1880–1914 and the post-Bretton Woods era.

4.1.2. Bond Market Prices

Applying a principal component analysis to the changes in the ten-year government bond yields in Japan, the United States and Germany, the first principal component captures 58% of the total variation in these three country series. Much of the co-movement in the changes in long-term government bond yields during our sample can be attributed to the first principal component, which we have labelled as our globalization measure. However, there is still a significant degree of unexplained co-movement, which is captured by the “non-global” principal components two and three. These other two principal components explain each around 20% of the total variation in the monthly change in the government bond yields of the three countries considered. The implicit country weights corresponding to the first principal component are 0.52 for Japan and around 0.6 for the United States and Germany. These values suggest that Japan is around 20% less important for globalization than the United States and Germany, which are found to be equally important for our globalization measure. One should, however, be aware that end-of-month data are used, implying that this principal component analysis does not take into account daily and weekly responses of national bond yields to global developments.

Has globalization (increasingly) affected the pricing in the bond markets of the three countries considered? Given the fact that globalization is not a one-off event, but an ongoing process, we estimate the impact of the first principal component, excluding the weight of the country considered, by using ever larger subsets of the sample data. Our first sample starts in January 1967 and ends in January 1973, the year of the collapse of the Bretton Woods system. We then subsequently add one additional observation to the data set to compute the globalization impact on the long-term government bond yield considered. We repeat this process until we have used all observations up to March 2004 (see Chart 5).

Two observations emerge from the chart. First, globalization has a significant impact on bond market prices. The level of the effect of globalization on the bond market pricing is nowadays in Japan lower (0.3) than in Germany (0.4) and the United States (0.7). According to our results, the US bond market operates the most globally. Second, a significant rise in the globalization impact is observed around the early 1980s in all three countries. This finding suggests a regime switch around this time, in line with a sharp reduction of capital restrictions around 1980, for example in Japan with the adoption of a new Foreign Exchange and Foreign Trade Control Law in December 1980 (see Section 3). In Japan, the globalization impact continued to slightly increase in the 1980s and 1990s and seems to have come to an end at the beginning of the new century. This would be in line with the finalisation of the major

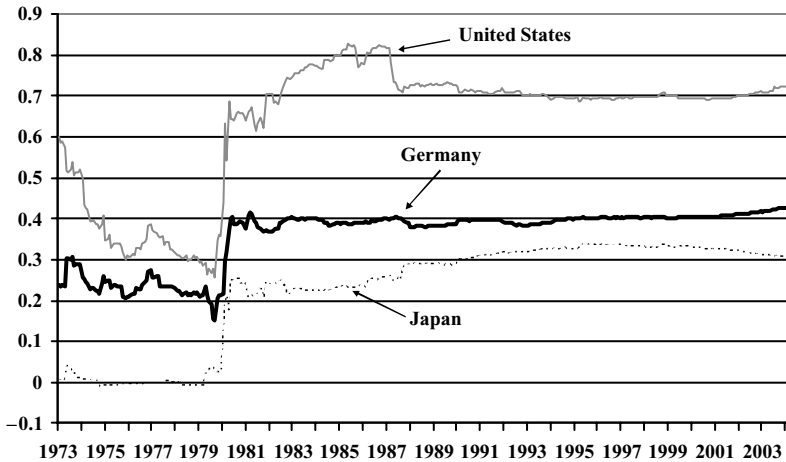


Chart 5. Recursive estimates of the impact of globalisation on government bond yield changes.

Source: Global Financial Data and author's estimations.

Notes: Dependent variable is the monthly change in the long-term government bond yield and the independent variables are a constant and the non-domestic part of our globalisation measure. Sample period starts in 1967.1 and ends with the period as shown on the x-axes. The first end period is January 1973, the year of the collapse of the Bretton Woods system. The grey lines denote two standard errors confidence interval.

international liberalisation measures in Japan in the second half of the nineties, as specific measures following the “Big Bang” financial reform initiative were enacted.

To investigate the impact of globalization on the change in long-term government bond yields further, we consider not only our globalization component, i.e. the first principal component calculated on the basis of the three country long-term interest rates, but also a domestic factor. One important domestic determinant of the long-term government bond yield, among other, is the three-month money market interest rate, capturing for example domestic monetary policy.

Table 2 presents the results of three different model specifications. The first estimation method is based on the ordinary least squares (OLS) single equation approach, the second and third on seemingly unrelated regressions of a system of equations. The second and third specifications differ whether the change in the short-term interest rate is corrected or not for a common component in the short-term interest rates of the three countries considered. The common component is computed as the first principal component as observed for changes in money market interest rates in Japan, the United States and Germany. The latter cannot be interpreted as a globalization measure of the money market, since the three different components explain each around one-third of the variation in the changes in money market interest rates. We label this variable as inflation-related world wide (oil price) supply shocks to which domestic monetary policy typically reacts in a similar way. The explanatory powers of the model specifications are quite satisfactory. Between 50% and 75% of the variation of the change in long-term government bond yields is explained by our globalization component together with a domestic factor. The standard errors of the regressions vary between 15

Table 2. Regression results of the change in long-term government bond yields

	OLS			SUR			SUR		
	JP	US	DE	JP	US	DE	JP	US	DE
Constant	-0.00 (0.01)	0.01 (0.01)	-0.00 (0.01)	-0.01 (0.0)	0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.01 (0.01)	-0.00 (0.01)
Globalisation component of bond market	0.43** (0.02)	0.71** (0.03)	0.46** (0.02)	0.45** (0.02)	0.78** (0.02)	0.47** (0.02)	0.47** (0.03)	0.76** (0.03)	0.50** (0.02)
Δ short-term interest rate	0.25** (0.04)	0.11** (0.02)	0.09** (0.02)	0.03 (0.02)	0.01 (0.01)	0.01 (0.01)	0.30** (0.04)	0.08** (0.01)	0.24** (0.03)
Common factor in Δ short-term interest rates							-0.12** (0.03)	-0.07** (0.03)	-0.18** (0.04)
R ²	0.46	0.73	0.61	0.43	0.71	0.59	0.48	0.73	0.61
S.E. of regression	0.20	0.19	0.15	0.21	0.20	0.16	0.20	0.19	0.15
Durbin-Watson statistic	2.28	2.02	2.05	2.21	1.97	1.98	2.30	2.05	2.05

Sources: Global Financial Data and authors' estimations.

Notes: Sample period is 1967.1-2004.3. Standard errors are reported between parentheses. ** and * denote significance at the 1% and 5% level, respectively. SUR instruments are the independent variables lagged one and two months.

and 20 basis points. Three conclusions emerge from Table 2. The first conclusion is that globalization significantly explains the change in government bond yields in the three major economies. As before concluded from the recursive estimates of the globalization impact, the US bond market is the most global one. This finding suggests that the Japanese and German bond markets might become even more globally in the future, at least in case they move towards the global dimension of the US bond market. Our result of a significant impact of globalization on the bond market prices is a very important one, since long-term interest rates, in turn, affect economic growth. In case we restrict in the system equations an equal globalization impact across the three countries, the estimated coefficient is found to be 0.57. Our second finding is that our domestic factor considered additionally and significantly explains long-term government bond yields. An increase in money market interest rates by 100 basis points results in up to 30 basis points higher government bond yields. The third and final conclusion is that a 100 basis points lower common short-term interest rate factor, e.g. due to lower world-wide inflation, results in a significant lowering of long-term government bond yields by 5 to 20 basis points.

4.1.3. Stock Market Prices

For the stock market price we follow the same procedure as for bond yields by looking at the monthly stock market return. The bulk of the variation that we observe in the monthly stock market return can be attributed to the first principal component, which represents globalization. The three principal components explain the variances of the stock market returns similar to the components of the changes in long-term government bond yields: 58% by the first principal component and around 20% by each of the other two components. The other two principal components capture influences on stock market returns, which are either specific to countries or a subset of countries. Also the implicit country weights

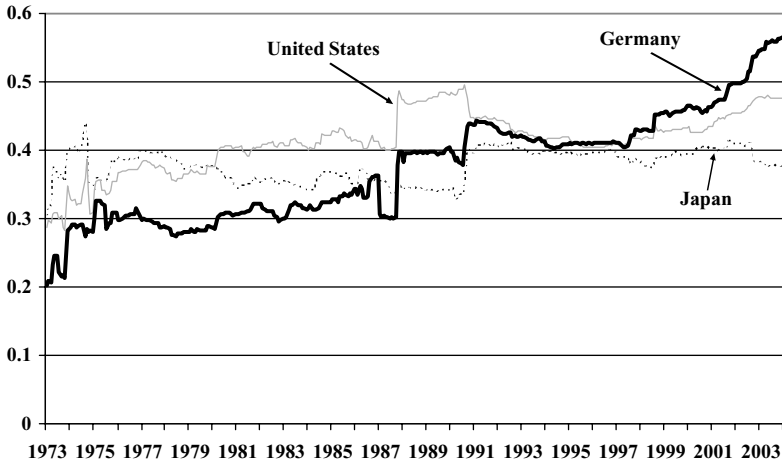


Chart 6. Recursive estimates of the impact of globalization on stock market return.

Note: Dependent variable is the monthly change in the long-term government bond yield and the independent variables are a constant and the non-domestic part of our globalization measure. Sample period starts in 1967.1 and ends with the period as shown on the x-axes. The first end period is January 1973, the year of the collapse of the Bretton Woods system. The grey lines denote two standard errors confidence interval.

relating to the first principal component are similar to that of the bond market: 0.51 for Japan and around 0.6 for the United States and Germany. The Japanese impact on stock market globalization is thus again found to be around 20% less important than that of the United States and Germany.

Two observations emerge from plotting the recursive estimates of the impact of globalization on the stock market return (see Chart 6). First, globalization has a significant impact on the stock market price. The level of the effect of globalization on stock market pricing is nowadays in Japan somewhat lower (close to 0.4) than in the United States and Germany (around 0.5). According to our results, the German stock market responds the most sensitive to globalization. Second, a significant rise in the globalization impact is observed in the late 1980s, after the October 1987 stock market crash in the United States and Germany, and in the early 1990s in Japan. A gradual increase of the impact of globalization during the whole post-Bretton Woods era is observed for German stock market returns. Noteworthy is the significant increase of the globalization impact in Germany since the start of the Economic and Monetary Union in 1999.

The impact of globalization on the stock market is further analysed by taking also a domestic component into account. The domestic variable considered is the long-term government bond yield, the relevant discount factor for future dividend payments. Table 3 presents the estimation results of the three different model specifications: OLS, SUR, and SUR including the globalization component of changes in government bond yields. Between 45% and 65% of the variation of the monthly change in stock market returns is explained by our globalization component together with the long-term government bond yield as domestic factor. The standard errors of the regressions vary between 2.7 and 3.9 percentage points.

Table 3. Regression results of monthly stock market returns

	OLS			SUR			SUR		
	JP	US	DE	JP	US	DE	JP	US	DE
Constant	-0.02 (0.19)	0.18 (0.13)	-0.15 (0.15)	-0.07 (0.19)	0.25 (0.13)	-0.19 (0.15)	-0.04 (0.19)	0.18 (0.13)	-0.15 (0.15)
Globalisation component of stock market	0.56** (0.03)	0.53** (0.02)	0.64** (0.02)	0.55** (0.03)	0.54** (0.02)	0.64** (0.02)	0.57** (0.03)	0.53** (0.02)	0.64** (0.02)
Δ long-term government bond yield	-0.97* (0.66)	-1.73** (0.35)	-0.81 (0.61)	0.00 (0.19)	-0.18 (0.12)	0.08 (0.20)	-2.97** (0.55)	-2.83** (0.53)	-2.99** (0.56)
Globalisation component of bond market							1.97** (0.53)	1.21* (0.53)	1.96** (0.45)
R ²	0.48	0.63	0.65	0.47	0.61	0.65	0.49	0.64	0.66
S.E. of regression	3.87	2.71	3.09	3.88	2.78	3.10	3.83	2.70	3.05
Durbin-Watson statistic	1.98	2.18	2.05	2.00	2.14	2.06	2.00	2.15	2.05

Source: Global Financial Data and authors' estimations.

Note: Sample period is 1967.1–2004.3. Standard errors are reported between parentheses. ** and * denote significance at the 1% and 5% level, respectively. SUR instruments are the independent variables lagged one and two months.

Three conclusions emerge from Table 3. The first and most important conclusion is that globalization significantly and positively affects stock market returns in Japan, the United States and Germany. The semi-elasticity with respect to our globalization component is found to be between 0.55 and 0.65. In case we restrict the globalization impact in the system equations to be equal across the three countries, the estimated coefficient is found to be 0.58, similar to the globalization impact on the bond market. The size of the estimated coefficients with respect to the globalization components are also in line with the average correlation between monthly equity returns of four major countries (the United States, Germany, the United Kingdom and France) of 0.475 during the period 1972–2000, as reported by Goetzmann et al. (2001). In addition, the domestic factor considered significantly explains stock market returns, at least in the case of the first and third model specifications. An increase of long-term government bond yields by one percentage point results in an up to 2.9% reduction in stock market prices. This finding is similar to the long-term interest rate semi-elasticity of -4.1 as found for EU countries in de Bondt et al. (1997). Thirdly, an increase in the degree of globalization of the bond market results in significantly higher stock market returns. In other words, an increase in globalization of the bond market has a significant and positive spill-over effect on the stock market. The possibility of daily spill-over effects across countries is further examined in the next subsection by taking a closer look at bond and stock market volatility.

4.2. Bond and Stock Market Volatility

Another way to shed light on globalization or the patterns in cross-country interdependence is to examine whether volatility spill-over effects consistently take place from one country to

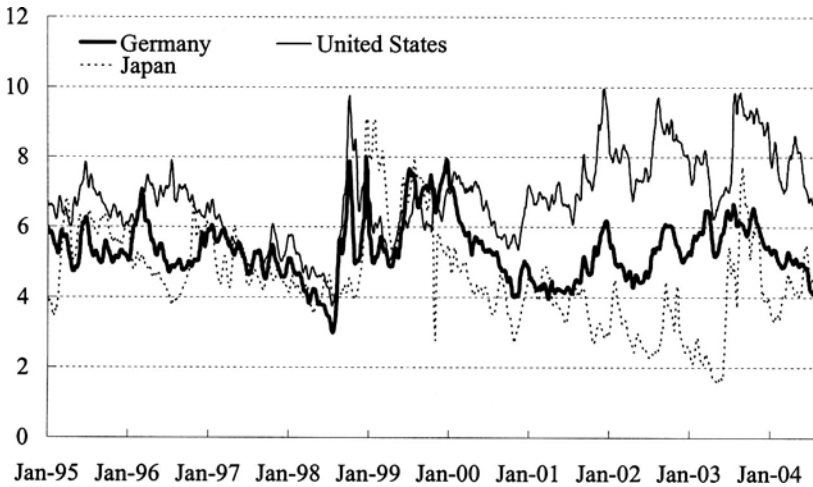


Chart 7. Implied bond market volatility.
 (10-day moving averages of daily data, January 1995 to August 2004)
 Source: Bloomberg.

another. To the extent that these spill-overs are predictable, empirical assessments of volatility relationships across major markets can reveal the most likely effects of tensions in international markets.

Increased international financial integration is likely to cause greater market interdependence. The degree of co-movement across national stock markets has increased dramatically since the mid-1990s. This has questioned the stylized fact in international portfolio diversification literature that diversifying across countries is more effective for risk reduction than diversifying across industries (IMF, 2003). In this section, we will try to investigate how financial market shocks are transmitted across countries.

4.2.1. Bond Market Volatility

In August 1998, Russia announced to restructure all official domestic currency debt obligations falling due at the end of 1999 and to impose a 90-day moratorium on the repayment of private external debt, and effectively devalued its currency by widening the trading band of the ruble. These events in Russia led to increased volatility in global bond markets. Just weeks after the instability caused by the events in Russia, the Federal Reserve Bank of New York was compelled to orchestrate a rescue package to prevent the collapse of LTCM, a major hedge fund. The impact of these crises on global bond markets is highlighted in Chart 4, which gives the daily implied bond market volatility for Germany, Japan and the United States.

An empirical model of volatility spill-overs can be tested by using daily data from Bloomberg since January 1995 for implied bond market volatility series for Germany, Japan and the United States. Equations (1), (2) and (3) may be used to detect any effect of how the level of implied volatility of one market influences the next market's opening level of implied

Table 4. Regression results of bond market volatility

	OLS			SUR		
	JP	US	DE	JP	US	DE
Constant	0.01 (0.09)	0.001 (0.06)	-0.003 (0.08)	0.01 (0.01)	0.02* (0.01)	0.02* (0.01)
Japan	0.82* (0.01)	-0.02** (0.01)	0.08* (0.01)	0.84* (0.01)	-0.01 (0.01)	0.08** (0.01)
United States	-0.01* (0.02)	0.83* (0.01)	0.19* (0.01)	-0.02 (0.02)	0.83* (0.01)	0.19* (0.02)
Germany	0.12 (0.02)*	0.14* (0.01)	0.51** (0.02)	0.01** (0.01)	0.06** (0.01)	0.51** (0.02)
R ²	0.66	0.73	0.40	0.66	0.71	0.35
S.E. of regression	0.04	0.03	0.04	0.05	0.03	0.05
Durbin-Watson statistic	1.97	1.83	2.23	1.93	1.68	2.24

Source: Bloomberg and authors' estimations.

Note: Sample period is 1995.1-2004.8. Standard errors are reported between parentheses. ** and * denote significance at the 1% and 5% level, respectively.

volatility. In other words, what is being investigated is whether a high level of volatility in one market spills over to another resulting in an increase in implied volatility in the next market opening of one of the other indices.

$$\Delta iv_{JP,t} = c_{JP} + \beta_{JP,JP} \Delta iv_{JP,t-1} + \beta_{JP,DE} \Delta iv_{DE,t-1} + \beta_{JP,US} \Delta iv_{US,t-1} + u_{JP,t} \quad (1)$$

$$\Delta iv_{DE,t} = c_{DE} + \beta_{DE,DE} \Delta iv_{DE,t-1} + \beta_{DE,JP} \Delta iv_{JP,t-1} + \beta_{DE,US} \Delta iv_{US,t-1} + u_{DE,t} \quad (2)$$

$$\Delta iv_{US,t} = c_{US} + \beta_{US,US} \Delta iv_{US,t-1} + \beta_{US,DE} \Delta iv_{DE,t-1} + \beta_{US,JP} \Delta iv_{JP,t-1} + u_{US,t} \quad (3)$$

The system of the above equations may be estimated using OLS and SUR (see Table 4). The results are in favour of some volatility spill-over across these markets. In particular, a statistically significant spill-over of volatility is found from the Japanese bond market to the next day opening of the German bond market, although the coefficient is small. Furthermore, there is evidence of feedback in this relationship as changes in the implied volatility of the German bond market affect the Japanese implied volatility (coefficient is statistically significant). The next market opening of implied volatility for the US bond market is affected by the previous day closing of both the German and Japanese bond markets' implied volatilities. In addition, the next day implied bond market volatility levels in Germany are also affected by the previous day closing values of both the United States and Japan. Therefore, the regressions imply that there is some evidence of implied volatility spill-overs occurring across these three markets. All in all, it is found that the implied volatility of the Japanese bond market tends to spill-over both to the US and the German bond markets, affecting their implied volatilities. Furthermore, the German bond market implied volatility tends to spill-over to both the US and Japanese implied volatilities.

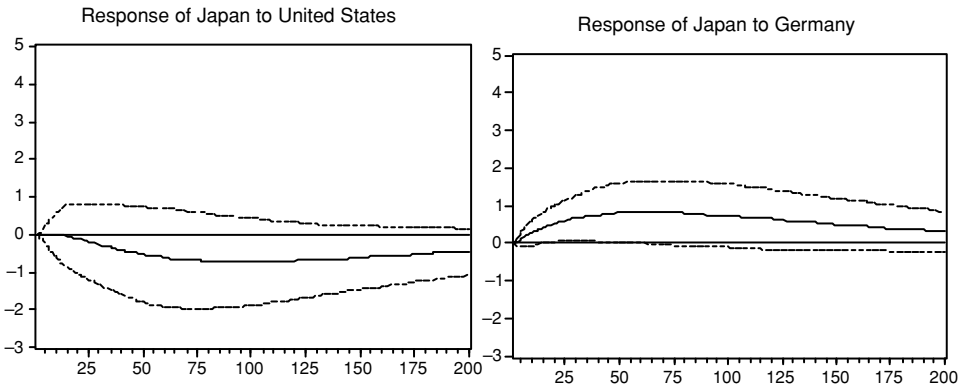
Response to Nonfactorized One Unit Innovations ± 2 S.E.

Chart 8. Impulse responses in implied bond market volatility.

The interaction of implied volatilities on these three bond markets may be illustrated by conducting impulse response analyses derived from equations (1), (2) and (3). This involves simulating shocks to the implied volatility in each of the markets in turn, in order to determine the manner in which shocks spill-over to the other markets. The results of this analysis are shown in Chart 8, which plots the response of the Japanese implied volatility series to one standard deviation shock in the other series. The chart also shows 95% confidence bands around these shocks.

From the impulse response analysis it is found that a shock in the Japanese implied volatility causes the US implied volatility to decline in the next 30 days with an effect which lasts for a few days after which it declines, albeit with some persistence, as is evident from Chart 8. The same effect does exist when there is a shock in US bond market implied volatility to the Japanese one.

Finally, applying the principal component analysis as explained above, the first principal component captures 48% of the total variation in the data. Thus, changes in implied bond market volatility can be explained by co-movements. The implicit country weights with respect to the first principal component are the smallest for Japan (0.4), closely followed by the United States (0.5), and the highest for Germany (0.8).

4.2.2. Stock Market Volatility

The fact that stock markets in different countries are correlated is, of course, not surprising in itself. Any standard asset-pricing model, such as the international capital asset pricing model (ICAPM), would allow for such a correlation. This model assumes that markets are internationally integrated, i.e. those assets with the same risk have the same expected excess returns irrespective of where they are traded or not. Hamao et al. (1990) have examined the idea that there may also be volatility spill-overs across markets. They found that higher lagged volatility on both domestic and other markets was associated with higher current volatility in these markets. This finding is consistent with a contagion model.

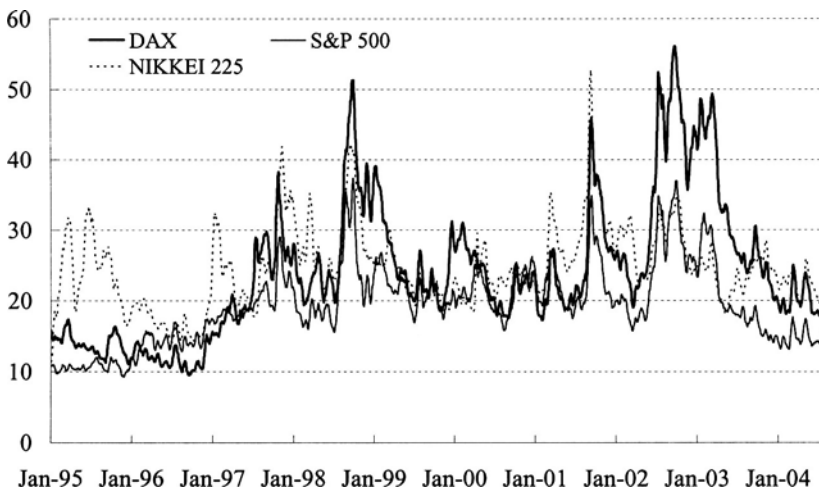


Chart 9. Implied stock market volatility.
(10-day moving averages of daily data, January 1995 to August 2004)
Source: Bloomberg.

The transmission of implied volatilities across the three major stock index–option markets are examined, which are the Nikkei 225 options on futures listed on SIMEX, the EUROSTOXX 50 index options listed on EUREX, and the S&P 500 options on futures listed on the CME. Chart 9 plots the implied volatilities (average of calls and puts) for these three markets.

The implied volatility of the Nikkei 225 contract has been higher than that in the other two markets between 1995 and 2004. The mean implied volatility of this contract is 24.7, whereas the mean implied volatilities of the DAX and S&P 500 contracts are 24.1 and 19.4 respectively. The DAX implied volatility is much less stable than those for the other two markets, with the standard deviation being 9.7. The DAX and S&P 500 implied volatilities are highly correlated (0.87), the ones for the Nikkei 225 and S&P 500 contracts somewhat (0.56), and the same for the DAX and the Nikkei 225 contracts (0.57).

Some evidence of volatility spill-overs across the major stock markets is found when estimating the above equations by OLS and SUR (see Table 5). The next market opening of the implied volatility on the Nikkei 225 index contract is affected by the previous day closing of the DAX and the S&P 500 contracts' implied volatilities. The level of the DAX index is only affected by the previous day closing of the S&P 500, while the S&P 500 implied volatility opening is affected by neither the DAX nor the Nikkei 225.

This pattern is one of “volatility contagion”, which spreads from one time zone to another. Thus, not only long-term levels of implied volatility are closely related, but day-to-day changes in implied volatility are related too. In other words, when the implied volatility of one market changes, the next opening market's implied volatility is likely to change in the same direction.

Finally, applying the principal component analysis to implied stock market volatility data, we find that the first principal component, which represents the global co-movement in

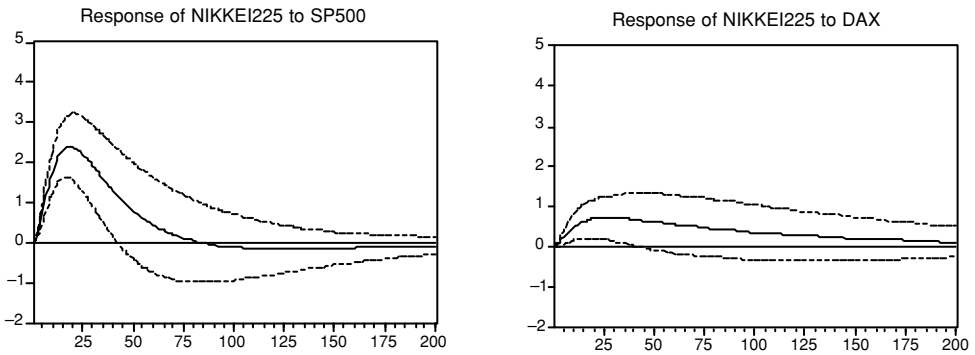
Table 5. Regression results of stock market volatility

	OLS			SUR		
	JP	US	DE	JP	US	DE
Constant	0.001 (0.04)	0.001 (0.03)	-0.001 (0.04)	0.01 (0.01)	0.06* (0.02)	0.01 (0.02)
Japan	0.76* (0.01)	0.02 (0.01)	0.03* (0.01)	0.78** (0.01)	0.12* (0.01)	0.08** (0.01)
United States	0.09* (0.02)	0.67* (0.01)	0.44* (0.02)	0.24* (0.01)	0.66* (0.02)	0.53* (0.02)
Germany	0.07 (0.01)*	0.18* (0.01)	0.61** (0.01)	0.58** (0.01)	0.11* (0.01)	0.74* (0.01)
R ²	0.66	0.73	0.74	0.66	0.71	0.70
S.E. of regression	0.22	0.15	0.21	0.21	0.15	0.22
Durbin-Watson statistic	2.12	1.77	1.88	2.01	1.71	2.06

Source: Bloomberg and authors' estimations.

Note: Sample period is 1995.1-2004.8. Standard errors are reported between parentheses. ** and * denote significance at the 1% and 5% level, respectively.

Response to Nonfactorized One Unit Innovations ± 2 S.E.

**Chart 10.** Impulse responses in implied stock market volatilities.

the stock market volatility, explains 78% of the variation in the data. The corresponding implicit country weights with respect to the first principal component are 0.5 for Japan, while Germany and the United States have an equal weight of 0.6.

5. CONCLUSIONS

This chapter examined the degree of financial globalization of the Japanese bond and stock markets, in relation with that of similar US and German markets. Our assessment is mixed. On the one hand, we concluded on the basis of several structural indicators of the globalization of the Japanese financial markets such as the number of foreign listings, presence of foreign

financial institutions in Japan and of Japanese banks abroad, issuance of yen-denominated bonds by foreign entities and the development of Japanese offshore markets that this process has been stagnating or even deteriorating in recent years. The “Big Bang” financial reform initiative seemed to offer many new opportunities for foreign firms but experiences seem to have turned out rather negative for most of them, due to the poor performance of the Japanese economy and stock market, high operating costs and remaining deficiencies in market development (Reszat, 2003). All in all, the overall progress in the further development and internationalisation of Japanese financial markets has been relatively modest, and consequently, demands for further financial reform are continuing. This applies to structural reforms of the Japanese economy as well, in order to take more advantage of the overall economic globalization process (Ministry of Economy, Trade and Industry, 2004; Nikkei Net, 2004).

On the other hand, as regards bond and stock market prices, our regression results are in favour of a significant and positive impact of globalization on bond and stock market prices in the three major economies. This finding, in turn, implies that globalization affects economic growth through financial asset prices. We also show an increasing impact of globalization on bond and stock market prices, in particular in the bond market in the early 1980s, when significant liberalisation measures were enacted. In addition, globalization turns out to have a negative effect on bond and stock market volatility. This finding suggests that a broadening of the investor base at a global scale results in lower market volatility. At the same time, our results show that bond and stock market implied volatility spill-overs do exist between the three countries. This finding suggests that bond and stock markets in the world major economies are significantly affected by global developments.

It is clear that the (increasing) importance of globalization presents new challenges (Greenspan, 1998). The advance of new technologies, and the financial innovations which this process has made possible, has strengthened the interdependencies between financial markets and market participants, both within and across national boundaries. As a result, a disturbance in one financial market segment or country is likely to be transmitted far more rapidly throughout the international financial system than was evident in previous eras. The environment now facing policy makers and financial markets participants is characterised by instant communication. Our quantitative results show that this process is indeed affecting the bond and stock markets in Japan, the United States and Germany, and thereby provides further evidence of the globalization of financial markets.

ENDNOTES

1. European Central Bank, Kaiserstrasse 29, D-60311, Frankfurt am Main, GERMANY. All views expressed are those of the authors alone and do not necessarily reflect those of the ECB or the Eurosystem. Seiichi Tsurumi, Japanese Banking Association, kindly provided certain data on Japan.
2. Other studies dealing with the globalization of financial markets can, among many others, be found in Auernheimer (2003), including the studies cited there. Furthermore, see Heathcote (2002), de la Torre et al. (2002) and Moshirian and Szegö (2003). For Japan, studies focusing on financial globalization are Suzuki (1989), Sasaki et al. (2000) and Takahashi and Kobayakawa (2003).
3. Eurobonds—not to be confused with bonds denominated in euro—are bonds denominated in a currency other than the national currency of the issuer.

REFERENCES

- Agenor, P.R., 2003, Benefits and costs of international financial integration: theory and facts, *World Economy*, 26, 8, 1089–1118.
- Aggarwal, R., 1993, An overview of Japanese finance: uniqueness in an age of global integration, in: S.R. Stansell (ed.), *International Financial Market Integration*, Blackwell, Oxford and Cambridge, 42–56.
- Auernheimer, L. (ed.), 2003, *International Financial Markets: The Challenge of Globalization*, Bush School Series in the Economics of Public Policy, volume 3, University of Chicago Press, Chicago and London.
- Baldwin, R.E. and P. Martin, 1999, Two waves of globalization: superficial similarities, fundamental differences, *NBER Working Paper*, 6904.
- Bailliu, J., 2000, Private capital flows, financial development, and economic growth in developing countries, *Bank of Canada Working Paper*, 2000–15.
- Batten, J.A. and P.G. Szilagyi, 2003, Why Japan Needs to Develop its Corporate Bond Market, *International Journal of the Economics of Business*, 10(1), 83–108.
- Bondt, de G.J., P.J.A. van Els and A.C.J. Stockman, 1997, EUROMON: a macroeconomic multi-country model for the EU, *DNB Staff Reports*, 17.
- Bordo, M.D., 2002, Globalization in historical perspective, *Business Economics*, 37, 1, 20–29.
- Bordo, M.D., B. Eichengreen and J. Kim, 1998, Was there really an earlier period of international financial integration comparable to today?, *NBER Working Paper*, 6738.
- Bordo, M.D. and A.P. Murshid, 2002, Globalization and changing patterns in the international transmission of shocks in financial markets, *NBER Working Paper*, 9019.
- Burstein, D., 1988, *Yen! Japan's New Financial Empire and Its Threat to America*, New York: Simon and Schuster.
- Calder, K.E., 1993, *Strategic Capitalism: Private Business and Public Purpose in Japanese Industrial Finance*, Princeton: Princeton University Press.
- Dattel, E., 1994, *The Sun that Never Rose: The Inside Story of Japan's Failed Attempt at Global Financial Dominance*, Chicago: Probus Publishing Co.
- Domanski, D. and M. Kremer, 2000, The dynamics of international asset price linkages and their effects on German stock and bond markets, *International Financial Markets and the Implications for Monetary and Financial Stability, BIS Conference Papers*, No. 8, March, 134–158.
- Dungey, M., R. Fry, B. Gonzalez-Hermosillo and V. Martin, 2002, International contagion effects from the Russian crisis and the LCTM near-collapse, *IMF Working Papers*, WP/02/74.
- Düser, J.T., 1990, *International Strategies of Japanese Banks: The European Perspective*, Houndmills, Basingstoke: MacMillan.
- The Economist, 2004, *Pocket World in Figures*.
- Edison, H.J., R. Levine, L. Ricci and T. Sloek, 2002, International financial integration and economic growth, *Journal of International Money and Finance*, 21, 6, 749–776.
- Edison, H.J., R. Levine, L. Ricci and T. Sloek, 2002, Capital account liberalization and economic performance: survey and synthesis, *NBER Working Paper*, 9100.
- Edison, H.J. and F.E. Warnock, 2003, A simple measure of the intensity of capital controls, *Journal of Empirical Finance*, 10, 1–2, 81–103.
- Eichengreen, B. and D. Leblang, Capital account liberalization and growth: was Mr. Mahathir right?, *International Journal of Finance and Economics*, 8, 3, 205–224.
- Fase, M.M.G. and P.J.G. Vlaar, 1998, International convergence of capital market interest rates, *De Economist*, 146, 2, 257–269.
- Fratzscher, M. and M. Bussiere, 2004, Financial openness and growth: short-run gain, long-run pain?, *ECB Working Paper*, 348.
- Frankel, J., 1984, The Yen/Dollar Agreement: Liberalizing Japanese Capital Markets, Institute for International Economics, *Policy Analyses in International Economics*, No. 9, Washington, DC: Institute for International Economics.
- Fukao, M., 2004, Financial deregulations, weakness of market discipline and market development: Japan's experience, in J.P.H. Fan, M. Hanazaki, and J. Teranishi (eds.), *Designing Financial Systems in East Asia and Japan*, 120–151.
- Gibson, M.S., 1998, Big Bang Deregulation and Japanese Corporate Governance: A Survey of the Issues, Board of Governors of the Federal Reserve System, *International Finance Discussion Papers*, no. 624.
- Goetzmann, W.N., L. Li and K.G. Rouwenhorst, 2001, Long-term global market correlations, *NBER Working Paper*, 8612.
- Goldstein, M. and M. Mussa, 1993, The Integration of World Capital Markets, *IMF Working Papers*, WP/93/95, December.
- Greenspan, A., 1998, The globalization of finance, *Cato Journal*, 17(3), 243–250.
- Hall, M.J.B., 1998, *Financial Reform in Japan—Causes and Consequences*, Cheltenham, UK: Edward Elgar.

- Hamao, Y., R. Masulis, and V. Ng, 1990, Correlations in price changes and volatility across international stock markets, *The Review of Financial Studies*, 3, 281–307.
- Harner, S.M., 2000, *Japan's Financial Revolution—And How American Firms Are Profiting*, Armonk, New York: M.E. Sharpe.
- Hartmann, P., S. Straetmans and C. de Vries, 2003, Asset market linkages in crisis periods, *Review of Economics and Statistics*, 86, 1, 313–326.
- Hassler, J., 1999, Does increased international influence cause higher stock market volatility?, *Scandinavian Journal of Economics*, 101, 1, 1–9.
- Heathcote, J., 2002, Financial globalization and real regionalization, *NBER Working Paper Series*, 9292.
- Higashi, C. and G.P. Lauter, 1990, *The Internationalization of the Japanese Economy*, 2nd edition, Dordrecht: Kluwer Academic Publishers.
- Honda, E., 2003, Financial deregulation in Japan, *Japan and the World Economy*, 15, 135–140.
- Horiuchi, A., 1996, Financial Fragility and Recent Developments in the Japanese Safety Net, revised version of paper prepared for the 71st Annual Western Economic Association International Conference, San Francisco, June.
- Horiuchi, A., 2003, The Big Bang financial system reforms: implications for corporate governance, in Amyx, J. and P. Drysdale (eds.), *Japanese Governance: Beyond Japan Inc.*, London: Routledge Curzon, 77–95.
- Hoshi, T. and A.K. Kashyap, 2001, *Corporate Financing and Governance in Japan*, Cambridge, MA/London: The MIT Press.
- IMF, 2003, *Is Financial Globalization harmful for Developing Countries*.
- Issing, O., 1997, *Globalization of financial markets—challenges for monetary policy*, Stevenson Lecture, 12 may.
- Ito, T. and M. Melvin, 1999, Japan's Big Bang and the Transformation of Financial Markets, *NBER Working Paper Series*, 7247.
- Japan Center for International Finance, 1984, Study on the Internationalization of Tokyo's Money Markets, *JCIF Policy Study Series*, No. 1, June.
- Japan Center for International Finance, 1988, Tokyo as a Center of World Finance: Its Evaluation and Future Tasks, *JCIF Policy Study Series*, No. 11, October.
- Japan Center for International Finance, 2004, *Assessment and Strategies of Foreign Financial Institutions in Japan regarding the Tokyo Financial/Capital Market*, Tokyo: Japan Center for International Finance.
- Japanese Bankers Association, 2001, *The Banking System in Japan*, Tokyo: Japanese Bankers Association.
- Kaminsky, G. and S. Schmukler, 2003, Short-run pain, long-run gain: the effects of financial liberalisation, *IMF Working Paper*, 34.
- Katz, R., 1998, *Japan: The System that Sowed—The Rise and Fall of the Japanese Economic Miracle*, Armonk: M.E. Sharpe.
- Kim, S.W. and J.H. Rogers, 1995, International stock price spillovers and market liberalization: evidence from Korea, Japan, and the United States, *International Finance Discussion Papers*, Board of Governors of the Federal Reserve System, 499.
- King, M.A., and S. Wadhvani, 1990, Transmission of Volatility between stock markets, *The Review of Financial Studies*, 3 (1), 5–33.
- Kinyū Zaisei Jijō*, 2003, *Ginkō—Shōken no naigai shinshutsu jōkyō*, *Kinyū Zaisei Jijō*, 8(4), Tokyo, 66–67 (in Japanese: Financial and Fiscal Developments, The development of the domestic and international expansion of banks and securities firms).
- Klein, M.W., 2003, Capital account openness and the varieties of growth experience, *NBER Working Paper*, 9500.
- Klein, M. and G. Olivei, 1999, Capital account liberalization, financial depth, and economic growth, *Federal Reserve Bank of Boston Working Paper*, 99/06.
- Lane, P. and G.M. Milesi-Ferretti, 2003, International financial integration, *IMF Working Paper*, 03/86.
- Levine, R., 2001, International financial liberalization and economic growth, *Review of International Economics*, 9, 4, 688–702.
- Lothian, J.R., 2002, The internationalization of money and finance and the globalization of financial markets, *Journal of International Money and Finance*, 21, 699–724.
- Maddison, A., 2001, *The World Economy. Historical Statistics*, OECD, Paris.
- Matsushita, Y., 1996, *Financial innovation, financial market globalization and monetary policy management, speech*, Yomiuri International Economic Society, Tokyo, 11 October.
- McLean, B. and S. Shrestha, 2002, International financial liberalisation and economic growth, *Reserve Bank of Australia Research Discussion Paper*, 2002–03.
- Mikitani, R. and A.S. Posen (eds.), 2000, *Japan's Financial Crisis and its Parallels to U.S. Experience*, Special Report 13, Washington, DC: Institute for International Economics.

- Ministry of Economy, Trade and Industry, 2004, *White Paper on International Economy and Trade 2004*, Tokyo: Ministry of Economy, Trade and Industry.
- Ministry of Finance, 1997, *Financial System Reform: Toward the Early Achievement of Reform*, June 13th, Tokyo: Ministry of Finance.
- Ministry of Finance, 1998, *Internationalization of the Yen (Interim Report)*, Council on Foreign Exchange and Other Transactions, Subcouncil on the Internationalization of the Yen, November.
- Ministry of Finance, 2003, *Enhancing Japan's Status as an International Financial Center*, Study Group on the Internationalization of Japan's Financial and Capital Markets, July.
- Moshirian, F. and G. Szegö, 2003, Markets and institutions: Global perspectives, *Journal of Banking & Finance*, 27, 1213–1218.
- Nikkei Net, 2004, Japan Needs More Reform To Utilize Globalization Benefits, 16 July.
- Obstfeld, M. and A.M. Taylor, 2002, Globalization and capital markets, *NBER Working Paper*, 8846.
- Oda, H., 1998, The Reform of the Financial System in Japan, *Zeitschrift für Japanisches Recht*, Z39, No. 6, 3–18.
- Okina, K., M. Shirakawa and S. Shiratsuka, 1999, Financial market globalization: present and future, *Monetary and Economic Studies*, 17, 3, 1–40.
- Peek, J. and Rosengren, E.S., 1997, The International Transmission of Financial Shocks: The Case of Japan, *American Economic Review*, 87(4), 495–505.
- Peek, J. and Rosengren, E.S., 2000, Collateral Damage: Effects of the Japanese Bank Crisis on Real Activity in the United States, *American Economic Review*, 90(1), 30–45.
- Peiro, A., J. Quesada and E. Uriel, 1998, Transmission of movements in stock markets, *The European Journal of Finance*, 4, 331–343.
- Posen, A.S., 1998, *Restoring Japan's Economic Growth*, Washington, DC: Institute for International Economics.
- Reszat, B., 2003, *Japan's Financial Markets: The Lost Decade*, Hamburg Institute of International Economics Discussion Paper, 231, June.
- Rhee, S.G., 2004, Further reforms of the JGB market for the promotion of regional bond markets, in Fan, J.P.H., Hanazaki, M. and J. Teranishi (eds.), *Designing Financial Systems in East Asia and Japan*, 316–334.
- Rixtel, A.A.R.J.M. van, 1989, De Derde Golf de opmars van de Japanse financiële conglomeraten, *Intermediair*, 25(34), August 25th, 67–73 (in Dutch: The Third Wave: the advance of Japanese financial conglomerates).
- Rixtel, A.A.R.J.M. van, 1997, The Evolution of the Japanese Financial System and Monetary Policy: The Rise and Collapse of the New Financial Superpower Myth, in Boonstra, W.W. and S.C.W. Eijffinger (eds.), *Banks, Financial Markets and Monetary Policy*, Amsterdam: NIBE, 57–98.
- Rixtel, A.A.R.J.M. van, 1998, *Het financiële hervormingsproces in Japan: Van stricte regulering to de 'Big Bang'*, Financiële & Monetaire Studies, 16(3), Groningen: Wolters-Noordhoff (in Dutch: The process of financial reform in Japan: From strict regulation to the 'Big Bang').
- Rixtel, A.A.R.J.M. van, 2002, *Informality and Monetary Policy in Japan: The Political Economy of Bank Performance*, Cambridge: Cambridge University Press.
- Rutherford, D., 2002, *Dictionary of Economics*, Second Edition, Routledge.
- Rousseau, P.L. and R. Sylla, 2001, Financial systems, economic growth, and globalization, *NBER Working Paper*, 8323.
- Sasaki, H., S. Yamaguchi and T. Hisada, 2000, The globalization of financial markets and monetary policy, in *International Financial Markets and the Implications for Monetary and Financial Stability*, BIS Conference Papers, No. 8, March, 57–78.
- Suzuki, Y., 1987, *The Japanese Financial System*, Oxford: Clarendon Press.
- Stiglitz, J., 2000, Capital market liberalisation, economic growth and instability, *World Development*, 25, 1075–1086.
- Stiglitz, J., 2002, *Globalization and Its Discontents*, London: Allen Lane.
- Stulz, R.M., 1999, Globalization of equity markets and the cost of capital, *NBER Working Paper*, 7021.
- Suzuki, Y., 1989, *Japan's Economic Performance and International Role*, Tokyo: University of Tokyo Press.
- Takagi, S., 1995, Structural Changes in Japanese Long-term Capital Flows, in M. Okabe (ed.), *The Structure of the Japanese Economy: Changes on the Domestic and International Fronts*, Houndmills, Basingstoke: MacMillan Press, 435–458.
- Takahashi, W. and S. Kobayakawa, 2003, Globalization: Role of Institution Building in the Japanese Financial Sector, *Bank of Japan Working Paper Series*, No.03-E-7, December.
- Takeda, M. and P. Turner, 1992, The Liberalization of Japan's Financial Markets: Some Major Themes, *BIS Economic Papers*, no. 34.
- Tett, G., 2004, *Saving the Sun: Shinsei and the Battle for Japan's Future*, Random House Business Books.
- Tokyo Stock Exchange, 2004, *Fact Book 2004*, Tokyo: Tokyo Stock Exchange.
- Torre, A. de la, E.L. Yeyati and S.L. Schmukler, 2002, Financial Globalization: Unequal Blessings, *International Finance*, 5(3), 335–357.

- Trichet, J.-C., 2004, The transformation of the international financial architecture to meet the challenges of globalization, *Arthur Burns Memorial Lecture*.
- Viner, A., 1988, *The Financial Samurai: The Emerging Power of Japanese Money*, London: Kogan Page.
- Wolf, M., 2004, *Why Globalization Works*, John Wiley and Sons.
- Wood, C., 1993, *The Bubble Economy: The Japanese Economic Collapse*, Tokyo: Charles E. Tuttle.
- Wright, R.W. and G.A. Pauli, 1987, *The Second Wave: Japan's Global Assault on Financial Services*, London: Waterlow Publishers.

8. WEEKLY EXPECTED CREDIT SPREADS IN LATIN-AMERICAN BRADY BONDS

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1. INTRODUCTION

Since 1990, following the introduction of the Brady Bonds, debt market of emergent economy was liquid, until the Asian crisis. As a matter of fact, until 1998, Brady Bonds represented over 30% of total traded volume of emerging countries' debt market. These debt instruments were designed within the *Brady Plan*², which consisted of a rearrangement of the emerging countries' debts. These economies could convert debt of commercial banks (originated from the debt crisis of the 1980's) into government bonds. The high traded volume³ and the importance of this instrument allow the market to use the Brady Bond yields as a source of information about the sovereign risk of emerging countries.

This research is focused on distinguishing whether or not the Latin American weekly Brady Bond's credit spread can be forecasted using a reduced number of international or local financial variables. To answer this question, we study the weekly credit spread Brady Bonds from Argentina, Brazil, Mexico and Venezuela.

We have chosen a reduced set of financial variables that belong to Brady Bond issuer countries and the US economy, and they are likely to contain information about weekly variation in the expected credit spread of the bonds. The chosen variables are the inverse relative wealth, bond betas, US *term spread*, and the real US Treasury Bond yield, similar to Ilmanen (1995). The first two instruments are specific proxies for time-varying risk aversion and time-varying risk, and the last two instruments are alternative proxies for the overall expected credit spread. Also, earlier studies, such as Borbine and Forni (1997), report evidence of the Mexican crisis influence in the Brady Bond market. Thus, in order to capture that shock and the Asian crisis, we have designed two dummy variables.

Our results indicate that US inverse relative wealth (*INVRELW*) is positively correlated to the weekly Brady Bonds credit spread, for both the Par and Discount. The US bond beta has a positive relation with the studied variables. We found a positive and significant relationship between the intertemporal interest rate structure proxy and the credit spreads in the sample. For the real interest rate proxy, we observe a negative and significant relationship where a substitution effect between Brady Bonds and Treasury Bonds takes place. The *dummies* are highly significant, capturing the effects of the financial crises.

The predictability patterns of the weekly Latin American Brady Bond credit spreads are very similar, and the US instruments are better predictors than local instruments. The regression coefficients are similar through the different weekly Brady Bond credit spreads analyzed, and the results for Par and Discount bonds are also similar. That is why we study the comovements between the weekly Brady Bond's credit spread from Argentina, Brazil, Mexico, and Venezuela. In fact, Barbone and Forni (1997), using a cointegration analysis of the excess Brady Bond's returns, found evidence about comovements. We used a Singular Latent Variable Model (SLVM), for the case of the credit spreads of Latin American countries studied. Our results validated that the weekly Latin American Brady Bond credit's spreads seem to be perfectly correlated. A possible source of these comovements could be the variations of the predictive instruments and a herd behavior of investors.

This paper is structured in four parts. After the introduction, we discuss in section II the motivation of the predictive instruments. In section III, we present a description of the predictable variation of Latin-American Brady Bonds and the meaning of our findings. In section IV we discuss the description of common variations in Latin-American Brady Bonds and some possible explanations for such performance. In section V we present our conclusions.

2. MOTIVATING THE PREDICTIVE INSTRUMENTS

In this section, we discuss the variables that may help to determine the expected credit spread of the Brady Bonds studied. For this purpose, it is important to know some particular characteristics of the Latin-American debt markets. Kaplan (1998) establishes that Brady Bonds, through their history, have had returns similar to low grade corporate US bonds, but with a higher risk. The author found significant correlations between Brady Bond market and US stocks and bonds market, for both Par and Discount. Thus, Brady Bonds play an important role diversifying risk for international investors. As a result, it would be logical to think that the predictability of the weekly Brady Bond credit spread could be explained by US variables. Those instruments should be useful explaining both the US bond and stock markets, implying that the Brady Bonds could be a kind of international *junk bond*⁴.

Several empirical studies analyze the predictability of the bond returns. Fama and French (1989) and Chen (1991) argued that the variance of the US asset returns is related to economic conditions. As a matter of fact, the stocks and bonds expected returns tend to be higher in contractive periods of the economic cycle and lower in peaks of the cycle. Keim and Stambaugh (1986) and Fama and French (1989) show that variables such as *dividend yield* and *term spread* can predict the excess bond returns in stocks and bonds in the US. The predictive ability over the excess bond returns studied in Ilmanen (1995) has been superior compared to earlier studies. Ilmanen (1995) chose financial variables that are reasonable determinants of the expected bond risk premia. The instrument choices include specific proxies for

time-varying risk aversion, time-varying risk, as well as two US overall proxies for the expected bond risk premia (*term spread* and *real bond yield*).

Earlier studies such as Lauterbach (1989) and DeBondt and Bange (1992) attempt to explain the time-variation in bond expected returns, analyzing several measures of time-varying risk. Such measures cannot explain the observed countercyclical patterns in expected returns. In this article, we intend to identify whether wealth-dependent relative risk aversion (RRA), rather than time-varying risk, causes this pattern. Chen (1991) argues that investors are more risk averse and require a higher compensation for holding risky assets when their wealth is relatively low. The time-varying risk aversion and time-varying risk can cause a temporary time-varying for the risk premium. However, we propose, similar to Ilmanen (1995); that the RRA vary inversely with the relative wealth, and that variation explains the cyclical patterns observed in the expected returns of assets. As an agent's wealth declines, he or she becomes increasingly risk averse. The higher the risk aversion, the higher compensation demanded to hold risky assets, such as stocks and long term bonds. Accordingly, the proxy for overall RRA level is the inverse relative wealth of the stock market. We discuss a model in which RRA varies with wealth and then describe the empirical proxy for the wealth-dependent RRA. Marcus (1989) presents a two-period, two-asset model in which identical agents have the utility function shown in equation (1).

$$U(W) = \frac{(W - \omega)^{1-\gamma}}{1 - \gamma}, \quad (1)$$

where W is wealth, ω is subsistence wealth, and γ is a positive constant. This function implies wealth-dependent RRA level:

$$RRA = \frac{-W(U_w)''}{U_w} = \frac{-\gamma}{1 - (\omega/W)} \quad (2)$$

where $(U_w)''$ symbolizes the second derivation of the wealth-dependent utility function. Rational agents never let their wealth reach or fall below subsistence level because they suffer infinite disutility when $\omega = W$. As an agent's wealth declines toward the subsistence level, he or she becomes increasingly risk averse. In contrast to this situation, as wealth increases, RRA approaches γ asymptotically.

When $\omega = 0$, the function reduces to a power utility function, which exhibits constant RRA. Thus, decreasing RRA is a direct consequence of assuming a positive subsistence level. In the Marcus model, RRA and the expected market premium risk vary inversely with absolute wealth level. It is more plausible that the subsistence level varies over time and the RRA varies inversely with relative wealth⁵.

For the analysis, we use *INVRELW* (the ratio between the past wealth and current wealth) as a proxy for the aggregate RRA level. This choice is an approximation of a utility function with a subsistence level that varies with past wealth. The inverse ratio captures some of the nonlinearity in the RRA equation, where RRA is more sensitive to changes in wealth at lower wealth levels. A significant positive relation between *INVRELW* and future asset returns should exist because many asset pricing models imply that expected asset risk premiums are positively related to the aggregate RRA level.

In this analysis, we use as an empirical proxy of the aggregate wealth the MSCI⁶ index for each of the countries analyzed. It is well known that the stock market represents only a small

part of the aggregate wealth. Nevertheless, they constitute the most volatile segment and are positively correlated with other wealth sources. In addition, stock prices are timely and can be measured accurately, despite the fact they cannot replace the macroeconomic variables that effectively determine in a precise way the aggregated wealth.

Choosing an adequate historical data gap that is related to past wealth is not an easy task. Consequently, we employ an exponential weighted average of past wealth levels, giving a little weight to those more distant wealth levels. We have taken a coefficient equal to 0.9, which is not subjective. With this instrument, we intend to capture possible effects related to the economic cycle. The inverse wealth function is as shown in equation (3).

$$INVRELW_t = \frac{\varepsilon^* \omega^* \alpha^* W_{t-1}}{W_t} = \frac{(W_{t-1} + 0.9^{2*} W_{t-2} + 0.9^{3*} W_{t-3} + \dots) * 0.1}{W_t} \quad (3)$$

Where W_t is a market index at the time t . Meanwhile, ε , ω , α and W_{t-1} are parameters used for calculating the exponential average of wealth in the time $t - 1$. As a preliminary characterization, Ilmanen (1995) studied the relationship between the performance of the US economic cycle, the index *INVRELW*, and excess bond returns. Further, he discovered that the bond risk premium behaves similarly to *INVRELW*, but with a certain difference. For this reason, *INVRELW* may well represent the existing relationship between the bond risk premium or credit spread and the US economic cycle.

The predictable asset risk premium variation might be based on the time-varying risk, as well as the time-varying risk aversion. From all the possible instruments that can reflect the time-varying risk, we take the bond beta, defined as the coefficient from the regression of credit spread of bonds over stock market. This instrument is motivated by a CAPM⁷ with time-varying betas.

The proxies for time-varying risk aversion are unlikely to capture all predictable variations in credit spread. Therefore, an additional instrument will be used to calculate the overall expected bond credit spread. The shape of the *yield curve*⁸ has often been used as a proxy for the expected bond risk premium. Both Fama and Bliss (1987) and Campbell and Ammer (1993) show that the continuously compounded (per-period) yield on an n -period nominal discount bond can be described as shown in equation (4).

$$Y_{n,t} = (1/n) E_t \sum_{i=0}^{n-1} (\pi_{t+1+i} + \mu_{t+1+i} + X_{n-1,t+1+i}) \quad (4)$$

This yield Y , is a sum of three terms: the n -period average of expected inflation rates π ; the n -period average of expected real rates of a one-period nominal bond μ ; and the n -period average of expected bond risk premium X . Equation (4) shows that the bond yield contains information about future expected bond risk premium, but also about future expected events. It is a noisy proxy for expectations of all three terms on the right hand side of equation (4). Subtracting for the bond yield elements that reflect the future short rates, ($y_1 = \pi + \mu$) should produce a less noisy proxy for the expected credit spread. This motivates the use of the term spread and the real bond yield; both are differences between the bond yield and some other variable. The per-period term spread can be written as shown in equation (5).

$$TERMSP_{n,t} = Y_{n,t} - Y_{1,t} = (1/n) E_t \sum_{i=0}^{n-1} [(n-1-i)(\Delta Y_{1,t+2+i}) + X_{n-i,t+1+i}] \quad (5)$$

Where ΔY_1 is the change in the one-period nominal yield. The per-period real bond yield can be represented as shown in equation (6).

$$\text{REALYD}_{n,t} = (1/n)E_t \sum_{i=0}^{n-1} (\mu_{t+1+i} + X_{n-i, t+1+i}) \quad (6)$$

In our research, we use the year-on-year inflation rate as the expected inflation rate over the remaining life of the bond. This measure implicitly assumes that the inflation rate follows a random walk. If this assumption holds empirically and the sum of the expected real rates μ is stable over time, variation in the real bond yield reflects variation in expected bond credit spread. Equation (5) and (6) show that the term spread and the real bond yield contain information about expected bond credit spread. Thus, neither instrument is likely to be a perfect proxy for the expected bond risk premium. Because it is not clear a priori whether the term spread or the real bond yield is the less noisy proxy, we use both instruments in our empirical analysis.

Earlier investigations report evidence about a significant effect on the Brady Bond's credit spread due to the Mexican crisis. Barbone and Forni (1997) hold that the Mexican crisis has caused a permanent effect on the Mexican Brady Bond's risk valuation. The authors find additionally strong comovements between all the Latin-American time series. Figure 1 shows the so-called "tequila effect" happened in 1995 after the Mexican devaluation. This shock can be easily noticed by the rising in Brady Bond yields for the four countries. Therefore, it is important to include a variable which is able to capture this shock. We create *Dmex*, which takes the value of one for all the observations before August 29th of 1997 and takes the value of zero otherwise.

On the other hand, after studying the Brady Bond's credit spread series, we observe a "shooting" in the second half of the 1997 sample, which leads us to suspect another external effect that can be explained by the Asian crisis. We have included another dummy variable called *Dasia*, which takes the value of one between August 29th of 1997 and January 30th of 1998 and zero otherwise.

3. DESCRIPTION OF THE PREDICTABLE VARIATION IN LATIN-AMERICAN BRADY BONDS

We examine the predictability for four Brady Bonds' credit spread from Argentina, Brazil, Mexico and Venezuela. These bonds constitute nearly 80% of the Brady Bonds market. To do so, we will employ weekly data from July 28th of 1995 to July 31st of 1998 from Bloomberg's database. The credit spread data set for Par and Discount Brady Bond versions are presented in Table 1 and Figure 1. For this article, we chose version Par and Discount of the studied Brady Bonds according to liquidity (see the last column in Table 1) and homogeneity⁹ criteria.

Since the analyzed countries have a lack of liquidity in their local Treasury bond markets, we employ the monthly *Eurodeposits rate* as a riskless short term security¹⁰. This choice is given by its low default probability. The predictive variables are: *INVRELW*, the US bond beta (*BOND BETA*), the term spread (*TERMSP*), and the US real bond yield (*REALYD*) and two crisis related dummies (*Dmex* and *Dasia*). Besides the variables mentioned, we include the variables *INVRELW* local and *BOND BETA* local belonging to each Brady Bond issuer country.

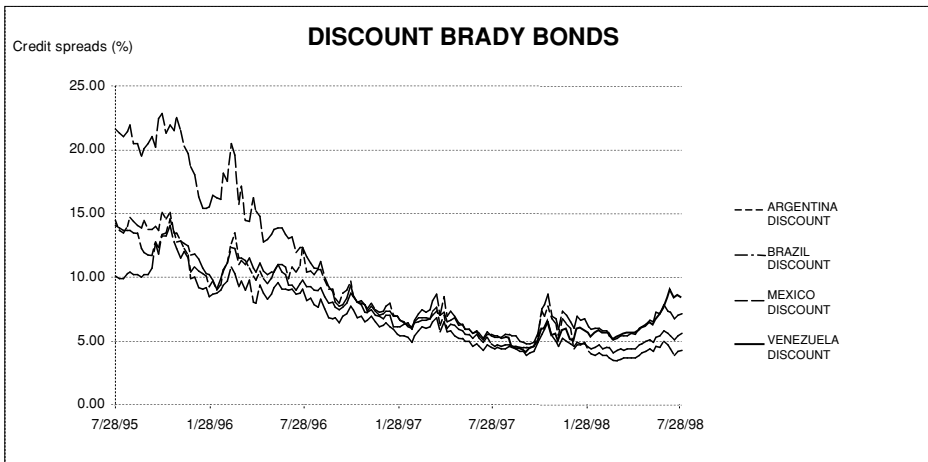
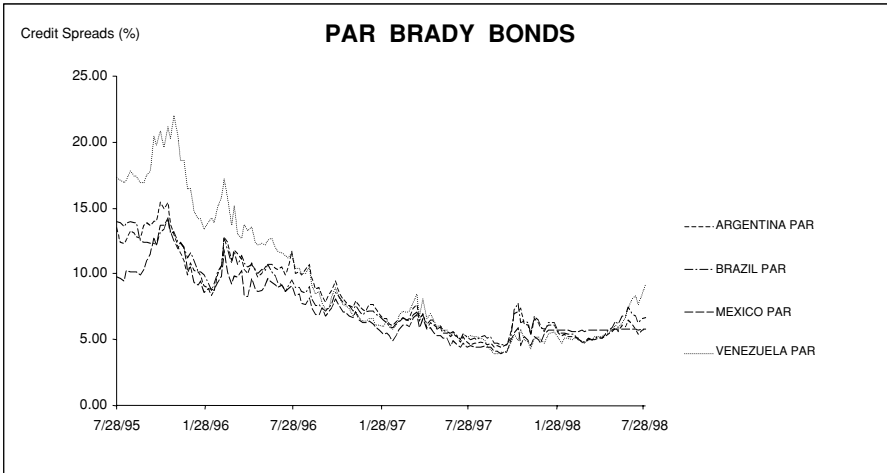


Figure 1. Brady Bond Credit Spreads

INVRELW is the ratio of past real wealth to current real wealth. We use each country's Morgan Stanley Capital International (MSCI) stock market index as real wealth proxies, since they are global, US dollar expressed and comparable indexes. The local bond beta is the slope coefficient obtained from a regression of the weekly local bond credit spread on the weekly local stock market return over the past 24 weeks. The index *TERMSP* is the yield difference between the 30 year US Treasury Bond and the one month US Treasury Bond. The US real bond yield (*REALYD*) is the difference between the 30 year US Treasury Bond and the US inflation rate (CPI) lagged in one month. *Dmex* is a dummy variable which takes a value of

Table 1. Latin American Brady Bonds Description

COUNTRY	Bond	Announcement	Emission	Maturity	Ratings ^A	Liquidity ^B
ARGENTINA (18%) ^C	Par	Apr-92	4/7/93	3/31/23	B1, BB-	L1
	Discount		4/7/93	3/31/23		L2+c
BRAZIL (35%)	Par	Jul-92	4/15/94	4/15/24	B1, B+	L1-
	Discount		4/15/94	4/15/24		L2+
MEXICO (19%)	Par	Jan-90	3/28/90	12/31/19	Ba2, BB	L1
	Discount		3/28/90	12/31/19		L2+
VENEZUELA (12%)	Par	Jun-90	12/18/90	3/31/20	Ba2, -	L1-
	Discount		12/18/90	3/31/20		L3

^A Moody's and Standard and Poor's respectively. The ratings are for the period of August, 1998.

The following table summarizes the grade's ranking:

Investment Grade		Speculative Grade	
Moody's	S&P	Moody's	S&P
Aaa	AAA	Ba1	BB+
Aa1	AA+	Ba2	BB
Aa2	AA	Ba3	BB-
Aa3	AA-	B1	B+
A1	A+	B2	B
A2	A	B3	B-
A3	A-		
Baa1	BBB+		
Baa2	BBB		
Baa3	BBB-		

Note: Baa1/BBB+ or below is JPMorgan's rating to define "emerging economies" in the context of the debt markets.

Source: Bradynet.com

^B JPMorgan's liquidity rating of Brady Bonds is:

L1	Benchmark	Average bid/offer < 3/8 and traded for principal brokers
L2	Active	Average bid/offer < 3/4 and traded for at least half of the brokers
L3	Traded	Average bid/offer < 2 and traded for at least one principal broker
L4	Mostly Illiquid	Average bid/offer < 3 and traded for at least one principal broker
L5	Illiquid	Bono rarely traded for principal brokers

Note: An L1, L2, L3 category bond must price % of the time.

An L4 category bond must price 25% of the time.

In JPMorgan's criteria, principal brokers are: Eurobrokers, Tulleys, Tradition, Cantor, Chapdelaine Y RMJ.

Source: JP Morgan, 1998.

^C % of the total volume in Brady Bonds market.

Source: Bradynet.com

one before December 29th of 1995 and zero otherwise. On the other hand, *Dasia*, takes the value of one between August 29th of 1997 and January 30th of 1998 and zero otherwise.

In Table 2, we can see some statistical features of the series selected for dependent and independent variables. The credit spreads are different through the issuer countries. Differences between Brady Bond credit spreads are also reflected among the dissimilar volatility. The impact of the positive changes in the credit spread can be observed through the yields. For instance, Venezuelan Discount bonds have no credit ranking changes during the sample period, and its yields are highly volatile, as seen in Table 2. Thus, in the case of Venezuela, regardless of the "Oil Warrant"¹¹, its Brady Bonds are the most volatile in the sample. The credit spreads show high first order correlations, which go beyond 0.97. In the case of predictive instruments, we verify a very strong first order correlation, a little inferior to the credit spreads ones. The correlation coefficients between the different countries' credit spreads are

Table 2. Statistical Summary of Brady Bond Credit Spreads and Predictive Variables 07/28/1995 until 07/31/1998

Brady Bond credit spreads are the difference between the Brady Bond yield and the one-month Euro deposit interest rate. INVRELW is the inverse of a real stock market index, defined in equation (3). BOND BETA is the slope coefficient of a regression of weekly bond credit spreads over weekly stock returns in a period of 24 weeks. TERMSP is the difference between the long maturity Treasury bond and the short term Treasury bond yields. REALYD is the difference between the 30 year US Treasury Bond yield and the US inflation rate (CPI) lagged in one month.

Panel A: average of the series, standard deviations and first order autocorrelation coefficients				
EXCEEDING RETURNS				
	ARGENTINA PAR	BRAZIL PAR	MEXICO PAR	VENEZUELA PAR
AVERAGE	8.120	8.045	7.248	9.415
DESV	2.920	2.733	2.411	4.904
AC(1)	0.968	0.967	0.971	0.981
ARGENTINA DISCOUNT BRAZIL DISCOUNT MEXICO DISCOUNT VENEZUELA DISCOUNT				
AVERAGE	7.978	8.310	6.994	10.323
DESV	3.355	2.642	2.463	5.702
AC(1)	0.968	0.966	0.972	0.977
BOND BETA				
	ARGENTINA PAR	BRAZIL PAR	MEXICO PAR	VENEZUELA PAR
AVERAGE	-0.049	-0.054	-0.049	-0.058
DESV	0.056	0.046	0.044	0.081
AC(1)	0.876	0.857	0.807	0.878
ARGENTINA DISCOUNT BRAZIL DISCOUNT MEXICO DISCOUNT VENEZUELA DISCOUNT				
AVERAGE	-0.058	-0.052	-0.051	-0.057
DESV	0.058	0.051	0.039	0.079
AC(1)	0.874	0.837	0.794	0.865
INVRELW				
	ARGENTINA	BRAZIL	MEXICO	VENEZUELA
AVERAGE	6.762	6.527	6.666	7.016
DESV	2.683	2.950	2.497	2.499
AC(1)	0.825	0.866	0.831	0.864
EE.UU.				
	INVRELW	BOND BETA	TERM	REALYD
AVERAGE	6.617	6.362	6.500	6.845
DESV	2.730	2.966	2.523	2.533
AC(1)	0.781	0.851	0.957	0.937
Panel C: Sample correlations among US predictive instruments				
	EE.UU.	EE.UU.	EE.UU.	EE.UU.
	INVRELW	BOND BETA	TERM	REALYD
INVRELW	1.000			
BOND BETA	-0.137	1.000		
TERM	0.204	-0.494	1.000	
REALYD	0.011	-0.104	0.089	1.000

far above the ground and move between 0.94 and 0.98, for Par and Discount bonds. On the other hand, the US predictive variables, in general, are not correlated.

Now we shall investigate whether Brady Bond credit spreads can be predicted using a US data set, as well as analyse whether the differences among Par and Discount forecasts are significant in our predictive model. Finally, through a restricted model¹², we determine the convenience of using US variables instead of local instruments. Table 3 shows the result of multiple regressions of US instruments over Brady Bond credit spreads, both for Par and Discount¹³. Multiple regressions let us see the predictive power of the variables *Dmex*, *Dasia*, *TERMSP*, *REALYD*, *INVRELW* and *BOND BETA*. As expected, US instruments are able to predict the weekly Latin-American Brady Bond credit spreads. We observe that such instruments concurrently explain between 77.86% and 81.32% of the variation in Par bond returns for the different selected countries. For Discount version we also see a high predicting ability, capturing nearly 78.69% to 80.90% of the variations. It is interesting to notice that the R^2 for the Argentinean Par and Discount bonds cases does not significantly rise above the rest of the countries. This result is different than Kaplan (1998), who finds much higher correlations (almost double of the remaining studied countries) between Argentinean bonds and the US stocks and bond market.

The positive and significant coefficients of US *INVRELW* for all the regressions are consistent with our hypothesis. As expected, *INVRELW* shows a countercyclical pattern in relation to stock market (our wealth proxy). Therefore, the higher US *INVRELW*, the higher the Brady Bonds credit spreads of all the Latin-American countries. The positive and significant coefficients for US *BOND BETA* and *TERMSP* are also consistent with our hypothesis. In other words, the variation of the Brady Bonds credit spread for all the countries follows positively the risk variation in time. Moreover, it is consistent with other empirical studies, which acknowledge the predictive ability of the bond returns in many countries¹⁴. Also, the studied Brady Bonds are backed by US Treasury bills, so the *TERMSP* should capture the movements of these instruments within international markets. Therefore, *TERMSP* should have some influence over the Brady Bond credit spreads. Regarding the variable *REALYD*, we can appreciate that for all the regressions, the coefficients are always negative and significant. The explanation does not seem simple, since in earlier studies *REALYD* was a noisy proxy for the credit spread. As mentioned previously, the studied Brady Bonds are backed by US Treasury bills, so we would expect a positive effect of these instruments over the Brady Bond credit spreads even though it is reasonable that a substitution effect exists between the Brady Bond returns and the 30 year US Treasury Bonds. As a matter of fact, in periods of crisis, international investors shelter in US Treasury Bonds instead of Latin-American debt instruments, while in peak periods, international investors look for another investment and diversification options (Kaplan, 1998), increasing the demand for Latin-American bonds. Thus, the substitution effect might dominate the *REALYD* effect over risk premium, generating a negative movement between the Brady Bond credit spreads and the 30 year US Treasury Bonds. The dummies are capturing possible effects of financial shocks in the Brady Bond studied. As seen in Table 3, the *Dmex* coefficients are positive and significant, confirming the impact of the Mexican crisis over the Brady Bond returns, increasing the credit risks in all the Latin-American issuer countries. In the case of *Dasia*, the coefficients are negative and significant, which implies the substitution effect generated between Asian and Latin-American debt instruments¹⁵.

Table 3. Regressions of Latin American Brady Bond Credit Spreads over US Predictive Instruments 28/07/1995 through 31/07/1998.

Brady Bond Credit Spreads are the differences between the Brady Bond yields and the one-month Euro deposit interest rate. INVRELW is the inverse of a real stock market index, defined in equation (3). BOND BETA is the slope coefficient of a regression of weekly bond credit spread over weekly stock returns in a period of 24 weeks. TERMSP is the difference between the long maturity Treasury bond and the short term Treasury bond yields. REALYD is the difference between the 30 year US Treasury Bond yield and the US inflation rate (CPI) lagged in one month. *Dmex* is a dummy variable which takes the value of one for all the observations before August 29th of 1997 and takes the value of zero otherwise. *Dusi*, is a dummy variable which takes the value of one between August 29th of 1997 and January 30th of 1998 and zero otherwise. We present the *beta* coefficients for each variable and their relative *t-statistics* (the standard deviations are adjusted for heteroskedasticity and first order correlation as described in Newey and West, 1987). R^2 is the determination coefficient adjusted by degree of freedom.

Panel A: Predictive regression for Par Brady Bonds				
independent variable	dependent variable			
	ARGENTINA PAR exceeding returns	BRAZIL PAR exceeding returns	MEXICO PAR exceeding returns	VENEZUELA PAR exceeding returns
Dmex	5.03 [6.95]*	4.54 [8.19]*	3.88 [5.92]*	8.00 [7.17]*
Dasia	-2.06 [-4.02]*	-2.05 [-4.49]*	-2.40 [-5.89]*	-4.72 [-6.21]*
INVRELW eeuu	32.71 [4.67]*	25.83 [4.68]*	26.27 [4.66]*	43.60 [4.63]*
BOND BETA eeuu	27.97 [2.92]	33.53 [3.88]*	19.39 [2.33]*	62.31 [3.81]*
TERM eeuu	2.02 [4.37]*	1.55 [3.59]*	0.66 [1.41]	1.89 [2.45]*
REALYD eeuu	-1.98 [-4.06]*	-1.99 [-4.63]*	-1.69 [-3.69]*	-3.30 [-3.52]*
R^2	77.86%	79.60%	75.03%	81.32%

* significant at 5% confidence level

Panel B: Predictive regressions for Discount Brady Bonds				
independent variable	dependent variable			
	ARGENTINA DISC exceeding returns	BRAZIL DISC exceeding returns	MEXICO DISC exceeding returns	VENEZUELA DISC exceeding returns
Dmex	5.95 [7.60]*	4.22 [7.74]*	4.03 [6.54]*	9.20 [6.98]*
Dasia	-1.45 [-2.28]*	-1.98 [-4.11]*	-1.96 [-5.50]*	-5.16 [-5.71]*
INVRELW eeuu	30.90 [3.98]*	27.30 [4.94]*	27.09 [5.16]*	44.99 [3.91]*
BOND BETA eeuu	30.37 [2.81]*	33.84 [3.90]*	22.44 [2.80]*	81.56 [4.05]*
TERM eeuu	3.32 [6.69]*	1.33 [3.06]*	1.33 [3.33]*	2.58 [2.86]*
REALYD eeuu	-2.65 [-4.84]*	-2.02 [-4.60]*	-2.05 [-4.69]*	-3.54 [-3.09]*
R^2	80.90%	78.69%	79.27%	79.86%

* significant at 5% confidence level

Employing a restricted model, which contains *Dmex*, *Dasia*, local *INVRELW* and local *BOND BETA*, we could compare local versus US instruments. As shown in Table 4, R^2 for all the regressions that include US instruments are higher than those which employ local variables, both for Par and Discount Bonds. In fact, models designed with US instruments show R^2 fluctuating between 67.21% and 74.69% for Par Bonds and between 62.16% and 73.32% for Discount Bonds. Meanwhile, models designed with local variables show R^2 fluctuating between 54.51% and 66.20% for Par bonds and between 50.23% and 66.16% for Discount Bonds.

Table 4. Restricted Model for Regressions of the Latin American Brady Bond Credit Spreads over Local and US Instruments, 07/28/1995 though 07/31/1998

Brady Bond Credit Spreads are the difference between the Brady Bond yields and the one-month Euro deposit interest rate. *INVRELW* is the inverse of a real stock market index, defined in equation (3). *BOND BETA* is the slope coefficient of a regression of weekly bond yields over weekly stock returns in a period of 24 weeks. *TERMSP* is the difference between the long maturity Treasury bond and the short term Treasury bond yields. *REALYD* is the difference between the 30 year US Treasury Bond yield and the US inflation rate (CPI) lagged in one month. *Dmex* is a dummy variable which takes the value of one for all the observations before August 29th of 1997 and takes the value of zero otherwise. *Dasia*, is a dummy variable which takes the value of one between August 29th of 1997 and January 30th of 1998 and zero otherwise. We present the *beta* coefficients for each variable and their relative *t*-statistics (the standard deviations are adjusted for heteroskedasticity and first order correlation as described in Newey and West, 1987). R^2 is the determination coefficient adjusted by degrees of freedom.

Panel A: Predictive regressions for Par and Discount Brady Bonds employing US instruments.				
independent variable	dependent variable			
	ARGENTINA PAR exceeding returns	BRAZIL PAR exceeding returns	MEXICO PAR exceeding returns	VENEZUELA PAR exceeding returns
<i>Dmex</i>	5.65 [5.94]*	5.21 [6.84]*	4.49 [5.74]*	9.14 [6.67]*
<i>Dasia</i>	-2.82 [-4.36]*	-2.67 [-4.49]*	-2.74 [-5.23]*	-5.56 [-5.14]*
<i>INVRELW</i> eeuu	40.64 [4.88]*	32.45 [4.45]*	29.99 [4.89]*	52.58 [4.84]*
<i>BOND BETA</i> eeuu	11.45 [0.81]	20.32 [1.62]	12.93 [1.14]*	45.39 [2.06]*
R^2	67.21%	70.01%	68.85%	74.69%
independent variable	dependent variable			
	ARGENTINA DISC exceeding returns	BRAZIL DISC exceeding returns	MEXICO DISC exceeding returns	VENEZUELA DISC exceeding returns
<i>Dmex</i>	6.74 [5.94]*	4.91 [6.84]*	4.73 [5.85]*	10.40 [6.75]*
<i>Dasia</i>	-2.64 [-2.97]*	-2.54 [-4.23]*	-2.52 [-4.39]*	-6.21 [-4.82]*
<i>INVRELW</i> eeuu	43.30 [4.30]*	33.30 [4.66]*	33.13 [5.20]*	56.23 [4.34]*
<i>BOND BETA</i> eeuu	3.81 [0.20]	22.22 [1.78]**	10.79 [0.85]	59.40 [2.31]*
R^2	62.16%	69.37%	68.23%	73.32%

(Continued)

Table 4. (Continued)

Panel B: Predictive regressions for Par and Discount Brady Bonds employing local instruments.				
independent variable	dependent variable			
	ARGENTINA PAR exceeding returns	BRAZIL PAR exceeding returns	MEXICO PAR exceeding returns	VENEZUELA PAR exceeding returns
Dmex	5.40 [9.21]*	6.12 [9.92]*	4.30 [9.88]*	10.57 [13.34]*
Dasia	-2.32 [-3.74]*	-1.49 [-3.02]*	-1.98 [-5.44]*	-3.87 [-5.25]*
INVRELW local	6.03 [1.39]	4.40 [1.75]**	6.95 [2.40]*	0.00 [0.00]
BOND BETA local	0.20 [0.03]	-17.32 [-2.96]*	-6.86 [-1.29]	8.46 [3.29]*
R ²	54.51%	66.44%	61.93%	66.20%

independent variable	dependent variable			
	ARGENTINA DISC exceeding returns	BRAZIL DISC exceeding returns	MEXICO DISC exceeding returns	VENEZUELA DISC exceeding returns
DUMMEX	6.05 [8.44]*	5.59 [9.34]*	4.45 [8.36]*	12.20 [11.95]*
DUMASIA	-2.01 [-2.42]*	-1.83 [-3.25]*	-1.82 [-4.54]*	-4.62 [-4.47]*
INVRELW local	2.99 [0.58]	5.02 [1.83]**	4.93 [1.59]	1.09 [0.36]
BOND BETA local	-3.99 [-0.70]	-7.31 [-1.64]**	-2.76 [-0.39]	11.56 [1.80]**
R ²	50.23%	59.30%	56.48%	66.16%

* significant at 5% confidence level

** significant at 10% confidence level

The results shown in Table 4 are consistent with our hypothesis. US instruments are able to explain Brady Bond credit spreads better than local variables. It is logical to think that Brady Bonds, which are principally demanded by international investors, might move closer to US time-varying risk than to Latin-American countries' time-varying risk. This leads us to detect a strong dependence level between Latin-American and US markets. In an integrated world, the weekly Brady Bond credit spread could be mainly determined by international markets.

Brady Discount bonds, which do not imply interest rate risk, should reflect a cleaner measure of country risk than Par Brady Bonds. Nevertheless, we could not find evidence related to this inference since the forecasts for both kind of bonds, either employing US or local variables, do not vary substantially. In fact, we can see how all of our predictions have the same signs for all the estimated parameters. Furthermore, the power of our model is very similar between the Brady Bond credit spreads. Even though the credit spread may be forecast by a small set of instruments, such prediction is very similar through the analyzed bonds and makes no relevant distinction between all tested Par and Discount bonds.

4. DESCRIPTION OF LATIN-AMERICAN BRADY BONDS COMMON VARIABLES

We have analyzed the weekly credit spread in a separate way for each bond. Now, we study the common variation in the expected Brady Bond credit spread. Table 3 provides preliminary evidence useful for this section. First, the predictive patterns are very similar between countries. Second, US instruments are better predictors than local variables. Third, the parameters obtained from the predictive instruments are similar through the credit spreads studied. Fourth, our results are similar both for Par and Discount bonds. Therefore, these performance patterns suggest the existence of high correlations between the expected credit spread. In order to examine how correlated the expected credit spreads are between the studied countries, we analyze the weekly expected bond credit spreads from July 28th of 1995 through September 4th of 1998.

A test of a single latent variable model (SLVM) provides a formal way to assess whether expected Brady Bond credit spreads from Latin America are perfectly correlated (see Campbell and Clarida, 1987). SLVM assumes that conditional betas (β_i) in a one-factor model are constant and that the expected credit spread of the risk factor (λ_t) is linear in a set of forecasting instruments:

$\lambda_t = \sum_{n=0}^N \theta_n Z_{n,t}$, where the instrument set consists of a $(N + 1)$ vector Z_t ($Z_{0,t}$ is a constant) and where θ_n are the coefficients of these instruments. SLVM implies that expected credit spreads of Brady Bonds from Latin America are proportional to λ_t and, thus, perfectly correlated. The expected credit spread of asset i over the nominally riskless asset is as shown in equation (7).

$$E_t(r_{i,t+1}) = \beta_i \lambda_t = \beta_i \left(\sum_{n=0}^N \theta_n Z_{n,t} \right) = \sum_{n=0}^N \omega_{in} Z_{n,t} \quad (7)$$

Where $\omega_{in} = \beta_i \theta_n$. The expected credit spread varies across assets only to the extent that their betas are different. SLVM imposes the restriction that the ratio of any two regression coefficients should be constant across forecasting equations.

These restricted equations can be tested using Hansen's (1982) generalized method of moments (GMM)¹⁶, where *chi-square* statistics reflect the correlation between each residual series and each instrument series in the model. Thus, a high *chi-square* shows that residuals are predictable and that there is no evidence against model restrictions.

Table 5 shows the results for equation (7). There are 28 orthogonality conditions and 10 parameters to be estimated, with a remaining 18 overidentifying restrictions to be studied. *Chi-square* has a 99.95 *p-value* both for Par and Discount bonds. Therefore, the data set does show evidence against the model restrictions; that is, the weekly Brady Bond credit spreads seem to be perfectly correlated.

Cumby and Huizinga (1992) notice that the *chi-square* test reflects whether the data set contains statistically significant deviations from the null hypothesis of perfect correlation between expected credit spreads. But this mechanism does not report enough information to detect how far from the hypothesis our data set is. Thus, high *p-values* may indicate that expected credit spreads are perfectly correlated, but this could be caused by a *low power*¹⁷. Consequently, Cumby and Huizinga (1992) argue that the sample correlation between expected credit spreads and the estimated standard error of this correlation coefficient should be examined directly.

Table 5. Estimation and Analysis of the Singular Latent Variable Model (SLVM) 07/28/1995 through 07/31/1998.

Results of a SLVM estimation employing Generalized Method (GMM):

$$\begin{bmatrix} r_{1,t+1} \\ r_{2,t+1} \\ r_{3,t+1} \\ r_{4,t+1} \end{bmatrix} = \begin{bmatrix} \theta_0 & \theta_1 & \cdots & \theta_4 \\ \beta_2 \theta_0 & \beta_2 \theta_1 & \cdots & \beta_2 \theta_4 \\ \beta_3 \theta_0 & \beta_3 \theta_1 & \cdots & \beta_3 \theta_4 \\ \beta_4 \theta_0 & \beta_4 \theta_1 & \cdots & \beta_4 \theta_4 \end{bmatrix} \begin{bmatrix} Z_{0,t} \\ Z_{1,t} \\ \vdots \\ Z_{4,t} \end{bmatrix} + \begin{bmatrix} u_{1,t+1} \\ u_{2,t+1} \\ u_{3,t+1} \\ u_{4,t+1} \end{bmatrix}$$

Where r_1 are the Mexican Brady Bond credit spreads and r_2, r_3, r_4 are the Brady Bonds credit spreads for Argentina, Brazil and Venezuela. β_1, \dots, β_4 are the coefficients of the “relative estimated betas” for these countries, and u_1, \dots, u_4 are the residuals. The predictive instruments Z_1, \dots, Z_4 include a constant, INVRELW, BONDBETA, TERMSP and REALYD. $\theta_0, \dots, \theta_4$ are the estimated coefficients for these instruments. The t -statistics (t) over the estimated coefficients have been calculated through standard deviations adjusted by heteroskedastity and first order correlation (see Newey and West, 1987). CHISQ is T times the value which minimizes the objective function of GMM. The degrees of freedom (d.f.) are equal to the number of over identified restrictions. P -value is the significance level for the study of the over identified, expressed in percentages.

Panel A: SVLM Model for Par Brady Bonds					
		MEX PAR	ARG PAR	BRA PAR	VEN PAR
		1.00	1.07	1.13	1.47
		[−]	[24.2]*	[27.6]*	[13.0]*
Constant	−0.53	[−3.12]*			
INVRELW	0.73	[4.14]*			
BONDBETA	0.98	[4.64]*			
TERMSP	−0.01	[−0.83]			
REALYD	−0.02	[−2.15]*			
Dmex	0.03	[3.68]*			
Dasia	−0.25	[−10.66]*			
Specification Test					
CHISQ (d.f.)	1.37 (18)				
p -value	99.9				

[] t —statistical
 *significant at 5% confidence level

Panel B: SVLM Model for Discount Brady Bonds					
		MEX DISC	ARG DISC	BRA DISC	VEN DISC
		1 .00	1.12	1.16	1.70
		[−]	[27.5]*	[43.5]*	[16.2]*
Constant	−0.53	[−2.23]*			
INVRELW	0.68	[2.66]*			
BONDBETA	0.46	[1.54]			
TERMSP	−0.06	[−3.30]*			
REALYD	0.01	[1.24]			
Dmex	0.01	[1.05]			
Dasia	−0.34	[−10.59]*			
Specification Test					
CHISQ (d.f.)	1.33 (18)				
p -value	99.9				

[] t —statistical
 *significant at 5% confidence level

Table 6. Correlation Matrix for Forecasts of Latin American Brady Bond Credit Spreads 28/07/1995 through 31/07/1998.

In the next table we present the correlation coefficients for Par and Discount Brady Bond Credit Spreads together with their relative *t*-statistics within parenthesis. The Brady Bond credit spreads are adjusted values from a regression over six credit spreads predictive instruments (US INVRELW, US BOND BETA, TERMSP, REALYD, Dmex and Dasia). The standard asymptotic deviations related to the *p*-values are calculated as described in Cummy and Huizinga (1992).

	ARG PAR	ARG DISC	BRA PAR	BRA DISC	MEX PAR	MEX DISC	VEN PAR	VEN DISC
ARG PAR	1.000 [—]							
ARG DISC	0.990 [99.9]	1.000 [—]						
BRA PAR	0.992 [99.9]	0.976 [99.9]	1.000 [—]					
BRA DISC	0.990 [99.9]	0.970 [99.9]	0.999 [99.9]	1.000 [—]				
MEX PAR	0.982 [99.9]	0.950 [99.9]	0.988 [99.9]	0.989 [99.9]	1.000 [—]			
MEX DISC	0.996 [99.9]	0.980 [99.9]	0.994 [99.9]	0.994 [0.000]	0.992 [99.9]	1.000 [—]		
VEN PAR	0.978 [99.9]	0.949 [99.9]	0.994 [99.9]	0.994 [99.9]	0.992 [99.9]	0.985 [99.9]	1.000 [—]	
VEN DISC	0.975 [99.9]	0.949 [99.9]	0.994 [99.9]	0.992 [99.9]	0.985 [99.9]	0.980 [99.9]	0.999 [99.9]	1.000 [—]

Table 6 presents the correlation coefficients of the predicted bond credit spreads as well as their relative *t*-statistic. The predicted credit spreads are the fitted values from an unrestricted regression of bond credit spreads on dummies and US variables. The correlations are very large and move from 0.949 to 0.999, all of them being significant at a 1% certainty level. Even correlations between Brady Bonds Par and Discount exceed 0.949. These Brady Bond's credit spreads correlations are higher than those reported by Ilmanen (1995) for international bond markets, and higher than the ones reported in other empirical studies¹⁸. Figure 2 illustrates the close comovements in the predicted credit spreads for Par and Discount Bonds among the four countries.

These high correlations, even among Par and Discount bonds, tell us about synchronized movements in this international debt market. As a matter of fact, we would expect closer movements between Discount Brady Bonds due to the absence of interest rate risk. However, evidence tells something different the two kinds of Brady Bonds studied have similar comovements. Barbone and Forni (1997) attribute these comovements to a kind of contagion effect between Brady Bond's credit spread, which would be a mix of herd behavior and a *learning spillover* effect¹⁹. The authors suggest that international traders have limited information about emerging economies, so any new information about one debtor country could be interpreted as Latin-American region information.

It would be reasonable assuming that traders' investment decisions are based on two elements: private information about fundamental variables and other traders' behaviour. Where

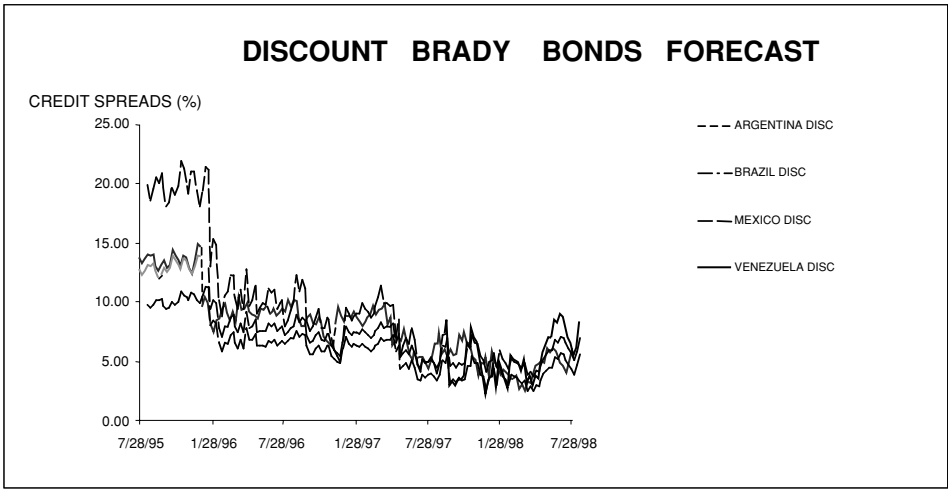
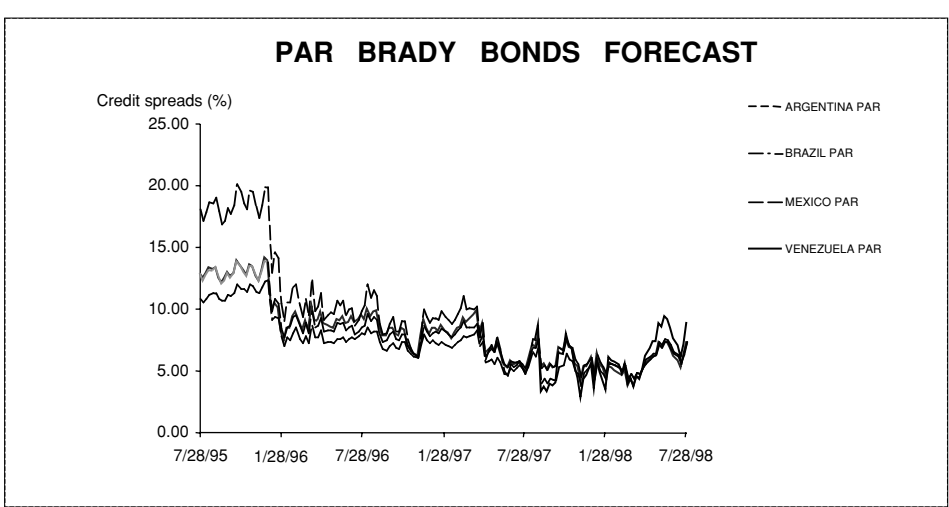


Figure 2. Forecasts for Brady Bond Credit Spreads

private information about fundamental variables provides the beliefs of financial distress probability of a countries, another traders' behaviour is important not only because of the additional information that he or she confers, but also because the investors' reputation lies on profitable investments, and they are after all, compared to other trader's performance. The latter fact is known as herd behavior, according to Scharfstein and Stein (1990).

In our research, Brady Bond credit spreads show comovements that are mostly due to variations of US instruments. Thus, in high uncertainty periods, international investors

demand higher compensations in their bond portfolios. This behavior, motivated for the risk aversion and the concern about the investor's reputation, would explain the herd behavior which leads traders to leave risky positions such as Latin-American Brady Bonds. Therefore, the close relationship existing between Latin-American Brady Bond returns might essentially be explained by international agents risk aversion, and a possible herd behavior that leads investors to act in a synchronized way, especially in periods of crisis.

5. CONCLUSIONS

This study examines the time varying expected credit spreads for a sample of eight Latin-American Brady Bonds. We found that a reduced set of US market variables is able to explain these credit spreads. The wealth dependent relative risk aversion (*INVRELW*), the bond beta (*BOND BETA*), the term spread (*TERMSP*), the US Treasury Bill real yield (*REALYD*), together with two dummies which capture the effects of Mexican crisis (*Dmex*) and the Asian crisis (*Dasia*), appear as important sources of credit spread predictability.

The positive and significant coefficients of *INVRELW* for all the regressions of credit spreads (both Par and Discount) are consistent with our hypothesis about a countercyclical pattern in relation to the stock market. The positive and significant coefficients for *BOND BETA* are also consistent with the idea that the variation of credit spreads for all of the Brady Bonds follows positively the risk variation in time. The positive and significant coefficients for *TERMSP* are consistent with the hypothesis that this instrument is a benchmark for Latin America Brady bond credit spreads. Regarding the variable *REALYD*, for all the regressions, the coefficients are always negative and significant which is consistent with a substitution effect between US Treasury Bonds and Brady Bonds. *Dmex* and *Dasia* are significant for all of our regressions, capturing permanent effects in credit spread of financial shocks.

We found evidence which confirmed that predictability patterns are very similar between previously studied bonds. Moreover, US variables are better predictors than local, and the obtained parameters are similar between the analyzed bonds. Our results are the same for Par and Discount bonds. Through a *Singular Latent Variable Model* (SLVM), we studied possible comovements of the weekly credit spreads, finding that the Brady Bonds are highly correlated between themselves. We also found that the correlations with the forecasts are also high and statistically significant (always above 0.95), even between Par and Discount bonds. Those comovements are mainly due to the risk aversion of international investors and to the herd behavior that leads them to make their investment decisions in a synchronized way.

ENDNOTES

1. Part of this paper was developed when Parisi was at the Department of Business Administration, Universidad de Chile. We wish to thank Gustavo Grullon, Rodrigo Fuentes, Jorge Gregoire, Gonzalo Chávez, and participants at the seminars of The Latin American Consortium (LARC) Tulane University- Tecnológico de Monterrey, Universidad Adolfo Ibáñez and Universidad de Chile. Best paper in Tercera Reunion de Finanzas en Chile (2002), and received The Santiago Stock Exchange Award.
2. The Brady Plan was impelled by former USA Treasury Secretary, Nicholas Brady, in order to relieve 1982's Debt Crisis of many emerging countries. Brady offered multilateral support from the government of the United States through replacing the debt of commercial banks for government bonds. This operation was available for those countries that made economic reforms under the assistance of the IMF and the World Bank.
3. Brady Bonds reached a traded amount of US\$178 billion in the third quarter of 1998.
4. Blume, Keim and Patel (1991) found that *junk bonds* or low grade corporate bonds in the USA, presents properties that belong both to American stock and bond markets. Therefore, any model used to explain expected returns of these bonds should include variables related to both markets.

5. Several recent studies formalize the idea that the subsistence level varies over time because of individual consumers' adaptive tastes.
6. This index was created by Morgan Stanley. The purpose of this index is to homologate 60% of the stock markets of each of the countries that are monitored.
7. Capital Asset Pricing Model.
8. The *yield curve* is a curve constructed from riskless bond returns.
9. All Brady Bonds studied in this article are backed up in principal with US Treasury Bonds Zero coupons, bullet amortization and guaranteed interests for over one year, and are renewable.
10. We made use of eurodeposits because this instrument is unaffected by local interest rates.
11. Those countries with a strong relationship with the oil price have established some guarantees related to some *oil exportation indexes*.
12. The utilization of a restricted model is suggested by the author since it is impossible to construct a faithful *TERMSP* and *REALYD* series for Latin America. This fact is explained by the inexistence of riskless instruments that have a long enough maturity.
13. The *t-statistics* over the estimated parameters have been calculated with standard deviations adjusted for heteroskedasticity and first order autocorrelation (see Newey and West, 1987).
14. See Fama and French (1989).
15. Cumby and Pastine (2000) find a fall in Brady returns from August 1998, the date which Russia announced payment cessations and devaluation. This fact, produced by the Asian crisis, shows us that this shock affected negatively in a second stage the excess Brady Bond returns, increasing the risk premium for all the Latin-American countries.
16. This method is built on the orthogonality of the regression residuals $u_{i,t+1}$ with the instrument set Z_t . Given a sample of T observations, the GMM forms a vector of $M(N+1)$ orthogonality conditions $g = \text{vec}(u'Z)$, where u is the $T \times M$ matrix of residuals and Z is the $T \times (N+1)$ matrix of instruments. An algorithm searches for parameter values that minimize the quadratic form (multiplied by T) serving as a measure for goodness of fit for the model. It is asymptotically chi-square distributed with degrees of freedom equal to the number of overidentifying restrictions.
17. In statistical terms, a low power means the probability of a type II error, which implies not rejecting the false hypothesis.
18. See Campbell and Clarida (1987) and Cumby and Huizinga (1992) whose studies analyzed correlations within international currency markets, stock markets, currency returns and international bond return markets.
19. Barbone and Forni (1997) study reactions in Brady Bonds markets due to the Mexican crisis, across time series.

REFERENCES

- Barbone, L. and L. Forni (1997). Are markets learning? Behavior in the Secondary Market for Brady Bonds. Central Europe Department, *World Bank*.
- Blume, M., D. Keim and S. Patel (1989). Returns and Volatility of Low-Grade Bonds. *Journal of Finance* 46, 49–74.
- Campbell, J. and J. Ammer (1993). What Moves the Stock and Bond Markets? A Variance Decomposition for Long-Term Asset Returns. *Journal of Finance* 48, 3–37.
- Campbell, J. and R. Clarida (1987). The Term Structure of Euromarket Interest Rates: an Empirical Examination. *Journal of Monetary Economics* 19, 25–44.
- Chen, N. (1991). Financial Investment Opportunities and the Macro economy. *Journal of Finance* 46, 529–554.
- Cumby, R. and J. Huizinga (1992). Investigating the Correlation of Unobserved Expectations, Expected Returns in Equity and Foreign Exchange Markets and other Examples. *Journal of Monetary Economics* 30, 217–253.
- Cumby, R. and T. Pastine (2000). Emerging Market Debt: Measuring Credit Quality and Examining Relative Pricing. Georgetown University.
- DeBondt, W. and M. Bange (1992). Inflation Forecast Errors and Time Variation in Term Premia. *Journal of Financial and Quantitative Analysis* 27, 479–496.
- Fama, E. and R. Bliss (1987). The Information in Long Maturity Forward Rates. *American Economic Review* 77, 680–692.
- Fama, E. and K. French (1989). Business Condition and Expected Returns on Stocks and Bonds. *Journal of Financial Economics* 25, 23–49.
- Hansen, L. (1982). Large Sample Properties of Generalized Method of Moments Estimators. *Econometrica* 50, 1029–1054.
- Hodrick, R. (1987). The Empirical Evidence on the Efficiency of Forward and Futures Foreign Exchange Markets (Harwood Academic Publishers, New York).
- Ilmanen, A. (1995). Time Varying Expected Returns in International Bonds Markets. *Journal of Finance* 50, 481–506.

- Kaplan, P. (1998). Stocks, Brady Bonds, and Currencies, Investment Opportunities in Latin America, Northwestern University.
- Keim, D. and K. Strambaugh (1986). Predicting Returns in the Bond and the Stock Markets. *Journal of Financial Economics* 17, 357–390.
- Lauterbach, B. (1989). Consumption Volatility, Production Volatility, Spot-Rate Volatility, and the Returns on Treasury Bills and Bonds. *Journal of Financial Economics* 24, 155–179.
- Mankiw, G. (1986). The Term Structure of Interest Rate Revisited. *Brooking Papers on Economic Activity*, 61–110.
- Marcus, A. (1989). An Equilibrium Theory of Excess Volatility and Mean Reversion in Stock Market Prices. NBER Working paper 3106.
- Newey, W. and K. West (1987). A Simple, Positive Semi-Definitive, Heteroscedasticity and Autocorrelation Consistent Covariance Matrix. *Econometrica* 55, 703–708.
- Scharfstein, D. and J. Stein (1990). Herd Behavior and Investment. *American Economic Review* 80.

9. RETHINKING PROJECT FINANCE

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1. INTRODUCTION

The successful development of large-scale infrastructure projects such as power plants, roadways, bridges, dams, seaports, airports, and telecommunications networks is vitally important for economic growth in developed and developing countries alike. Consequently, ensuring that such projects are successfully undertaken and completed should be a top economic priority, particularly for the governments of developing countries. In the past decade, the scale of global capital investment in infrastructure projects has increased rapidly. Esty (2004) points out that the total project-financed investments worldwide grew at a compound annual rate of almost 20% through most of the 1990s and reached \$165 billion in 2003.² Most large-scale infrastructure projects, by their very nature involving massive capital investment, long completion times, and high levels of risks,³ present formidable financial challenges to developing countries of the world. Infrastructure development cannot succeed without adequate financing, and it is clear that large-scale infrastructure development in developing economies surely requires substantial amounts of technology and capital from developed countries in North America and Europe.

Although historically we have witnessed a number of large and successful infrastructure projects, we have also seen many spectacular failures. In their study of sixty engineering projects with an average size of \$1 billion undertaken around the world between 1980 and 2000, Miller and Lessard (2000) found that almost 40% of them performed poorly and were either abandoned completely or restructured due to severe financial crisis.⁴ In their more recent study of the performance of large transport infrastructure projects, Flyvbjerg et al. (2003) found that cost overruns of 50% to 100% and revenue shortfalls of 20% to 70% were not uncommon.⁵

The typical approaches to financing large-scale infrastructure projects are well-known. Projects are typically financed on a stand-alone basis, giving rise to an independent project company for the purpose of financing the construction, operation, and maintenance of a specific public investment project. The project company exists as a legally independent entity, usually has a clearly-defined lifespan, and most often is financed with equity capital from one or a small number of firms and with project loans from a consortium of banks. The current practice of creating project companies with the structural attributes of high leverage and concentrated equity ownership has led to Esty's recent conclusion that "Project finance, as it turns out, just happens to be a particularly interesting and effective setting in which to illustrate the simple yet critical idea that 'structure matters'".⁶ I believe that existing approaches to financing infrastructure projects are largely to blame for some of the failures of large-scale investment projects in the world. Existing approaches are based on inherently flawed economic justifications. If the financing problems that have repeatedly plagued infrastructure projects are to be solved, we must consider new approaches.

This paper is organized as follows. Section 2 discusses some of the shortcomings of existing approaches to infrastructure financing. Section 3 discusses the benefits of financing infrastructure projects through the capital markets and describes innovations in issuing project bonds, project stocks, and project preferred stocks. Finally, the paper concludes with a brief summary.

2. EXISTING APPROACHES TO INFRASTRUCTURE FINANCING AND THEIR SHORTCOMINGS

Currently, there exist two main approaches to financing infrastructure projects. The first approach is one that I will call *the Build-Own-Operate (BOO) approach*; and the second approach is widely known as *the Build-Operate-Transfer (BOT) or the Public-Private-Partnership (PPP) approach*.

2.1. The BOO Approach

In many countries, especially those with planned economies, major infrastructure projects are built, owned, and operated by the government. The procedure for a particular public investment project usually begins with government estimates of the total cost of undertaking the project, including costs of project construction and project operations and maintenance. The government then evaluates, compares, and chooses from available financing alternatives. The set of financing alternatives usually includes public funds spent on the hired project companies, domestic and international bank loans, and privately-placed project bonds. Not surprisingly, jurisdiction over the aforementioned steps falls under the influence of domestic politicians. There are several problems inherent in this basic approach. First, bidding on infrastructure projects is often subject to bribery and corruption. Second, deciding upon a complex financing structure requires much negotiation and re-negotiation that can cause delays or even project halts. Third, approval of funding for state-owned projects must often navigate through lengthy and bureaucratic political processes. And fourth, upon completion of project construction, actual operation and maintenance are often inefficient by virtue of the state's ownership of the project. Indeed, we can draw lessons from the numerous privatizations of state-owned infrastructure projects over the past few decades. We know that

such privatizations occurred largely because state-owned enterprises (SOEs) suffered from inefficiency and poor performance stemming from a lack of proper incentives and reward systems for managers and workers.

It is worth pointing out that the privatization of even some well functioning publicly-owned infrastructure projects can arise from other reasons such as the government's budgetary needs. As Baglolle (2003) has recently stated concerning privatization in Hong Kong: "To help reduce a record budget deficit, the government plans to sell partial stakes or securitize revenues from major assets over the next 18 months, from its airport to its tunnels and even its housing department. The program could raise anywhere from \$14 billion to \$40 billion in coming years, depending on what goes on the block, and would put Hong Kong at the forefront of privatization efforts globally."⁷

Experience with such privatizations suggests that creating *immediate* private ownership of a public project among a diverse group of investors—both domestic and from abroad—may lead to a quicker, more successful type of infrastructure financing. In later sections, I will illustrate how this rapid financing may be accomplished through the capital markets.

2.2. The BOT or the PPP Approach

In order to tap investment capital from private sectors while improving the efficiency of public investment projects, governments in many countries have been widely encouraged to apply Build-Operate-Transfer (BOT) or Public-Private-Partnership (PPP)⁸ approaches to encourage the participation of private sectors in infrastructure development. Although BOT (or PPP) is unique to the infrastructure project and to the locale, the basic approach involves awarding a project to a company that operates it for twenty-five to thirty-five years before it is transferred back to the government. The sole difference between BOT and PPP lies in the two approaches' output criteria. In the PPP model, unlike with BOT, the government buys services from project companies at agreed-upon prices and thus has a greater influence in production decisions. As a result, project companies are not overly exposed to changing market conditions for the outputs. Nevertheless, use of the BOT model is widespread in many countries. As of May 2004, there were 240 BOT projects in East Asia and 240 in South America.⁹ As for the PPP approach, it is reported that, since the early 1990s, the UK has signed over 569 contracts with an overall value of 52.6 billion pounds having been spent on PPP projects.¹⁰ Compared to the BOO approach, the newer BOT and PPP approaches can undoubtedly improve the efficiency of infrastructure financing. However, as I will argue below, both the BOT and the PPP approaches still suffer from some serious shortcomings that can hinder the performances of infrastructure projects around the world.

2.2.1. Inefficient Bidding Processes

In BOT and PPP project bidding, domestic and foreign project companies usually submit bids for the entire project to government agencies, which make the final selection. Therefore, the process is not immune from the influence of domestic politicians and concomitant bribery and corruption. For example, Mr. Estrada, the former President of the Philippines, stated that it was his administration's policy not to grant BOT projects any government guarantee, and he confirmed that Mr. Jimenez, a former businessman, offered him \$14 million for a direct government guarantee on the multibillion dollars Caliraya-Botocan-Kalayaan (CBK)

hydropower project which he had declined. Mr. Estrada further stated that Mr. Ramos, the former President of the Philippines, and Mr. Abrille, the former Philippine ambassador to Argentina, had lobbied for IMPSA (Industrias Metalurgicas Pescarmona Sociedad Anonima) for the CBK project, and that IMPSA contract was not formally consummated in his two and a half years in office. Nevertheless, it took the new administration only a few days to conclude the deal.¹¹

While it is true that using public tenders in BOT and PPP project bidding processes can increase efficiency in project cost reduction, the governments of some countries often impose restrictions on bidding that work against their own best intentions. Instead of allowing open tenders for projects, some governments, based upon their criteria, negotiate and directly assign project contracts to closely-tied investment companies. According to the World Bank's mid-1999 reports on the impact of the Southeast Asian financial crisis, a number of governments and enterprises in the region had to incur debts of billions of U.S. dollars due to bad negotiations in BOT investment projects. For example, Indonesia and the Philippines incurred some US \$10 billion and US \$6 billion in bad debt, respectively, from BOT investments.¹²

It is worthwhile to note that some governments now employ new measures to promote and increase capital investment via the BOT format. For example, it was reported that the Taiwan Cabinet's Public Construction Commission finalized a plan of allocating *quotas* concerning BOT projects each government agency should sign up with private investors each year and offering *monetary awards* to government employees with superb performance in winning BOT contracts.¹³

2.2.2. Imperfect Project Contracts

Asian countries in particular have frequently invited firms and contractors from abroad to invest in their infrastructure projects under the BOT and PPP approaches. Because these foreign firms and contractors often possess advanced technologies and vast amounts of capital, domestic politicians may seek to provide enticements via the "red carpet," i.e., financial incentives allowing the creation of tax-free bonds for infrastructure; or multi-year tax holidays for infrastructure investment. However, a red carpet, if not carefully maintained, can be easily transformed into so much red tape. For example, the Hong-Kong based Hopewell Holdings secured an ambitious road and train system BOT project in Bangkok in the early 1990s for a 30-year operation with concession of taxes and other benefits. The total worth of this road and rail project was approximately \$4 billion. However, in January 1998 the Thai Government, citing major delays and cost overruns, ordered the disengagement of Hopewell from Bangkok's BOT project. In the end, the Thai government was only willing to reimburse Hopewell a fraction of the \$600 million the infrastructure company had spent on the project.¹⁴

Another instance of unsuccessful BOT infrastructure project involved the U.S. firm Congentrix Energy Inc. Congentrix had been invited by the Indian government to join with Hong Kong's China Light and Power Ltd. as a partner in the project. In 1992, the two companies were to invest in and develop a \$1.6 billion Mangalore power project in the south India state of Karnataka. The project was designated as a "fast-track" project, which entitled it to federal financial guarantees. Mangalore Power Co. (MPC), the company set up by Congentrix and China Light and Power to develop the project, waited for over 7 years to get

clearance for executing the project. During those years, MPC spent more than \$20 million and fought several public interest litigations for two years, eventually prevailing. However, there was a pending two-year-old suit alleging the payment of \$13.8 million in bribes to Indian officials. After a lower court ordered an investigation into the allegations of corruption, MPC appealed to the Supreme Court in April 1998, and the justices reserved the case for judgment in January 1999. MPC waited for almost a year without a verdict; as a result, Cogentrix quit the project on December 9, 1999.¹⁵ On December 13, 1999, four days after Cogentrix announced its withdrawal from the power project, the Supreme Court of India gave a judgment in favor of MPC.¹⁶

These examples illustrate that sometimes a very lengthy time is required to conduct negotiations and renegotiations among project companies, foreign and domestic banks, and politicians of the host country. Companies engaged in a project will typically bear almost all of the risks—both financial and political—yet will lack adequate diversification. Therefore, countries in which the political processes of project approval are mired in red tape will have difficulty in attracting foreign project companies for infrastructure projects.

The PPP approach to project finance is also often subject to political risks. For example, Enron Corporation built a \$2.9 billion power plant in Maharashtra, India that resulted in considerable controversy in 2001. Enron's plan was the first of the "fast-track" PPP power projects signed in 1995 and the only one to have been successfully implemented in India. The Dabhol Power Company (DPC), in which Enron held a 65 percent share, and its sole customer, the Maharashtra State Electricity Board (MSEB), had been in dispute on the issue of tariffs. MSEB owed DPC \$45 million in unpaid bills; and DPC insisted the tariff—three times higher than that typically levied by Indian power producers—reflected high capital costs, rising fuel costs, and the depreciation of the rupee since the contract was signed in 1995. DPC had issued a preliminary notice to cancel its contract with MSEB. As a result, the Indian and foreign banks decided to force the closure of the Enron power plan for a year in June 2001 to give the two partners in the project a chance to discuss and reconcile their differences.¹⁷

The above examples underscore the fact that any project company in BOT or PPP financing which engages in direct investment on infrastructures invariably must deal with bureaucratic red tape and political risk because, ultimately, the key decisions rest in the hands of host-country politicians.

In addition, changes in political administration can have an ex-post impact on the viability of agreed-upon BOT or PPP contracts. For example, at the urging of the World Bank and the International Monetary Fund, the government of Turkey adopted in 2000 the BOT approach to its electricity sector. However, in 2003 the new Turkish government licensed 72 new power plants with outputs ranging up to 1,120MW, and at the same time it moved to cancel 30 BOT projects with a combined capacity of 2,846MW due to high output costs.¹⁸

It is also important to point out that the enforcement of contracts agreed to by the project companies and the governments under BOT or PPP laws is often subject to the judicial interpretation of the courts. For example, the Supreme Court of the Philippines on January 21 of 2004 issued a resolution affirming its May 5, 2003 decision declaring as null and void Piatco's (Philippine International Air Terminals Co.) BOT contracts in the NAIA-3 (Terminal-3 at the Ninoy Aquino International Airport) project, which was valued

at \$650 million.¹⁹ The ruling had a significant impact on various parties involved. Pistco's German partner, which has written off some \$313 million in its investment in the Terminal-3 project, vowed to pursue its claims on the facility.²⁰ It has also been argued that the propriety of security arrangements for the investments in the project, particularly those provided by international financing institutions (e.g., the Asian Development Bank and World Bank's International Financing Corp., which had approved a \$440-million loan package for the project) should not be left to the court's decision.²¹

2.2.3. Lack of Diversification and Liquidity in Project Finance

The number of participants in project finance under the BOT or PPP approaches is usually very small, giving rise to substantial illiquidity and risk concentration. For instance, some governments usually allow private firms to apply either singly or through the formation of a consortium that is restricted to four members for tenders. The number of members in the lending bank consortium is also usually quite small. Therefore, the BOT and PPP approaches do not provide the benefits of risk sharing in the face of high project risks. For instance, the Taiwan government launched a BOT project for a high-speed rail link between Taipei and the CKS International Airport in 1997. But the two contractors, Evertransit International Co. and BES Engineering Corp., both abandoned the project citing financial problems and technical difficulties. As a result, the government scrapped the project in April 2003 after six years of planning.²²

In addition to problems of illiquidity under the BOT and the PPP approaches, any contract that permits private firms to operate projects for twenty-five to thirty-five years and then transfer them to the government creates severe management incentive problems. As one can easily see, managers of project companies under either a BOT or a PPP contract would have ample incentives over the length of the project to engage in managerial misbehavior and self-dealing behavior before turning over the project to the government.

Motivated by the above observations regarding the shortcomings of current practice of using the BOT and PPP approaches, I now propose a new approach—one that brings with it correct financial tools and proper economic incentives—that holds out the promise of improving the critical process of infrastructure project financing in developed and developing countries around the world.

My message in this paper is a simple one. Successful financing of major infrastructure developments is too important and too vital to the rapid economic growth of many countries in the world to be simply left to the hands of politicians. Instead, project finance should be guided by the capital market's invisible hand. And a key part of such financing must come from financial innovation. The fundamental challenge of infrastructure financing, then, is how to match the massive demand for capital investments in the world with a supply of capital from millions of private investors through project securities available on a global scale.

3. A NEW APPROACH TO PROJECT FINANCE THROUGH CAPITAL MARKETS

Since the widely-used BOT and PPP approaches have not produced satisfactory results in terms of the performance of large-scale infrastructure projects around the world in the past decade, a new approach is needed. The capital markets provide fundamental opportunities for risk-sharing among millions of private investors through financial innovations. As

I have noted in Chen (2002), motivations for financial innovation are no doubt complex and diverse, but they can be best understood by the simple acronym TRICKME, in which: ‘T’ stands for reduction of taxes and transactions costs; ‘R’ for circumvention of bad regulations; ‘I’ for reduction of informational asymmetry; ‘C’ for market completion; ‘K’ for knowledge advancement; ‘M’ for marketing efforts for new products and new processes, and ‘E’ for financial engineering.²³ This acronym captures the idea that newly-developed financial instruments can be used to enable financing infrastructures in a way that will reduce agency costs arising from bureaucratic regulations and informational asymmetries. It is my view that the operation of the capital market’s invisible hand will prove undoubtedly to be the most efficient and most successful way to achieve desired results in infrastructure development.

The core of the new approach to financing infrastructure is the idea that the economic costs and benefits of infrastructure projects can and should be determined by placing the project financing in the hands of millions of private investors *from the start*. In other words, I advocate using the *invisible hand*—the capital market—to determine the economic value of an infrastructure project and to provide the necessary capital for its construction and operation. By utilizing *initial public offerings* (IPOs) of project bonds, project stocks and project preferred stocks, the true “private participation” of the infrastructure projects for economic developments can be achieved immediately, thus reducing substantially the lack of diversification and lack of liquidity faced by both shareholders and bank creditors in the BOT or the PPP approaches. Before discussing in more detail some financial innovations relevant to IPOs of project bonds, project stocks and project preferred stocks, I first would like to highlight some of the key benefits of the proposed approach:

- 1) Issuing project bonds, project stocks, and project preferred stocks in both domestic and foreign capital markets would attract funds from millions of investors at home and abroad,²⁴ thereby helping to ensure ample funding and strong interest in and awareness of the infrastructure projects on a global scale. As a result, a “globalization” of an infrastructure project can be achieved.
- 2) Sufficient numbers of bonds and equity shares of the project company can be issued to establish reasonable unit prices of project financing instruments, thereby ensuring broad participation in the domestic as well as foreign capital markets. It is important to note that a high degree of community interest in the domestic country is necessary for the ultimate success of the infrastructure project.²⁵
- 3) Placing ownership immediately in private investors’ hands fosters efficiency and liquidity in the market for claims on the future cash flows of the infrastructure projects.
- 4) Publicly-traded project stocks would provide a foundation for granting stock options to construction workers and project operation employees that could help to improve incentives and productivity at the construction phase as well as at the operational phase. Consequently, the currently widespread problems of cost overrun and inefficiency can be reduced.
- 5) The governments in the host country will be allocated for some units of project securities, so the true public-private-partnership can be achieved at the very beginning of any new infrastructure project which will reduce a great deal of agency problems and agency costs we have mentioned before.

3.1. Issuing Project Bonds with Event Risk Provisions

In general, the private ownership of infrastructure through the BOT or PPP format involves both shareholders as well as bondholders. However, their numbers are small as they are represented by project companies created by small shareholders represented by domestic and foreign firms and the small number of creditors represented by domestic and international lending banks. Without a large number of diverse private investors that hold project equity shares and project bonds, the benefits of risk sharing and liquidity cannot be obtained. Therefore, in addition to project stocks, a large number of project bonds and project preferred stocks should also be issued at initial public offerings. The project bonds should have tax-free status in order to attract private domestic and foreign bond-investors. Furthermore, various types of project bonds can be structured to have different maturities and priorities in order to attract different kinds of private bond-investors worldwide.

Just like corporate bonds, project bonds may be subject to some unforeseen adverse shocks such as wars, political upheaval, tax law changes, earthquakes, oil price shocks, exchange-rate fluctuations, etc. Occurrence of such event risks would affect the total value of infrastructure and consequently the value of project bonds and hence bondholders' wealth. Typically, the corporate bondholders in the United States have protected their wealth from certain types of event risks in the late 1980s and the early 1990s by demanding that new bond issues should include "poison puts" or "event-risk provisions"²⁶ in their indentures. Also, Standard & Poor's Corporation started to add the "event risk" rating to its credit risk rating of corporate bonds in the beginning of the 1990s. The categories of event-risk rating range from the strongest protection against event risk (E1) to the insignificant or no protection against event risk (E5).²⁷

Let me now describe two financial innovations that have been incorporated in the covenants of corporate bonds first introduced in the early 1990s. These innovations on corporate bonds can be applied to the project bonds in financing infrastructure I have discussed earlier. For convenience, the first kind of innovation in the covenants of bonds will be called "protective put-type" bonds with "bearish" event-risk provisions. Bonds with bearish event risk provisions are similar to regular puttable bonds. However, there is a key difference between these two types of bonds, namely, that the exercise of a put option attached to the former is triggered by the occurrence of an external risk event, while the exercise of the put option attached to the latter is determined by bondholders. We can refer to the second kind of innovation in the covenants of corporate bonds as "conversion call-type" bonds that have "bullish" event-risk provisions. Bonds with "bullish" event risk provisions are similar to regular convertible bonds. Again, the difference between the two depends on the trigger point for the conversion.²⁸

3.1.1. Project Bonds with Bearish Event-Risk Provisions

Project bonds with bearish event-risk provisions should protect bondholders from wealth loss due to the occurrence of some designated events such as wars, changes in political systems, changes in world oil prices, and changes in foreign exchange rates that might cause a significant decline in the economic value of an infrastructure project and hence a drastic downgrade in the rating of project bonds. If this has occurred, then the project bond has effectively matured and the bondholders have the right to ask the issuer or guarantors for

immediate payment of the principal amount of the bond and the accrued interest. This is why a project bond with bearish event-risk provisions can be viewed as a puttable bond and should have a value greater than that of the straight project bond. The bearish event-risk provisions should therefore serve to make investing in the project more attractive to both domestic and foreign private bond investors.

3.1.2. Project Bonds with Bullish Event-Risk Provisions

Project bonds with *bullish* event-risk provisions can provide bondholders with opportunities for wealth gains by converting debt into equity upon the occurrence of some designated event. These bullish events can include: favorable changes in exchange rates, favorable changes in tax laws, and favorable changes in energy prices that have resulted in a significant increase in the economic value of an infrastructure project, especially the value of equity shares. If such an event occurs, then the holders of project bonds with bullish event-risk provisions can immediately convert the debt into equity shares.

3.1.3. Other Economic Implications of Project Bonds with Event-Risk Provisions

Issuing project bonds that include event-risk provisions may have some other important economic implications for an infrastructure project. First, in the presence of bearish event-risk provisions, managers and stockholders of project companies are less likely to engage in project restructuring activities that might enhance equity value at the expense of bondholders. Therefore, with event-risk provisions in project bond indentures, agency problems between bondholders and stockholders of project companies and their associated agency costs can be reduced. As a result, the decrease in deadweight costs should improve the overall efficiency of infrastructure projects.

Second, the inclusion of event-risk provisions in project bond contracts should be a deterrent to the politicians' attempts to make undesirable policy changes in the host countries. Thus, a more stable economic growth can be expected.

Third, project bonds with event-risk provisions in the contracts will make them more attractive to both the domestic and foreign private bond-investors because they represent a package of project bonds and the attached put/call options to the investors. Thus, the explicit costs of debt financing for an infrastructure project will be lower with the inclusion of event-risk provisions in its debt.

3.2. Financing with Project Stocks

Any infrastructure project can be financed by the mechanism of initial public offerings of project securities—stocks and bonds. With the assistance of some internationally reputable investment bankers, the economic value of an infrastructure project could be estimated with reasonable accuracy, and certainly as easily as estimating the value to any potential foreign direct investor interested in the project. The possibility of wider participation in the project would also reduce the financial risks borne by a wider base of investors, and hence the costs of raising the required capital for the project would be lower. Thus, a world-wide IPO of project stocks would raise funds for the project from global private investors immediately. The invisible hand of the global capital markets would work better in financing the infrastructure project than the visible hands of the domestic politicians.

Due to the high degree of informational asymmetry of an infrastructure, foreign private investors might naturally require some guarantee from the project company or other guarantors as to the future returns on their project investments. In the following, I will briefly describe two methods of issuing project stocks that could reduce the costs associated with informational asymmetries. The first is to perform an IPO with puttable project stock, and the second is to perform an IPO of project stock with contingent-value-rights (CVRs) attached.

3.2.1. Issuing Puttable Project Stock

One of the financial innovations that investment bankers came up with in the late 1980s was common stock that can be “put” back to the issuer. A “puttable stock” can be used to reduce the underpricing problem in some initial public offerings (IPOs) as well as to resolve other problems arising from informational asymmetry. Puttable project stock is simply a package consisting of project stock and a put option on the project stock.²⁹ In simple terms, it is a “money-back” guarantee that can be provided by the project company or other international guarantors of the infrastructure project. Purchasers of the puttable project stock obtain the right (the put option) to redeem the shares at some prespecified price (the minimum guaranteed or the strike price). Thus, the downside risk due to a decline in the share price is eliminated with puttable stock. Such an arrangement would be attractive to potential foreign investors who might otherwise be reluctant to invest without the “money-back” guarantee. The innovation of puttable project stocks provides attractive investment opportunities for private domestic and foreign investors that would not otherwise be available. Indeed, although a homemade “synthetic protective put” strategy could be created by using a dynamic asset allocation scheme, high transactions costs will prevent private domestic and foreign investors from using such a strategy. A simple example can be used to show how puttable stock can solve the IPO underpricing problem. Suppose that one billion shares of the new project stock are issued for an economic value of \$10 per share worth of the equity portion of the infrastructure. If the project company or a guarantor is willing to redeem the shares at \$10 per share, say within the next three years after the issuance date, then the value of the puttable stock would be worth more than \$10 per share because of the value of its implicit put option. The following graph illustrates the payoff to a puttable stock at the expiration of the put option.

3.2.2. Issuing Project Stock with CVRs

Investors’ commonly portrayed investment psychology of “fear for downside risk and greed for upside gain” can be exploited with another strategy. In particular, the project stocks of an infrastructure offered to domestic and foreign investors can be combined with Contingent Value Rights (CVRs), which permit investors to reap the benefits of possible upside appreciation while maintaining downside protection.³⁰ Thus, a project stock plus CVRs can be even more attractive than the puttable-stock to risk-averse foreign investors seeking to invest in the shares of a new infrastructure project in an environment with large information asymmetries. In essence, the CVR guarantees a base price for the project stock while establishing a target price which the stock is expected to achieve prior to the CVRs expiration. In the language of financial engineering, a CVR is really what is known as a “bearish put spread.” In other words, holders of a CVR own a portfolio of two options on the same underlying project stock, consisting of a long position in a put option at a higher strike price (target

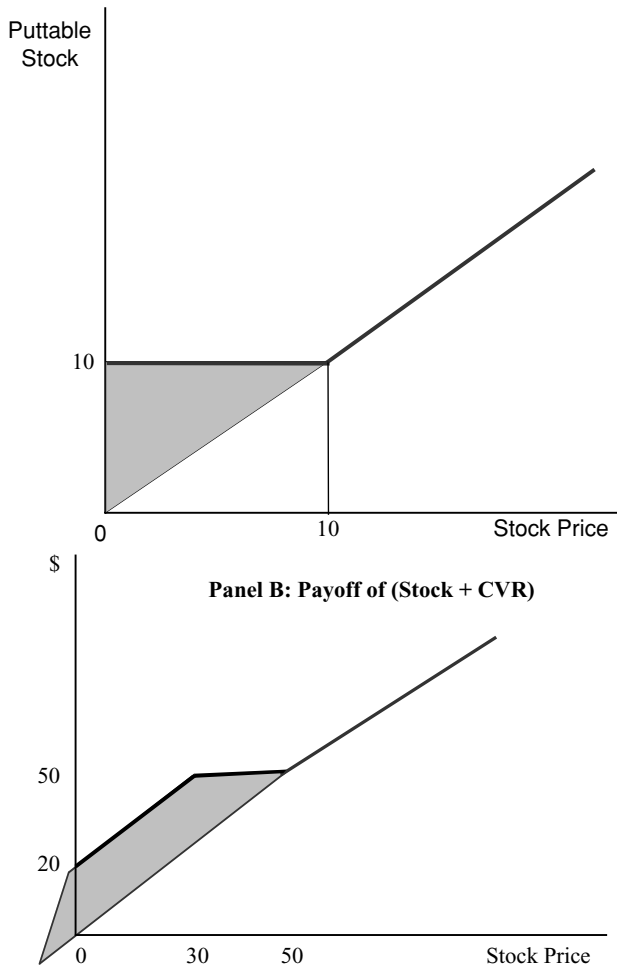


Figure 1. Payoffs of Puttable Stock at Expiration

price) and a short position in a put option at a lower strike price (base price). It should be noted that the payoffs of CVRs relative to base and target prices are usually calculated based on the average prices of the underlying stock for a number of days. In other words, valuation of the CVRs involves pricing of the average-price (or Asian) options.³¹

In the following, the valuation of a simple CVR will be discussed. The payoff for a CVR at expiration is simply the difference between the payoff for a long position in put option at the target price (TP) and the payoff for a short position in put option at the base price (BP).

Thus, we can express the payoff to a CVR as follows:

$$\begin{aligned} \text{CVR} &= \text{Put (TP)} - \text{Put(BP)} \\ &= \text{Max} [X_{\text{TP}} - S_T, 0] - \text{Max} [X_{\text{BP}} - S_T, 0] \end{aligned} \quad (1)$$

where,

X_{TP} = the exercise price of a put option at the target price;

X_{BP} = the exercise price of a put option at the base price;

S_T = the price of project stock at the expiration.

Figure 2 depicts the payoffs at expiration for holding a CVR (Panel A) and holding both a CVR and project stock (Panel B). Let us assume that the base price is \$30 and the target price is \$50. As Figure 2 shows, the payoff for a CVR at expiration is simply the difference between the payoff for a long position in put at the target price (TP) = \$50 and the payoff for a short position in put at the base price (BP) = \$30.

An example will illustrate how the stock-plus-CVR combination preserves the downside protection and at the same time enjoys the upside potential. Assume again that the equity portion of an infrastructure project is worth \$10 billion and that 1 billion shares of project stocks are offered in the local and global capital markets at a price of \$10 per share. If the base price is set at \$30 per share and the target price is set at \$50 per share, then at the CVR expiration date (e.g., 3 years after the date of issue) the market value of the package will be as follows in Table 1.

3.3. Financing with Redeemable and Convertible Project Preferred Stocks

Project preferred stock has features similar to both project stocks and project bonds of the project company. It resembles a project bond in that it promises to pay to its holder fixed dividends each year, and it also resembles a project bond in that it does not have the voting power regarding the management of the project company. Project preferred stock is an equity investment in the sense that failure to pay the dividend does not precipitate bankruptcy of the project company.

In addition to issuing the ordinary project preferred stocks, the project company can also issue *redeemable* project preferred stocks that are *callable* by the project company within some predetermined period of time. By issuing the redeemable project preferred stocks, the project company has effectively acquired call options on the preferred stocks from the investors and paid the call premiums in terms of promising higher preferred dividends than that on the ordinary project preferred stocks. This callable project preferred stock will be the same as what known as PERCS, the Preferred Equity Redemption Cumulative Stocks, employed by many major “blue chip” companies such as General Motors, Sears, Texas Instruments,

Table 1. The Value of (Stock + CVRs) at Expiration Date

Stock Price (\$)	Short Put @\$30	Long Put @\$50	Stock + CVR (\$)
0	-30	+50	+20
5	-25	+45	+25
30	0	+20	+50
40	0	+10	+50
50	0	0	+50
80	0	0	+80
100	0	0	+100

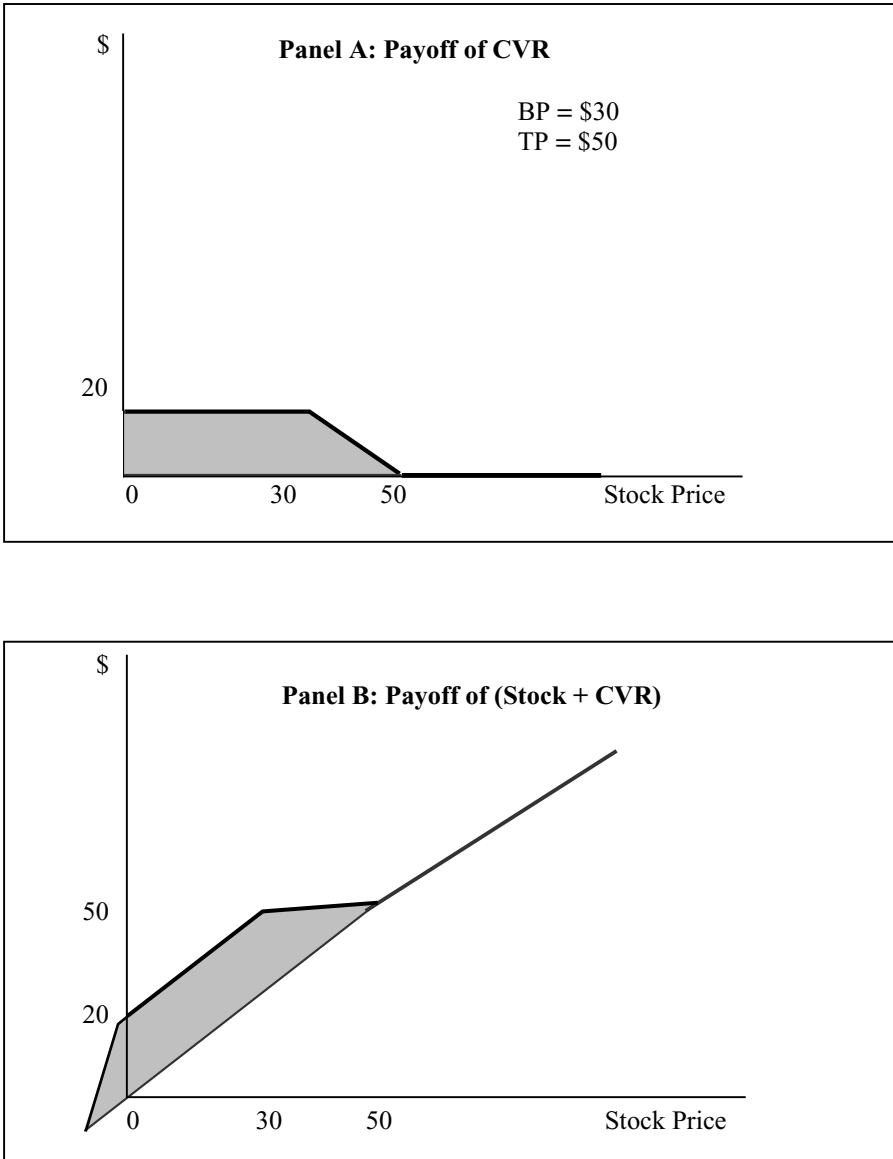


Figure 2. The Payoffs of CVR and (Stock+CVR) at Expiration

Citicorp and others in the recent past. A recent empirical analysis of PERCS has shown that it provides the advantages in transaction costs and taxes to its investors.³²

Furthermore, the project company can also issue *convertible* project preferred stocks that can be converted into project stocks at options of their holders. The convertible project

preferred stocks can be attractive to certain types of preferred stock investors in the domestic and global capital markets.

4. CONCLUSION

In this paper, I have described some of the major problems associated with current practice of using the BOT and PPP approaches to finance infrastructure projects in the world. I have argued that such problems can be avoided—or at least significantly reduced—if the project financing is undertaken with the invisible hand of the capital markets. Therefore, I disagree with Esty's (2004) assertion that "... the growing use of project finance challenges the Modigliani and Miller's (1958) 'irrelevance' proposition, the idea that corporate financing decisions do not affect firm value under certain conditions."

Of course, access to well-functioning and globally linked capital markets is a prerequisite for raising capital in the fashion I have proposed. In other words, for any nation to develop and finance infrastructure projects most effectively, its capital markets will have to exhibit the key characteristics of well-functioning capital markets, including freedom from insider trading and security manipulation, advanced bodies of corporate and securities law, effective contract enforcement, well-developed accounting standards, and transparent disclosure of accounting and financial information. The development of capital markets, legal systems, and accounting systems are themselves important infrastructure projects vital to the economic growth of a country.³³ If economies in the world can achieve such development, then we can hope that financial innovations of the sort I have discussed earlier will be even more useful in facilitating the financing of infrastructure development in any nation.

ENDNOTES

1. I am grateful to Mark Chen, Frank Fabozzi, John Kensing, John Martin and Soushan Wu for helpful comments on earlier versions of the paper and to Jacqueline McLelland for her excellent research assistance.
2. See Esty (2004).
3. Some of the project risks are discussed in Fabozzi and Nevitt (2000).
4. See Miller and Lessard (2000).
5. See Flyvbjerg et al. (2003).
6. See Esty (2004).
7. See Joel Baglole, "Hong Kong Plans Another Handover," *Wall Street Journal*, 10/17/2003.
8. See Bradford (2001). The PPP approach outgrew from the U.K. government's Private Finance Initiative (PFI) program launched in the early 1990s that aimed at bringing private equipment and services and private funds into the field of public utilities. The PFI structures have grown and now represented more than 15% of the U.K. government's total equipment expenditures.
9. Source: *Financial Times*, 5/12/2004.
10. Source: *China Post*, 10/3/2003.
11. Source: *BusinessWorld (Philippines)* 1/15/2003.
12. Source: *Financial Times*, 3/6/2003.
13. Source: *Taiwan Economic News*, 2/20/2003.
14. Source: *Financial Times*, 11/4/98.
15. Source: *Wall Street Journal*, 12/10/99.
16. Source: *Financial Times*, 12/26/99.
17. Source: *Financial Times*, 6/8/2001.
18. Source: *Platts Energy Economist*, March 2003.
19. Source: *BusinessWorld (Philippines)*, 2/2/2004.
20. Source: *Manila Standard*, 5/7/2003.
21. Source: *BusinessWorld (Philippines)*, 2/2/2004.
22. Source: *Global News Wire*, 10/3/2003.

23. See, Chen (1997). Miller (1986) claims that the prime motivators for financial innovations in the past are frequent and unanticipated changes in regulatory and tax codes.
24. The project securities can be issued at relatively small unit prices to attract both domestic and foreign investors. The project investors will include individual investors, investment banks, commercial banks, mutual funds, insurance companies, and even governments.
25. The Thai people used to call the Hopewell's road and train system BOT project in Bangkok the "hopeless" project. Clearly, lack of community interest in the project was one of the key factors contributed to its failure.
26. They have been dubbed "poison" because they may make a company indigestible for a hostile bidder.
27. The event-risk bond covenant ratings are an outgrowth of the Standard & Poor's Event Risk Task Force (1989) that investigated bondholders' protection against event risk due to takeovers or recapitalizations.
28. The contingent-claim analysis has been applied to formulate the valuation models for bonds with various event-risk provisions in Bicksler and Chen (1992).
29. See, for example Chen and Kensing (1988) for more discussion and analysis of the downside protection and upside potential of puttable stocks.
30. See, for example Chen and Kensing (1992), and Chen, Chen and Laiss (1993) for the discussion and analysis of using CVRs to reduce the agency costs of asymmetric information in corporate mergers and acquisitions. The CVRs were used by Dow Chemical Co. to acquire Marion Laboratories in 1989, and by the French government in its Rhône Poulenc S.A.'s acquisition of Rorer Group Inc. in 1990. In 1993, the Pension Benefit Guaranty Corp. issued CVRs to the creditors of LTV Corp. in order to get them to approve a settlement of LTV's lengthy bankruptcy. In 1994, Viacom used CVRs in its acquisition of Paramount Communications Inc. And the most recent usage of CVRs was in General Mills' successful acquisition of Pillsbury from Diageo in October 2001.
31. See Chen, Chen and Laiss (1993) for the discussion of proposed methods of pricing Asian options and the references therein. They have analyzed the prices of Marion Merrell Dow's CVRs based upon an application of a closed-form analytical approximation for the valuation of arithmetic options.
32. See Chen et al. (1994).
33. Merton (1990) presents an excellent and thorough discussion of this point.

REFERENCES

1. Bicksler, J., Chen, A., Pricing Corporate Debt with Event-risk Provisions, *International Review of Financial Analysis*, Vol. 1, 1992, 51–63.
2. Bradford, M., The British Model of Private Finance Initiative and Public-Private Partnership Ten Years Later: Toward International Extension in the Defense Sector? *The Journal of Structured and Project Finance*, Fall 2001, 61–71.
3. Chen, A., A New Perspective on Infrastructure Financing in Asia, *Pacific-Basin Finance Journal*, Vol. 10, 2002, 157–165.
4. Chen, A., Chen K., Laiss, B., Pricing Contingent Value Rights: Theory and Practice, *Journal of Financial Engineering*, Vol. 2, 1993, 155–173.
5. Chen, A., Kensing, J., Puttable Stock: A New Innovation in Equity Financing, *Financial Management*, Vol. 17, 1988, 27–37.
6. Chen, A., Kensing, J., Uncommon Equity, *Journal of Applied Corporate Finance*, Vol. 1, 1992, 36–43.
7. Esty, B., Why Study large Projects? An Introduction to Research on Project Finance, *European Financial Management*, Vol. 10, 2004, 213–224.
8. Esty, B., Megginson, W., Creditor Rights, Enforcement, and Debt Ownership Structure: Evidence from the Global syndicated Loan Market, *Journal of Financial and Quantitative Analysis*, Vol. 38, 2003, 37–59.
9. Fabozzi, F., Nevitt, P., *Project Financing*, 7th ed. (London: Euromoney, 2000).
10. Flyvbjerg, B., Bruzelius, N., Rothengatter, W., *Megaprojects and Risk: an Anatomy of Ambition* (Port Chester NY: Cambridge University Press, 2003).
11. Merton, R., The Financial System and Economic Performance, *Journal of Financial Services Research*, 1990, 263–300.
12. Miller, M. H., Financial Innovation: the Last Twenty Years and the Next, *Journal of Financial and Quantitative Analysis*, Vol. 21, 1986, 459–471.
13. Miller, R., Lessard, D., *The Strategic Management of Large Engineering Projects* (Cambridge MA: MIT Press, 2000).
14. Modigliani, F., Miller, M., The Cost of Capital, Corporation Finance and the Theory of Investment, *American Economic Review*, Vol. 53, June 1958, 261–97.

10. IMPACT OF GLOBALIZATION AND ECONOMIC DEVELOPMENT IN ASIA AND AUSTRALIA

MOHAMED ARIFF

1. INTRODUCTION

At the start of this century, Asia consists of a very large land mass with about 32 significant countries¹ with very different economic and social achievements. In fact it is difficult to talk of a typical Asian nation even in economic terms as the economic structures are very different as well. There is no similarity in describing Asian countries of the kind one could take for granted when describing, for example, most of the 25 OECD countries, based on a set of open trading policies and relatively similar income levels. Add Australia as an Asian regional country—this is the trend since 1984 among international economists to group the large Australian continent as it is increasingly becoming trade-linked to Asian nations more and more through the same globalization forces—the description of an Asian composite is even more confusing. However, globalization has affected Asia and Australia in telling manner that it is possible to describe the changes that globalization has brought to the countries in this vast region.

We can start this description by first looking at the gross domestic products. If one were to add the GDP of the more successful of the Asian economies that had partaken of globalization as a means to secure growth and social well-being, the reader would find that the combined income of some 10 countries (Japan; China; India; Korea; Australia; Taiwan; Thailand; Indonesia; Pakistan; Malaysia) is equal to that of the European Union nations or the U.S.A. Yet, with all that economic clout, these ten nations in Asia are still poor countries excepting Australia and Japan. In comparing the Asian countries, one needs to be mindful of this paradox, and hence devise a sensible means of making useful comparisons in this chapter.

Asia has been historically connected to the known world through trade from ancient times. No doubt this connection through trade and also much-talked about historical notes of people-to-people contacts was from China and India at one end of the then known world to the Mediterranean city states with trade conducted via the land routes. Where land route was difficult, these contacts were made through coastal transportation points in Southeast Asia and in South India. No doubt, globalization is a modern phenomenon accelerated by the birth of multinational enterprises, which, numbering 150,000 firms in 2004, is founded on a different principle, one that seeks to exploit relative factor advantages across the globe. The simple pursuit of these firms merely seeking to lower the costs of producing goods and services has been speeded up by the pro-trade world trading rules aimed at promoting international flow of trade in goods, and, since 2000, also in services. As is known today, the impetus for this comes from the World Trade Organisation, the precursors of which had greatly facilitated globalization since the 1950s.

In contemporary times up to about 1980s, many countries had latched on to globalization to secure significant economic growth. Japan, South Korea and Taiwan built their economies over about 40 years after the World War Two via global trading links. The original five nations (Indonesia; Malaysia; Philippines; Thailand; Singapore)² also grew phenomenally using the same strategy over about 30 years while China has just begun this same route to growth starting in 1987: see Root (1996) and Krugman (1999) for different views. Relative to their limited home-grown capacity for capital and technological knowledge, these nations achieved incredible income growth of near double-digit GDP growth over many decades. In the 1990s onwards, more nation states are on the similar move—Brazil, India, Indonesia, Mexico, and many more—to secure similar growth experience by linking their economies to the global trade. These nations have developed trade sectors that are two to three times the size of the trade sectors of many other countries which are not yet on track to gain from global trading. World trade grew at the rate of 5.6 per cent over 1950 to 1990, when it has slowed to a lower growth rate of about 3.6 per cent because of the slow down in growth especially since 1999.

That open and free trade—accompanied by growth-promoting liberalization of trading and financial rules—secured great wealth to the Asian nations in historical times is in recorded history as giving birth to several golden ages of which history books record of the Sung Dynasty, the Moghul Age, and so forth. Similar golden ages based on open trade occurred in the valleys of the Euphrates—Tigris rivers in the Middle East as it also occurred in the Persian empires. It must be said that the development of Australia was based on more the extraction of primary resources from the forest and mines of Australia, supplanted later by the growth of commercial agriculture, which till the mid-1980s formed the backbone of global trade for Australia. Hence, global reach or more aptly free and open trade under pro-growth rules had been around long before the modern day globalization. However, globalization also involves a certain degree of free exchange of ideas and adoption of an emerging international culture, which were aspects not in the golden ages of the ancient times.

This chapter provides in summary form the changes brought on by modern-day globalization in Asia and Australia. First, we provide a sketch of how income growth has generally grown very fast in some countries over the previous 50 years. Next, we proceed to document the main trends in the real sectors that accompanied globalization. The response in the

financial sectors is described next before ending the chapter with some thoughts on future trends.

2. ECONOMIC DEVELOPMENT

Accelerated economic growth has been a major change perpetrated by globalization in several Asian countries, several of which deliberately chose to latch on to globalization as a means to accelerate income growth and social development. Per capita income of a number of Asian countries included in this book was a mere 10 per cent of the U.S. per capita income in the 1970s. Through the globalization impact in the countries that linked to this movement, these ratios improved relative income levels to as high as 80 per cent (Japan) to 20 per cent (Indonesia) to 35 per cent (Malaysia) by the mid-1995: see Ariff and Khalid (2000). How was this phenomenal income growth secured? Latching on to the globalization movement was the key, and it deserves to be documented here.

Table 1 provides a summary of the GDP growth achievements of several selected countries, which got linked to the globalization through what was termed in Asia as the export-led-growth strategy. This strategy mooted in the 1950s is still the driving force in the policy circles in Asian and other regions.

The early reformers,³ who put in place pro-growth promoting policies to take advantage of globalization, were few countries starting first with Japan and by 1980 included such countries as Indonesia and Thailand. As is evident from the GDP growth figures, these countries had growth rates two times those of the late starters such as China, India and Pakistan. The last three countries got on to adopting pro-growth policies some thirty years later: China in the late 1980s, India in the early 1990s and Pakistan in the mid-1990s. The

Table 1. Income and inflation experiences of Asian countries: 1961–2000
(Income growth and inflation are in %)

Outcomes	Early Reformers(1950s) See Note 1	Late Reformers	
		India and Pakistan	China
INCOME GROWTH			
1961–70	7.5	3.7	—
1971–80	7.9	3.9	9.35
1981–90	7.1	5.5	12.02
1991–95	8.3	5.8	8.26
1996–00	3.7	4.4	8.0
INFLATION			
1961–70	53.7*	4.94	—
1971–80	11.3	10.29	1.4
1981–90	4.99	7.93	7.5
1991–95	5.29	11.75	40.1
1996–00	6.4	7.46	1.96

Source: Analysis done with data from the International Financial Statistics, International Monetary Fund, various years.

Note 1: These are Indonesia, Korea, Japan, Malaysia, Singapore, Taiwan and Thailand. — indicates that the data were not available.

* Inflation during this period is highly inflated due to an average of 210% inflation in Indonesia. Inflation in other countries in this group was in single digits, though.

growth experience of the late starters, except for China, has been lack-lustre prior to the reforms.

One vital statistics of orderly economic development is the control of inflation. The average inflation rates of the early reformers indicate that the high inflation experiences of earlier years had been quickly brought under control by the reforms to the financial and monetary regimes in the reforming countries. The reader would also note that the late reformers had to grapple with high inflation in their economies in the earlier periods. Only with reforms of the kind learned from the early reformers, these late comers manage to control inflation to an orderly level of single digit in the 1990s. Hence, globalization has perpetrated not just income growth, but also led these countries to learn to put their economies through orderly price experiences by reforming their monetary and financial regimes. Monetary stability is a hallmark found in high-growth economies in Asia.

The process that secured the high growth recorded in the table needs to be described first. The process was a strategic decision by early reformers to latch on to the globalization movement that was picking up speed in the 1950s and 1960s. The first to adopt this strategy was Japan, very soon South Korea followed especially after the Korean War of 1954, then Taiwan in the 1960s. The world trading rules of preferential trading arrangements had just been promoted by the GATT rounds of talks. That greatly facilitated exports to the developed countries, often at preferential terms in textiles, consumer goods, and small scale machineries. With the high cost of production in developed countries, capital-rich firms started to locate production plants in Thailand, Indonesia as much as they did so in Korea, and Japan. This is how it started in the 1950s with electro-mechanical goods production, then with electronics, these days with bio-tech, accounting services, and technology products.

3. CHANGES IN THE REAL SECTOR

The changes brought on by globalization had important effects on the real sectors of the economies. A phenomenal change was the increasing contribution of industrial sector to the economic pie. For example, manufacturing was a mere 15 per cent of many countries (example Malaysia in 1960s). By the year 1995, some of these countries had increased the industrial sector to 35 per cent and the agriculture began to lose its dominance. India managed to build slowly an industrial capacity that is described as the eight largest pool of technical manpower in the World.

Those countries that realised that prosperity could be improved by open and multilateral trade started to open up the real sectors to capital flows and technology flows starting from the early 1960s. Tariff rates which were close to 100 per cent in the 1950s, started to roll down, first for those goods that the globalised world wanted to manufacture in foreign lands, then for more and more items of goods. By the start of this century, the early reformers had reduced the average tariff to fewer than 5 per cent, all within 40 years! Compare this average with the average of about 25 or more percent for tariff levels in countries that did not adopt fast enough reforms in the Asian countries. Australia moved in 1984 and again in 1997–2000 to reduce the tariff levels to its present very low level of under 5 per cent: see reports of the WTO and the World Bank.

With tariff reduction, firms were facing increasing international competition from producers from other parts of the world. This had the beneficial effect in Asia of improving the efficiency of production while it also helped to improve the technology adoption needed

to secure efficiency. Next came the waves of multinationals, given permission to own and operate production with majority ownership. This had led to changes in management of corporations, adoption of new techniques, entry into new products, and enlarged marketing of hitherto local based goods. The quality of the goods increased as did also the prices charged. No longer could monopolies dish out shoddy goods in many of these economies. This has been a sea change in the production sector and marketing of products in the real sector.

3.1. Global Openness & Free Trade Areas

In the mid-1980s grew an awareness to speed up the real sector development through more radical schemes than the GATT-Uruguay rounds of trade-increasing rules. Note that the world trade had already grown at a fast phase of about 6 per cent by then, and there was expectations building up for faster growth. This led to a series of market-friendly reforms—generally grouped under freer trading rules—that spawned new trading groups for free trade.

The big impetus came from the Canada-U.S. free trade agreement, later expanded to the South and Central Americas. In Asia, the Asian Free Trade Area (AFTA) was announced, which by year 2006, would become a large area of free trade for manufacturing, and for trading. In the year 2004, China is showing interest in joining this free trade area. This means that the real sector would be increasingly linked among the economies as diverse as those of industrialised Japan and Korea to the growth areas of ASEAN economies to those of low cost producers such as Pakistan in the West to India and Indonesia in the South and China and Vietnam in the East. Trade openness has always worked to improve incomes of peoples: WTO (1995).

3.2. Privatization

Several Asian countries have a large government presence in production of goods and services. Take China's economy, which in 1979 had 80 per cent of outputs from state enterprises. This has now been camouflaged by the increased private sector outputs of international firms producing under joint ventures. By year 1999, the output by private sector has grown to 55 per cent of China's output. At the central government level, there are 27,000 state firms depending on state subsidy in the annual budget as well as funding by state banks in China. India's central government has about 150 large enterprises. Australia, with the least amount of government presence, also has some significant telecommunications and other producing units. In the years starting from 1984 and ending at about 1995, many Asian countries adopted a change, in the face of globalization—also to pay off debt—to speed up privatization of state firms. Singapore passed laws to divest its 305 firms, which they did slowly and successfully. Malaysia divested most of its 905 firms between 1985 to 1995. These are few cases in this vast continent. Most of the countries are still reluctant to divest state enterprises.

India and China came much later to the scene on this issue. The state firms are the providers of much of the welfare benefits to retired workers in China. In India, state firms act as the employment sink for the party in power. It is understandable for these reasons why they were reluctant to divest state firms. Indonesia was awash with good income over 1970–1996. The New Order Regime of Suharto in power for 32 years in that country did not divest the state firms as it was not on the agenda given the good cheer in that economy that things

were going well. When the dictatorship fell in May 1998, and the country went into deep political and attendant debt problems, now there is talk of selling the state firms when the market price is right as soon as the country gets on its foot. The election in October 2004 has produced a strong mandate on a popular leader, and the national development front this man is putting together promises to speed up the sale of state assets since the economy needs to get off the overhang of state firms.

The upshot of selecting a few countries to discuss this important issue in this discussion is to point out that the governments of almost all countries are reluctant today to divest state firms at the same speed as some did in the 1984–1996 era. Depressed price for capital assets is one main reason, which is stalling the governments. The second reason is the process of sale by sealed-bid-offer is not favored by many governments although some governments (Australia and Malaysia included) had chosen this method as the least costly and most transparent. Other governments and government bureaucracy with different agenda from divestment programs prefer to negotiate deals and sell them on bilaterally negotiated price. This is opposed to by the private sector as well as the civilian population as not being transparent. Nevertheless, there is no decision by the governments on this issue. A third reason given in recent years has been aggressively promoted: this is the desire to retain state firms. Both India and China want to reform the state firms to become efficient bulwarks since to dismantle the more efficient ones would be to undo years of investment and know-how embodied in these firms. In the case of India, the more efficient firms as judged by an independent evaluator and such firms will be retained to become major corporations while the poor performers will be sold off. China wishes to retain 1000 of the state firms to become the competitors to the multinational firms that would increasingly enter that economy as more openness occurs in that economy.

If there is a lesson to be learned from the massive divestment in Germany from its unification, it is that the reform of the state sector is a key to economic well being, and sustained development. It appears that most Asian countries are awaiting the asset markets to go up in value—all markets had gone down since the IT bubble in 1999 and in the world economic slowdown after the 2001 terrorism alert. Excepting China and India, one would expect the global trend of more privatization may occur in Asia in the near future as the economies are beginning to recover and the asset markets are slowly recovering.⁴

3.3. Moving Up the Value-Added Chain

The entry of China in the real sector production for the world is changing the pecking order of the Asia's more successful economies. Within about 12 years of China's experiment with market economy, given its comparative advantage, the several Asian economies lost their competitiveness, and began to lose export: World Bank (1998). Australia for example is increasingly becoming a full-scale machine manufacturer exporting high value-added items while its primary produces are finding their way wherever there is global trade reforms and low tariff. The ASEAN countries are now moving production to cover more value-added manufacturing. While still dominant in microelectronics, these countries have begun to move up the skill levels to make higher end products. India is increasingly linking with machinery production, consumer durables while moving slowly from consumable production for exports.

This is in line with what happened over many years. Winding the clock back some 30 years, many Asean countries moved at that time from labour-intensive production to

value-added production as much as away from primary production to industrial outputs. In 1975, about 90 per cent of exports of Indonesia, for example, were primary produce: in 1996, its exports were about 50 per cent manufactured goods. Other countries such as Malaysia moved to export 90 per cent as manufactured goods by 1995. Given these experiences, the ASEAN countries—total of about 380 million people with a large market place—will be a key global player in manufacturing at the higher end in the decades to come. Korea, Germany and Japan are investing heavily in the Asian and Australian region on more and more value-added production facilities.

4. FINANCIAL REFORMS

Real sector reforms were the first moves most early reformers undertook to latch on to the emerging globalization during the last 55 years. For those who made timely decisions to open up the real sectors—about 10 key nations in Asia and Australia—had made very important gains in outputs. Per capita income of these countries had gone up. At the simple level, many of these countries, which started as poor countries 55 years ago, had moved up the ladder to become rich countries (Japan, Korea and Singapore) or middle-income countries (Malaysia, Thailand and Taiwan). Countries such as Indonesia had by 1996 reduced poverty to 10 million out of its then 200 million population; China's GDP has gone up threefold or more. India's middle class has grown from some 78 million people to over 250 million in the last 50 years. Nevertheless these countries are still classified as poor countries: the Boston Consulting company has made several reports on Asian middle classes. How about financial reforms?

There are several studies on individual country efforts to reform the financial sectors: Among them is a serious study of Korea (Cole and Park, 1983). Financial reforms—reforms in banking and financial markets—started to occur on the back of real sector reforms. The earliest reformers in financial sector were the Philippines (in central banking); Malaysia (direct financial markets); Singapore (international financial center); Australia (both prudential reforms and exchange rates). India has moved, since introducing the 1991–94 package of financial reforms, to address the financial sector, whereas China is still reluctant to reform its rather moribund banking and the capital markets as much as it is unwilling to reform its exchange rate regime. What changes did financial sector go through? This is discussed under different headings that follow.

4.1. Exchange Rate Reforms

Globalization had its worst effect via the exchange rate. The World Bank analysis (Aghevli, Khan and Montiel, 1991) points to some major issues on exchange rate management. I would add to this the bad habit of many countries to depress exchange rates to gain competitive advantage in trade.⁵ After all exchange rate is the value outsiders place on the wealth of a country. With the demise of the Bretton Woods fixed-parity in 1971–73, most Asian countries (Australia included) were thrown into disarray. Most countries were on fixed exchange rate system, and the value of currency is a key determinant of how well the trade sector would be competitive with other countries. Japanese Yen emerged as a major currency by the mid-1970s, but Japan managed its currency guardedly to give it an advantage in trade. This was stopped in 1983/84 with the Plaza Accord that made Japan work with the

major nations to let its currency appreciate slowly to reflect its parity levels. In fact the Yen appreciated from about 240 Yen to a dollar to about 85 Yen by the end of 1980s.

Australia moved in 1984 to free float the currency. From its value then of A\$0.80 to a US\$, the currency had settled over time to A\$1.40 to US\$ in 2004. New Zealand dollar was also free floated. These were the three important currencies to be affected seriously by the globalization movement. Other currencies, mostly less important than these three, were managed differently. Most of them chose to manage the currency, defending the currency if it went against a favoured position set by the central bank as desirable (largely dictated to by the governments). Managed regimes fared so badly that, when the 1997–98 financial crisis came, the worst hit economies were those of the managed regimes: Indonesian currency lost 75 percent of its value; Malaysia 35 per cent; etc. The IMF free floated the Korean won, the Philippine peso, the Thai baht and the Indonesian rupiah. For a brief period in 1997–98 the Singapore dollar was free floated, but it reverted to managed float in 1999: according to the World Bank annual reports, most countries have elected to either fix or manage currencies.

Most Asian currencies had declined in value over the last 55 years: the exception being the Yen and Singapore dollar. The Japanese Yen which was 9600 Yen to a dollar in 1950s, improved steadily to its present level of about 110 yen to a dollar. The Singapore currency improved from S\$3.20 to a dollar in 1970s to S\$1.75 in 2004. The opposite is true of the Rupiah, which went from 150 Rupiah to a dollar in 1950 to the current 8800 rupiah to a dollar. In the last six year, on the back of the huge current account surplus, hence building US\$350 billion foreign reserves, China's currency is overly undervalued in its fixed rate.

The undervaluation is estimated to be about 25–30 per cent, using trade-weighted exchange rate under parity conditions. Just as Japan manages in the early 1980s to use the currency wedge to keep its trade favorable, China is doing the same. If it were to revalue the Chinese Yuan to current market value, then it could slow its rapid economic growth, and arrest some of the excesses of the growth that are considered unwelcome for sustained development in that country. But when the exchange rate is revalued, then the trade in goods will decline. But the good impact of this would be to spread the globalization effect that is mostly moving to China, to elsewhere as well, and help develop more regions of Asia (as well as other world regions such as Brazil in Latin America).

Most of the Asian currencies are either fixed or managed. Given the cost of managing the exchange rate—Thailand lost US\$38 billion in June–July, 1997 to defend its currency—it is timely to consider free floating the currencies at least in the cases of those countries with large economic base. Free float will let the currency find its own levels as happened to Australian dollar, and not act as the weak chain that breaks every time there is a crisis, and the business sector then suffers the most from this policy. With free floating would come more market-based currency risk management techniques. Forward markets would develop as would futures contracts that could be used for risk managing the currency effect on trade. In some countries—South Korea, Thailand, etc.—this has already occurred since 1997, and is considerably facilitating firms to manage the currency risk in the market place while the government is freed from having to defend the currency to protect business.

4.2. Capital Market Reforms

There are about 90 stock markets in the world along with about 45 futures markets. At the start of 1950, there were merely six respectable stock markets in Asia, no futures markets at all.

In year 2004, about 22 countries have developed stock markets while there are about a dozen futures markets, some of which such as the Tokyo and Sydney futures markets are thriving. How did this happen on the back of globalization? With trade that followed globalization came the demand for money. The financial sector had to accommodate the international flow of money as much as it had to find sources of capital for the increasing demand for capital in the private sector connected to the rest of the world trade. Thus, capital market reforms had to follow soon as the banking sector was reasonably established.

As a result of this imperative, capital market development occurred quite in pace with economic development. Japan again led the way in this. Its share market is the world's second largest capitalised market with exchanges mainly in Tokyo (70% of trade) and Osaka that caters to some 4000 top firms. Australia had had a thriving market as well, based on mining and agriculture, which today is expanded to include manufacturing and services as well as properties and other sectors. This market is the size of that of Hong Kong, which is another important capital market.

Then there is the Korean market, newly created. Over the last 14 years, China markets (Shanghai and Shenzhen) emerged. While these are large markets, there are also moderate sized well developed markets in Singapore, Kuala Lumpur, Bangkok, Bombay, Auckland and Taipei. These markets had developed over the last 40 years to become major contributors to the local economies. Finally, with the global trend, other countries had spruced up their markets or set new markets afresh (Vietnam in 1999 for example). These markets in Bangladesh, or Indonesia or Sri Lanka are there not yet fully developed, but on the road to growth as the underlying economies are reformed, and with that economic development is improving.

Some of the Asian economies, particularly those that had more open currency regimes, had developed futures markets to trade currencies, treasuries, and stock index futures contracts. These are found in Japan, Australia, South Korea, Thailand, Malaysia, Singapore, and Taiwan. Some of them also trade option contracts on shares or share indices (Malaysia; Singapore and Thailand). These markets are growing in importance for firms to manage risk. These futures markets provide a place for mutual funds to manage risk as these also let currency risk to be traded off. Currency contracts are not yet that liquid, and it would take some time to become more efficient, nevertheless, the global developments in this regard is growth-promoting.

4.3. Banking Reforms & Consolidation

Most of the Asian economies depend on bank financing for their working capital needs and long term funds. While this is true of most countries, the three exceptions are those of Australia, Japan and Malaysia. In these three countries, about 40 per cent of funds are raised directly from the stock/money markets. In all others, it is safe to make a broad generalisation that almost three-quarters or more of the fund needs are met by the banking system. So, banks are dominant financiers, and their relative efficiency is of great importance to service and sustain growth. That underscores the importance of an efficient competitive banking system for meeting the fund needs of the private sector, which has increasingly come to the market to raise money, as the capital markets develop. The second fact of the banking is the extent to which banking sectors are reformed in Asian countries. In this regard, it could be said that not many good examples of a fully reformed banking sector could be found

in abundance, except perhaps the banking system in Hong Kong, Australia and Singapore. BankWatch.com provides a lot of information on contemporary banking, and is a valuable source.

For our purpose of how globalization is affecting the banking system, we may start with a simple classification that would suffice for this purpose. First there are relatively well-reformed banking systems in few economies: Australia has a good prudential system implemented since 1992, and a relatively developed banking that is competitive within limits (Australia promotes few-big-banks-is-better than many small banks policy). The two financial centres in Hong Kong and Singapore has developed very efficient banking sectors as collection centres for managing money (about 20% of currency trade of about US\$1.9 trillion takes place in these centres) and capital flows. Singapore also houses the Asian dollar market with some US\$500 billion in assets, which grew out of a 1968 law that exempted withholding tax for foreign depositors. Japan has a well developed network of banks with about 300 institutions: among the top 100 banks in the world are 40 Japanese banks. We shall call these banking systems as the ones that had evolved with globalization to accommodate the demands of the private sector relatively efficiently.

Next we have the banking systems that are relatively reformed but are in smaller economies: in Malaysia, Philippines, Thailand, South Korea, Taiwan and New Zealand. Policy changes have been introduced in all these countries to remove entry barriers to banking, improve flow of capital, and competition among local banks by easier branching rules, and access to deposits, etc. in these cases. For example, South Korea eased entry requirements for foreign banks as early as 1970s, and increased competition among banks, and promoted specialised foreign exchange banks. This helped the economy in its formative years of the 1970s and 1980s to meet the high demand for capital when this economy was growing without any recession for 20 years at the break-neck speed of 10–11 per cent per annum.

Malaysia revamped the banking laws, and promoted competition among banks. However, the government connected banks failed to respond to efficiency improving rules, and had to be saved more than once to keep them in business. Nevertheless, with the consolidation of the share capital of some 95 institutions into ten major banking groups (more like the U.S. case of holding company) in year 2002, the way is paved for the banks to be more resilient in the face of financial crisis. The newly consolidated banks are robust enough to withstand economic demands at hard time as these have core capital of about 14 per cent and have less than 5 per cent non-performing loans. This case of reform and consolidation is worth watching by other Asian economies.

The third set of countries have very entrenched often not pro-growth policies in developing the banking system. At one end is such banking systems as those of China and Vietnam (two urgently needing reforms as they are fast becoming global players). At the other end are banking systems with entrenched government banks: India, Indonesia, and Pakistan are good examples. In these economies and few others, the state had retarded the growth of private sector banks for a long time. In Indonesia, it was not until 1988–89 that reforms ended the dominance of state banks. In India, it was not until 1994 that the private sector banks are beginning to play greater roles, while the entrenched state banks still continue to play major roles. In China, the reforms have been cosmetic in spawning more government banks to finance agriculture and industrial activities, but there is but three private banks licensed only

a few years ago. Add to this the non-performing loans problem from state-owned firms, we have a disaster waiting to happen in the banking system.

As may be seen from these three differing approaches, it appears that the globalization had only brought in changes to the banking sector in few countries. The entrenched positions of banking systems in some countries require urgent study and consideration of reforms of the kind that the first group undertook many decades ago. Globalization calls for such reforms, but, given internal factors, many countries are preventing these reforms from taking place soonest possible. Cosmetic reforms in the structure of banking are insufficient. (a) Freedom to enter the market and to branch at reasonable cost is essential to promote competition. (b) Capital requirements to establish banks must be reasonable and not exorbitant as is the case in some countries. (c) Prudential laws needs to be established, and a separated regulatory body set up to oversee compliance: no longer is it feasible to call upon the central bank to manage both inflation as well as intermediation. (d) Credit evaluation quality must be enhanced via new stringent laws (related party lending; restriction on large shareholdings; etc) along with good institutional training in business schools for bank employees. (e) There is a need to address the non-performing loans problem in many Asian countries with strict compliance to international norms of 3 per cent unserviced loans in three months. (f) There is a need to carefully implement the Basle II Accord in the years to come. If not anything, there ought to be a level playing field for the countries playing in the global trading world. Some countries are brave enough to open the financial sector (including insurance) to competition from multinational firms, but the number of Asian countries joining this is few. This has to change.

4.4. Credit Rating

In a far-reaching report in the aftermath of the Asian financial crisis, the banking fragility and weak credit culture as well as infant capital markets: Asian Development Bank (1998). Credit rating is very slow to take root in most Asian countries. In one of the chapters of this book, China's slow road to credit rating is explained. The story is the same for most countries, the exception being few: Australia; Japan; Korea; Malaysia; Taiwan; Thailand. In some of the countries (exception being Japan and Australia), where there has been greater credit rating experiences, it is commonly found that the ratings done by international players (Standard and Poor for example) and local players cater to both local and international audience. This is excellent as it gives consistent rating, and credit decisions are easier to make. However, in others, the local rating agencies grade only for the local market players. Often this shows as inflated rating by the locals compared with the international players. This is contrary to good business practice, and does not augur well for transparent rating.

In countries, where there is no public access to rating at all, there is great deal of risk that is not made known in financial transactions. This is where most changes are needed. Corporations need to be rated and the ratings must be accessible to the public as is the case in Australia and in Japan. So long as rating is confidential, which is mostly the case in Asia, it is not conducive to good credit practices developing in an globalized world of financial transactions. More need to be done in this regard.

However, in relation to sovereign rating, the international rating companies have very good rating services for most countries in Asia. Most Asian countries score within the range

of C to B in sovereign ratings although there are some countries such as Australia and India which has better rating. Sovereign ratings have been watched avidly whenever economic crisis besets countries. For example, the Asian financial crisis in 1997 led to sovereign ratings of about five countries seriously decline to very low ratings. With economic recovery, for example, of Thailand, the rating went from low C minus to B over a two-year period in 1999.

4.5. Market Making and Efficiency Improvements

The development of direct markets accompanied the globalization movement. For a story of how Thailand established its market, see Agtmael (1994). Much of Asia was familiar with the stock markets as some of them had such markets for a long time: in Shanghai; Melbourne; Calcutta-Bombay; Singapore; etc. It was not till 1960s, and later that countries took active roles to create direct markets, that would become more competitive, more attuned to the needs of local firms, and generally more efficient over time. Asian bourses chose to speed up the restructuring and market-making procedures in line with the more developed markets in the world.

The more established markets in Tokyo, Hong Kong, Melbourne, Singapore and Calcutta-Bombay (Shanghai was closed down by the Communists in 1949) continued to evolve into major markets by modernising their facilities.⁶ For example, these markets introduced computerised order books early in the 1960s and 1970s on so that the trade could be speeded; these also made it possible for trade to be booked to the floor (until all but Tokyo changed to screen trading in the 1990s) speedily. The transaction costs which used to be about 4 per cent roundtrip fell slowly to today's under 2 per cent transaction costs. More market information was released, and the bourses expanded at the rate of about 10 per cent per annum.

Unlike these major markets, the smaller ones had to restructure themselves. The last 40 years have seen a flurry of activities to set up share markets in many countries. One example is that of the Malaysian market. The domestic trading took place in a newly-established market in Kuala Lumpur in 1960 with parallel trades in Singapore for the companies from both economies. In 1973, with the introduction of two different currencies for the two countries, the trading in Kuala Lumpur became more and more on domestic firms. In 1983, the double-listing arrangement was withdrawn, and the Kuala Lumpur market had shown tremendous growth since then, which peaked in 1997/98. By year 2004, there were about 900 firms listed. This represents a phenomenal growth of a capital market. In some good years this market provided about 35 to 50 per cent of the fund needs by the Malaysian economy: this is a phenomenal success story. Another such market is that of Thailand. The experts from Australia helped to set up the Thailand's stock exchange in 1960s. By year 2004, this market provided a place for capital raising and stock-bond trading.

The South Korean economy was expanding at the rate of about 11 per cent for most of 1960s to 1980s. This augured well for the development of the stock market in that country. The Seoul stock exchange has close to 1000 firms listed and traded. It suffered a bubble-bust experience in 1988, and therefore investors had grown to be very cautious in capital market investments in this economy with perennial shortage of capital for the high-growth firms. Taiwan also developed a vibrant stock market for its very diversified economy based upon small-is-good philosophy of nurturing small-to-medium enterprises, which make consumer

items and consumer durables as well as high quality computers for the world market. Taiwan is an example of a country that has mostly benefited from the globalization. Its trade with the world is the highest in per capita terms compared with any other country.

Meanwhile, the markets in Bombay (India), Colombo (Sri Lanka), Dhaka (Bangladesh), Karachi (Pakistan), Manila (Philippines) and Jakarta (Indonesia) grew at much slower phase for two reasons. First, these countries were not as vigorously affected by the globalization movement as were the other major markets. In fact these countries had not latched on to the global trading until about the late 1980s, almost 25 years after the early reformers did. Hence, the capital market developments were much muted as these countries only experienced income growth rates of about 3–4 per cent until the growth rate went up in the 1990s with economic reforms. The growth rates of the capital markets was rather slow, much of the gains reflecting the slow economic growth and the large inflation premium built into the prices in these high-inflation countries.

The story of growth in the China's capital market is an outstanding one. First, the policymakers made it a priority to grow the capital markets as quickly as they could. For that reason, they established two markets one near Hong Kong and one in the old city of Shanghai in 1991. Prior to the official start of the trading of stocks—the first company listed was the Beijing Departmental Store—in that year, bond and stock trading was done on off-the-floor basis since 1985 at Shenzhen to train and learn this capitalist method. Since then, the listing has grown to some 1200 firms by year 2004. Liquidity is still weak, but the market for listing the firms is well-established in China after 14 years of modern experience with capital market in this Communist nation.

In summarising an assessment of the several markets, it can be said that the experience of Asian and Australian capital markets had been very mixed. Consistent with this experience, the efficiency of these markets vary from very efficient (Hong Kong as an example) to pretty inefficient (Shanghai). Why? Efficiency is measured using the Fama efficiency paradigm: a market is efficient if there is (a) an absence of historical information affecting current prices and (b) public information being converted to price signals speedily. Strictly performed, such tests show that the markets that were situated in countries most affected by global trade and high economic growth as well as the fact that these markets were in the private sector, are efficient. Such efficient markets are: Bombay; Singapore; Kuala Lumpur; Australia; Hong Kong; Seoul; Tokyo; and Bangkok. Studies in scholarly journals indicate that these markets are pretty efficient, and are capable also of raising sizeable amounts of capital for firms listed in these markets.

The liquidity in Asian markets is moderately high. The most liquid market in New York Stock Exchange trades US\$800 million trade per firm per year. The liquidity of the above-named Asian markets would average anywhere between US\$350 to US\$450 million in most of these markets. The liquidity of the markets in other economies with less exposure to the global movements is well below US\$200 million per firm per year. These markets are found in Karachi, Colombo, Dhaka, Jakarta, Philippines, Vietnam, and other Asian countries.

In brief, globalization has affected the development of the capital markets in dramatic manner. The countries that latched on to the global trading had the most beneficial changes from this development. The others, who joined in the late 1980s are beginning to have

favourable changes occurring in their markets. China is one example. Another is that of Indonesia, where, with the reforms introduced in 1994, the stock market has improved its listing and its liquidity. The Vietnamese are experimenting with their new market over the last five years, and more countries will join in this experiment as the globalization affects them.

In the cases of the more liquid and more efficient markets, portfolio investments is made by foreign funds as part of their diversification program. Markets in Malaysia, Korea, Thailand, Australia and Hong Kong are among the more favored locations for this activity. Again this is a late development of globalization leading to global flow of capital that funds domestic markets. However, there have been some bad experiences with portfolio flows especially if these funds pull out suddenly. At such times as it happened in Seoul in 1988/89 and in Kuala Lumpur and Bangkok in 1997/98, markets may register huge corrections to the detriment of the local investors who are left to hold assets at low prices. This problem requires solution, and capital controls imposed on short term capital flow is one method of overcoming the entry of such destabilising effects of portfolio flows. No global solution has been agreed upon although there are a number of suggestions on the table. Overall, the portfolio flows have helped to improve liquidity in otherwise very shallow markets. The flow of this form of capital, though short term in nature in Asian markets, augments the already heavy foreign direct investment capital of about US\$96 billion a year that is coming to mostly China and few other countries.

5. THE FUTURE

Any traveller across Asia and Australia—it would a long and expensive travel over exotic lands and peoples—would notice one important physical fact. That is the relative abundance of creature comforts in the few countries that had latched on the globalization in trade and capital. The absence of such creature comforts is quite striking when one travels in Hanoi, or in Colombo, or in Karachi, cities situated in countries that did not make a conscious decision long time ago to latch on to the globalization in trade and capital. Why does one feel more comfortable in Tokyo, or Hong Kong or Kuala Lumpur or Melbourne is because of the wealth that the early decision to latch on to the globalization brought to these countries. The early adopters—who made reforms and liberalization as the continuing theme to promote growth—of globalization have benefited much more than the later adopters, we call the latter the reluctant reformers: see Ariff (1996).

One glimmer of hope is that the reluctant reformers have also joined in the race in the 1990s as did China in the 1980s. Early indications are that the decision to reform and liberalize, though at much slower speed than desirable in India and Vietnam for example, had had salutary effects. Income growth is improving for these late reformers, trade is increasing, as does capital flows especially since 2002, when the World is beginning to settle after the great financial crisis of the 1997–98 and after conflicts relating to the September 11 and terrorism. The future of globalization is assured, and with that more social well-being will come. The stumbling blocks are the continuing uncertainty and the attendant war footing in many countries. However, it is good to be hopeful that the last 55-year experience will continue in the same direction. Two well-known commentators had made specific suggestion for the Southeast Asian nations as the way forward: Arnt and Hill (1998). The more-ready-to-liberalize nations have followed this advice avidly, and are on the road to recovery. While,

freer trade is a major structure for securing greater prosperity, it is also pertinent that greater opening of the markets—I mean here both the real and financial markets—occurs steadily to establish market economies and reduce the overhang of state production. These are beginning to take place, and will be speeded once the recoveries seen in many countries become full-blown in the near future.

ENDNOTES

1. There are more than 32 sovereign nations in the vast region of Australasia, a term that is being popularised in recent years to describe Asia, and the Pacific Asian countries. In this book, coverage is given to far fewer countries that had actually made a connection to globalisation to improve their well-being. Most countries are still either ignoring (North Korea) or blissfully unaware of what globalisation could help achieve connection to the rest of the World.
2. Add to this list the following nations as members of this important trading group: Vietnam; Cambodia; Myanmar; Laos. Recent annual report of the ASEAN secretariat provides a long list of items on which tariff reduction is making this trading group a truly free-trading area.
3. The term early reformers refer to a group of eight economies (Japan, Indonesia, Hong Kong, Malaysia, Singapore, South Korea, Taiwan, and Thailand) which pioneered the export-led growth strategy that secured for these countries an early advantage to link to the global trade in goods and capital as well as technology. The late reformers are those economies that began to adopt liberalization in the 1980s. There are several countries, because mainly of political reasons, unable to latch on to the globalisation in trade and capital to secure their growth path.
4. Share markets had declined across Asia (exception Australia) by about 40–60 per cent in the aftermath of the IT bubble since 1999. It is only in year 2004, has some upward movement taken place. If the current asset price movements—still short of the highs of 1997—hold, it is very likely that major state firms will be listed in the years ahead to raise badly needed revenues in countries such as Indonesia, India, Malaysia, and so forth.
5. Exchange rate management was widely practiced to give trade advantage by the Japanese and the Koreans in the 1970s, which led to the Plaza Accord in 1984, which eliminated this problem. It is again occurring this time in China. China's devaluation of its currency by almost 35 per cent in the early 1990s led to them getting the advantage in trade, and the ripple effect of that was the slow hollowing out of the hitherto established manufacturing areas in many countries in Asia. China took, until September, 2004, a hard stand that China's currency is not undervalued to give it an advantage in trade. They made a statement 10 days prior to the G8 meeting that they would consider reforms in exchange rate. Only the future will yield if this will lead to exchange rate reform.
6. These were exchanges set up by the colonial powers to facilitate trade more than to finance local enterprises. However, the working of these markets provided valuable lessons for share market trading, and to list more and more local firms as the local economies began to demand more capital.

REFERENCES

- Aghevli, Bijan B., Mohsin Khan and Peter Montiel (1991), 'Exchange Rate Policy in Developing Countries: Some Analytical Issues', *IMF Occasional Paper No. 78*, Washington: International Monetary Fund.
- Agtmael, Antoine W. van (1994), 'Thailand: From Mini-Market to Leading Emerging Market', in Keith K.H. Park and Antoine W. van Agtmael (eds.), *The World's Emerging Stock Markets: Structure, Developments, Regulations and Opportunities*, Singapore: Heinemann Asia, pp. 121–142.
- Ariff, Mohamed (1996), 'Effects of Financial Liberalization on Four Southeast Asian Financial Markets, 1973–94', *ASEAN Economic Bulletin*, 12(3) pp. 325–338.
- Ariff, M., and A. Khalid (2000), *Liberalization, Growth, and the Asian Financial Crisis*, Edward Elgar Publishing, Cheltenham, United Kingdom.
- Arndt and Hall (eds.) (1998), *Southeast Asia's Economic Crisis: Origins, Lessons, and the Way Forward*, Singapore: Institute of Southeast Asian Studies.
- Asian Development Bank (1998), *Report of the Working Group on Strengthening International Financial Systems*, October, Manila: Asian Development Bank.
- BankWatch releases in the Internet (www.bankWatch.com)
- Cole, David C. and Yung Chul Park (1983), *Financial Development in Korea, 1945–78*, Cambridge, Massachusetts: Harvard University Press.

- Krugman, Paul (1999), 'What Happened to Asia', in *Global competition and integration*, Sato R; Ramachandran R.V. and Mino, K. (eds). Boston, Kluwer Academic Publishers, pp. 315–328.
- Root, H. (1996), *Small Countries Big Lesson: Governance and the Rise of East Asia*, Hong Kong: Oxford University Press.
- World Bank (1998), *East Asia: the road to recovery*, Washington, DC: World Bank.
- (WTO) World Trade Organisation (1995), *Regionalism and the World Trading System*, Geneva: World Trade Organization.

11. GLOBALIZATION AND THE CHANGING RELATIONSHIP BETWEEN ECONOMIC DEVELOPMENT AND CAPITAL MARKETS: INNOVATIONS IN FUNDING FOR MICROFINANCE

ALEXANDRA BERNASEK, RONNIE J. PHILLIPS, AND MICHAEL P. ROSS

1. INTRODUCTION

The process of economic globalization is having profound effects on capital markets and economic development. Capital markets around the world are becoming more integrated and opportunities for borrowing and lending internationally are expanding. At the same time developing countries are finding they have fewer opportunities to obtain grants and subsidized loans and are becoming more reliant on international capital markets as a source of funds for development projects. What the implications of such a significant change will be for economic development are as yet unknown.

The purpose of this paper is to present a specific case study that illustrates the phenomenon described above and to consider some of the broader implications a case such as this may have for economic development and for capital markets. The deal we describe took place in early 2004 between three parties, a development organization that makes micro loans to the poor, an international bank and a non-profit organization dedicated to promoting the growth of microfinance initiatives world-wide. The deal created what was essentially a new financial instrument that securitized a pool of micro loans and was then sold to investors. The microfinance institution (MFI) gained access to funds to lend out to poor borrowers and international investors gained access to a new investment opportunity.

The chapter will proceed as follows. In the next section we will present a brief overview of the role of microfinance in economic development. Following that we will describe in detail the securitization deal that was done in 2004 between SHARE of India, the ICIC Bank, and Grameen Foundation USA. The implications for the microfinance industry will

be discussed in the next section. In the final section we will consider possible implications of this kind of deal for economic development more broadly.

2. MICROFINANCE AND ECONOMIC DEVELOPMENT

What began in 1976 as an experiment by an economics professor at Chittagong University in Bangladesh became a revolution in approaching the task of poverty alleviation in developing countries. Muhammad Yunus is the economics professor whose experiment lending small amounts of money to the rural poor to be used for small scale self-employment activities evolved in a specialized financial institution, the Grameen Bank in Bangladesh, and the proliferation world wide of what are known as microfinance or microcredit institutions.

It is widely accepted by economists that there are failures in the area of providing credit—especially for micro-entrepreneurs. Though in theory there would be no unmet credit needs in a perfectly competitive market, in the real world transactions costs and asymmetric information (when one party to a transaction possesses information not available to another party) result in markets that are not perfectly competitive and credit rationing—Mushinski and Phillips (2002).

Yunus identified lack of access to financial resources as the main cause of poverty in the rural areas of Bangladesh. He observed that poor people had skills, were engaged in productive activities, and worked hard. Their inability to get ahead, he reasoned, came from their lack of access to working capital. The poor did not have access to formal capital markets because of their lack of physical collateral and were forced instead to rely on local moneylenders and traders and middlemen who generally charged interest rates of 10–20 percent per month. By studying the circumstances of the poor Yunus was able to create an innovative financial institution designed specifically to meet the needs of the self-employed poor.

The innovation that Yunus came up with was in the nature of the lending scheme that he devised. In the absence of physical collateral, Grameen Bank made loans to self-formed groups of borrowers, such that each group agreed to guarantee repayment of the loans of all its members. If a group member were to default on a loan then s/he would lose access to future loans from the bank and for the remaining group members to maintain their access to future loans they would have to repay not only their own loans but also the loan of the defaulting member. The group lending scheme, by utilizing social collateral instead of physical collateral, was able to overcome problems of adverse selection and moral hazard that traditional formal financial institutions argued made it impossible from them to provide credit to the poor—Varian (1990), Stiglitz (1990).

The costs of such a scheme are high, for example groups are required to attend weekly meetings with bank representative at which they make payments and receive disbursements. Loans are small, on average about US\$120 and a paid back over a period of one year in fifty weekly installments of principal and two weeks of interest payments. Borrowers have to choose investment activities that generate a regular stream of revenues. The bank workers travel to the meetings with the borrowers, not the other way around. The high degree of contact with bank representatives is necessary in ensuring that loans stayed out of default. It also reinforces the fiscal discipline that is necessary for poor lenders to remain soluble—Yunus (2003, p. 63). All in all the success of the scheme is seen in the repayment rate on loans which has consistently remained at around 98 percent; exceptionally high by any banking standards.

It has been over 20 years since the Grameen Bank gained its status as an official financial institution. Over that time the Bank has expanded considerably. As of August 2004, over US\$4.5 billion has been disbursed in loans to members—Grameen Bank Monthly Update, August 2004. The repayment rate on loans is 98.89 percent. There are over 3.7 million members of Grameen Bank and the Bank operates in 46,620 villages throughout the country. In addition to microenterprise loans, the Bank makes home loans, higher education loans and offers members life insurance. There are 74,422 village cell phones being operated by members as the result of a special loan program.

Grameen Bank really created a revolution in thinking about poverty alleviation in developing countries. In start contrast to the indirect “trickle-down” approach to development here you have a “bottom-up” injection of credit directly into entrepreneurial activities of the poorest and most marginalized people in developing countries. And in contrast to the view that access to resources should be given to men, providing women with access to resources was revealed to be a more effective use of those resources for poverty alleviation among children. The Grameen experience suggests that it takes a borrower on average about 10 years of borrowing from the bank to raise her family out of poverty and that once done that economic progress is sustained over the long run—Bernasek (2003).

Microfinance has become a central element in economic development strategies around the world. The Microcredit Summit, a group that met in 2002 dedicated to expanding access to credit for the poor world wide, set a goal of bringing microcredit to 100 million borrowers by 2005 and working to link lending institutions around the world—Abe (2003). According to its report as of December 31, 2002 there were 2,572 microcredit institutions world wide and a total of 67,606,080 clients had been reached with a current loan. Of that total, 41,594,778 clients were among the poorest when they started the program. The poorest are classified as being in the lower half of those living below their country’s poverty line, or below \$1 a day. The number of poorest borrowers reached is up 55% from the year earlier. The rate of growth in loans for the poorest is currently averaging 40%—Daley-Harris (2003).

Most micro-lending institutions are similar in they way they operate. Two of the major concerns that all microcredit institutions share are issues of profitability and sustainability. From the start there was skepticism on the part of many that credit could be provided to the poor in an efficient and cost effective manner. The skeptics believed that not only would operational costs be substantial, but default costs would also be excessive. The Grameen Bank experience with this is instructive. Muhammad Yunus always emphasized the need for the Bank to be financially sustainable and over the years as the institution evolved he maintained and even intensified that financial discipline. Today he argues that Grameen Bank is not only financially sustainable it is “profitable”—Yunus (2003). Over the years however Grameen has relied on grants, loans at well below market rates and revenue from investments in assets other than loans to borrowers. It is significant to note that it is only relatively recent that Grameen Bank has been able to sustain borrowing to obtain funds at market interest rates—Gibbons and Meehan (2002).

In discussions of financial sustainability the possibility of simply increasing interest rates charged on loans is raised. Experience suggests that this measure is fine when increases are small enough to be fairly easily absorbed by the borrowers in their real payments—CGAP (2002, p. 10). In general this remains a problematic strategy though which can increase the risk of default by borrowers—Stiglitz and Weiss (1981). Other suggestions

include integrating operations into existing bank branches, reducing bank contact with borrowers, or other measures to reduce the administrative costs. Here again experience suggests that the high administrative cost of making micro loans is a necessary component in ensuring high repayment rates of borrowers. The avenue that is being explored more recently and which offers some hope is in obtaining sufficient loanable funds at reasonable cost in capital markets to allow microfinance institutions to increase the volume of their lending. That is the essence of the \$4.3 million deal executed by ICICI, SHARE, and Grameen USA in January of 2004 to which we will soon turn.

Despite reaching over 67 million borrowers through 2002 there are millions more who want and need access to capital through a micro-lending institution. Many micro finance institutions (MFIs) have the desire and the demand to grow. What they lack is the capacity and capital to grow. MFIs do not usually operate as traditional banks operate. They are typically not classified as depository institutions that take client deposits and use them as lending capital. Instead they focus on lending only and are able to free themselves of many governmental restrictions that are placed on traditional banks. The problem with this is that it becomes much more difficult to generate capital for lending purposes. Most of the capital that MFIs lend, particularly in the early stages, comes from contributions by governments or other philanthropic organizations and individuals and loans from governments and institutions that incur interest at below market rates. As an MFI matures it is able to become more profitable and can start funding its own lending—Gibbons and Meehan (2002, p. 234). They are even able to borrow in more traditional commercial lending markets receiving unsubsidized loans at market rates. This is clearly preferable from an operational basis as it demonstrates an ability to exist outside of the unreliable world of voluntary contributions.

The primary problem with this restrictive model of growth is that it is a slow process that leaves little room for increasing the volume of the lending that is so important for the MFI's financial sustainability and for its mission in reaching as many of the poor with credit as possible. Those MFIs that seek to reach a greater number of people and accelerate their growth rates are faced with significant upfront costs that place downward pressure on profitability. This not only prohibits strong gains in growth rates it makes it even more difficult as investors become reluctant to invest in less profitable assets.

The lack of capital is by far the most critical constraint in the process. The Consultative Group to Assist the Poorest (CGAP) published an article entitled "Water, Water Everywhere but Not a Drop to Drink", which sought to assess the funding environment for MFIs. The study found that funding for the sector was on the rise but many high-potential MFIs were not receiving the funding they needed. CGAP suggested that the reason for this was that "much of the supply of funds to microfinance is ineffective—narrowly targeted and poorly structured." The first problem CGAP identified was that donors were reluctant to invest in the lesser known organizations even though they had a great deal of potential. Instead funds were funneled to the established MFIs who had already proven their success. This results in the more mature MFIs receiving subsidized funds while the small MFIs struggle to find the capital necessary to scale-up their operations—Gibbons and Meehan (2002, p. 233). Such an environment would benefit a great deal if commercial investors had greater access to these markets. If this were the case investors could seek out those organizations, large or small, with strong management, high potential for growth, and a commitment to transparency, in which to invest.

There are a number of creative solutions that have been offered up for this particular problem. David Gibbons and Jennifer Meehan in their paper suggest the use of quasi-equity, such as subordinated debt, convertible debt, preferred stock, and Special Drawing Rights—Gibbons and Meehan (2002, p. 229). These are all effective instruments and should be utilized by those in the microcredit industry. The instrument that will be discussed in this paper is of similar value. The method this paper will focus on is the securitization of loans. This process will provide a means to inject capital quickly into the sector and will provide many other additional benefits.

3. THE SHARE/ICIC BANK/GRAMEEN USA SECURITIZATION DEAL

Before turning the specifics of the deal between SHARE, ICIC Bank and GRAMEEN USA we will provide a little background on the various organizations. ICICI is a commercial bank that operates in the Indian market. SHARE is a microlending organization that also operates in India. SHARE is a Grameen-style organization and represents one of the largest MFIs in the world. Grameen Foundation USA is an offshoot of the Grameen Bank. The Grameen Foundation operates in the United States and is charged with the task of assisting MFIs around the world in securing funds for expansion and operations. In the deal we discuss, a portion of SHARE's portfolio of loans was sold to the ICICI bank and the Grameen Foundation provided funds that served as a guarantee for the pool of loans involved in the transaction.

In describing the nature of the financial instrument created in the SHARE/ICIC/GRAMEEN USA deal it is necessary to understand how the Asset Backed Securities (ABS) market functions. One of the largest markets included in the ABS market is the Mortgage Backed Securities (MBS) market—Fabozzi (1996, p. 301) which will be used here for illustration purposes.

Mortgage loans are most often 30 year loans that incur interest using the simple interest declining balance method. Under this method interest is only charged on the remaining principle balance. If payments are made according to the schedule the effective rate will be the same as the stated rate. This type of loan represents a fixed-rate, level-payment, fully amortized loan. Each payment is of equal size. The difference of the full monthly loan payment and the portion of the loan that is used to pay interest represents the amount used to reduce the principle of the loan. These payments are designed so that the last loan payment reduces the principle to zero—Fabozzi (1996, p. 216).

In order for individuals to invest effectively the loans are securitized through the use of a mortgage passthrough security. The security is created when a holder of loans pools them together and sells shares of the pool. The cash flows of the security depend on the cash flows of the underlying pool of loans. If any delinquency or default is suffered on any one loan the loss is spread out over all shareholders. There are a number of other features that can vary from one deal to another.

The Asset Backed Securities market represents the use of similar procedures applied to a variety of other assets, including manufactured housing, receivables, auto loans, student loans, etc. One important feature often used is credit enhancement. Credit enhancement refers to the credit support provided for one or more of the bondholders—Fabozzi (1996, p. 301). Securitizations are frequently split in to multiple classes or tranches. Credit enhancement allows the senior tranches to receive a higher credit rating than they would without the

enhancements. Enhancement can come in the form of external or internal enhancement. The level of enhancement required can vary and is often determined by the rating agency.

An external enhancement is created when a third-party agrees to supply a guarantee that provides for first loss protection against losses in the pool up to a specified amount—Fabozzi (1996, p. 291) This is precisely what was done in the ICICI securitization deal. Asset Backed Securities are called such because they are typically protected with real assets. However, in the case of microcredit, there is no asset backing the pool. It is important to note that even if the loans were used to purchase assets the purchaser would still not have claim to those assets under the contract created in the India securitization—*The Economist* (2004). Such protections would likely be included in all future contracts. This protects the borrowers from facing the loss of their property if they had difficulty paying their loan. Investors would likely not want claim to such assets anyway as they carry very little value and would be difficult and costly to secure. In place of real assets the purchasers of the pool require the external enhancements be sufficient to protect them relative to the risk they are assuming. The India deal required an 8% first loss protection. For the \$4.3 million pool of loans this amounted to \$350,000. Of this \$350,000, \$325,000 was provided by the US based non-profit organization Grameen Foundation USA. With Grameen Foundation USA providing 93% of the required cash collateral SHARE was able to maximize the securitization deal without the use of its own capital. This also provided an opportunity for Grameen Foundation USA benefactors to leverage their contributions at a rate exceeding 12 to 1—GFUSA Press Release, (2004). The use of this form of enhancement was slightly different in this particular deal in the sense that the cash was provided up front rather than just a paper guarantee. In that sense it is much like the reserve funds enhancement described below.

There are a number of methods used for internal credit enhancements and they are frequently more complicated than external enhancements. The various forms applicable to the microcredit market are described below.

3.1. Reserve Funds

This form of enhancement can come in two forms; cash reserve funds and excess servicing spread. Under the cash reserve funds format a straight deposit of cash generated from the issuance proceeds is held back for protection. The cash is a portion of the underwriting profits and are deposited in money market instruments. Cash reserve funds are frequently used along side external enhancements.

3.2. Overcollateralization

When overcollateralization is used more loans are included in the pool than what the originator is getting funds for. Essentially the originator is adding an equity kicker that gives the purchaser some head room in case a portion of the pool was to default.

3.3. Senior-Subordinated Structure

As mentioned earlier tranches are simply classes of assets that are components of a larger securitization deal. When a senior-subordinated structure exists there is a senior tranche and

at least one subordinated tranche. For example if we were to apply the India deal the structure could look like the following:

Senior tranche:	\$3,870,000
Subordinated tranche:	\$430,000

This means that the first \$430,000 of losses is absorbed by the subordinated tranche and the senior tranche does not experience any losses. There can be more than one tranche under this structure; in fact there are usually many tranches in any given securitization deal. The most subordinated tranche will always experience first loss until it is completely exhausted, at which point the next tranche will begin to experience losses.

All of this is significant for the securitization of microcredit loans because the process would be much the same for those assets. A lending and servicing institution like Grameen Bank or SHARE could select a pool of loans for securitization. The loans would be chosen based on a set of criterion. This is necessary to insure that the securities can be effectively analyzed by potential investors and especially by the rating agencies. There are many potential criteria but the following is a partial list that highlights some of the most important:

- a. Payment terms**—the loans in the pool must have the same payment terms, preferably all the loans would be collected on a simple interest, declining-balance, fully amortized basis.
- b. Recent history of loan**—the loan should not have suffered delinquency or default in the last six months
- c. Maximum size of loan**—a cap should be determined, over which loans cannot be included in the pool. This would encourage organizations particularly interested in providing access to capital for the poor and very poor to participate in guaranteeing the loans. It would also allow banks in developing nations to fulfill government requirements that a certain percentage of their portfolio be invested in the very poor, as was the case in the ICICI deal.

Interestingly in the SHARE securitization there was very little in the way of criteria that were used to select the loans. Rather than handpicking loans that were qualified for the pool SHARE simply chose 26 different branches. The only real criteria was that the branches not be encumbered by any type of lien or any other encumbrance that would complicate the transfer of ownership to ICICI. The loans from all of these branches, regardless of their status, were included in the pool. The sale of these loans accounted for 25% of SHARE's portfolio, the implications of which will be discussed later in the paper.¹

While there were no criteria used in selecting loans for this particular securitization this will become a more important issue in the future. A process for selection will become necessary to ensure the quality of loans included in any particular securitization. As the securitizations become more common in frequency and larger in size there becomes the potential for the originator to “cherry-pick” the loans that will be included in the pool. Under these circumstances they could choose the more “at risk” loans in the pool that they securitize and keep the lower risk or higher yielding loans in their own portfolio. As mentioned earlier a set of criteria for choosing the loans will expedite the rating process and

allow the instruments to get to market more quickly, which is of particular interest since the loans are frequently for no longer than 50 weeks.

SHARE was required to provide some funds in reserve to provide some indemnity to ICICI. The first pool of funds they were required to provide was for prepayment indemnity. This is likely more a result of the bank's unfamiliarity with micro-credit than the provision of protection for a real concern. With microcredit, unlike many other forms of debt, the risk of prepayment is almost nil. Since so many borrowers live on a near day-to-day basis they are not likely to have the resources to prepay. The likelihood of a borrower somehow refinancing their loan is highly unlikely as well. There is already a short supply of microcredit loans and MFIs are not seeking to take clients away from their "competitors." Even the original issuer is not likely to refinance any debt as this is done only in extreme circumstances where there would be no way for the borrower to make their payments if a restructuring of the loan was not completed (for example after a natural disaster).

The second form of enhancement SHARE was required to include was a stamp duty indemnity. In India banks are required to charge a stamp duty on every loan that is issued. Since SHARE is not considered a bank they have not had to levy these stamp duties. At the time the deal was executed it was unclear if ICICI would have to pay the stamp duties on the microcredit loans they were absorbing into their portfolio. In order to avoid the burden of paying these duties ICICI required SHARE to provide an indemnity that would cover the full costs of the duties.

Once a pool of qualified loans is selected the MFI can then contract to sell the loans to a bank or other investment entity. Ownership of the loan would then be transferred to the pool buyer. This transfer of ownership is significant to both buyers. The MFI no longer carries the loan in its portfolio, thus it also no longer carries the loan's risk in its portfolio. If any, or all, of the loans in the pool were to fall in to delinquency or default the MFI would not suffer any losses. Instead the pool buyer has taken on all of the risk of default. The advantage to the buyer is that they are able to obtain a return that is higher than the prevailing market return.

Although the loans are no longer owned by the MFI the organization will continue to service the loans. The borrowers would not notice any difference in the way the day-to-day operations of their particular MFI. Staff from the MFIs would continue to provide services to borrowers whose loans were sold. The payments would also be made in the same manner. Under the new structure however the MFI would pass the income from the pooled loans on to the supervising trust that facilitates the bonds.

In order to cover the costs of managing the loans the MFI would receive a servicing fee. This fee would likely come in the form of a spread. For instance, the loan rate that the MFI charges its borrowers could be 16% and the rate that the pass-through owners receive could be 10%. The MFI would use the difference of 6% to cover its administrative costs. The spread on the loans is high because the administration costs on microcredit loans are proportionately higher than more conventional loans that would carry a much narrower spread. Since the loans are amortized the cash flow from the loan that consists of interest payments declines as the loan ages. The fees that the loan servicer receives are simply a portion of the interest payments and will thus also decline as the loan ages. Such a payment schedule would require MFIs to budget for this declining level of cash-inflows even as servicing costs are remaining the same. The short lives of the loans should alleviate any burden this places on the MFI.

After a securitization is completed the MFI is left with a lump sum payment from the sale of its pool. This capital is now available for the MFI to lend to new borrowers. Under normal conditions there would be no way for an MFI to use its loans as means of leverage in raising capital for additional loans, but with the use of derivatives they become very productive assets. The rapidity with which this cycle can complete itself allows for tremendous growth reaching the demand that is, at this point, far outpacing the supply. Growth of this kind is much more organic than simply growth from philanthropic contributions and subsidized loans. It is also likely to be more sustainable than relying on contributions from third parties which allows the MFIs and their pools to receive higher ratings and thus enhancing the end product securities.

Rating becomes a significant issue in the derivative industry. Most investors make their risk/return decisions based on the ratings provided from the major rating agencies. The three major rating agencies consist of Moody's Investors Services, Inc., Standard & Poor's Corporation, and Fitch. They each assign ratings based on a standardized scale that represents the likelihood of default—Fabozzi (1996, p. 19). The ratings can have a significant impact on the price of the bonds from a securitization deal. The criteria on which the bonds would likely be rated would be similar to those mentioned earlier in regard to screening loans to be included in the pools. The analysis would focus on the extent to which the loans in a pool fulfill those criteria. This is not a static process as the agencies can change their ratings at any time if there is concern that certain ratios are falling out of line with initial expectations. The agencies would also likely analyze the ability of the MFI's to ensure that borrowers do not become delinquent in their loans and the efficiency with which they are servicing the loans. The solvency of the MFI also becomes important to the agencies, particularly if they are providing any kind of enhancement or guarantee for the loans.

4. IMPLICATIONS FOR MICROFINANCE AND DEVELOPMENT

Clearly this kind of financial instrument has the potential to impact the microfinance industry profoundly. It could, if popularly adopted, change the face of the industry all-together. In considering some of the possible implications of such deals on the microfinance industry and on the goals of development we will begin by mentioning some possible limits on the adoption of such instruments by investors in international capital markets. The most important questions would seem to be "Will securitization provide the resources for the desired growth in the microfinance industry?"

While securitization demonstrates great prospects there has been little to no use of it until the most recent deals. In a paper prepared as part of a USAID Best Practices Project the costs of executing a securitization are of concern as they can become prohibitively high and prevent a securitization from being even a break-even investment—Bass (2000). The costs are so high primarily due to information gathering, analysis, and monitoring. With so many loans it becomes costly to keep up-to-date information on them. Investors want this information so that they know the status of their investment and whether or not there is the potential for losses to go beyond the guarantees. The cost for this type of information is on the decline as more and more of the servicing gets recorded electronically on a timely basis. The speed of transmission of this information to rating agencies and investors will in turn continue to accelerate and drive costs down. In the India securitization it seems that ICICI was not concerned with obtaining information on individual loans from SHARE.

Instead they had confidence in the track record of SHARE and agreed to purchase a pool of loans on which much of the information was likely an aggregate. While this strategy of selecting pools will persist in the short term, as securitizations become more common and sophisticated there will probably be a divergence from such simplistic selection. In the case of more sophisticated pooling scenarios, which could in turn result in higher ratings, criterion like those suggested above may become necessary.

While it is now evident that securitization is possible for microcredit it is less clear what the market looks like on the other end. In order for securitizations to have the desired impact there must be a sufficient number of investors who would purchase such instruments. While at first glance it would seem that the short life span of the loans would prohibit the pools from becoming marketable on a large scale, in fact there are many investors who are both willing and in need of short term investment instruments that are of high quality.

Another issue when considering the final investors is the creation of a secondary market or some other market for the intermediary to sell the instruments to. In order for a real secondary market to exist it must be large, liquid, have easy access to information, and be standardized. These are all hurdles that microcredit securitization will have to overcome. The microcredit industry on a whole is very large. There are billions of dollars being lent and billions more that could be lent. The challenge will be getting a large volume of these loans pooled and securitized. It will be a slow process but as the trend picks up a sufficiently sized secondary market could be created in a matter of a few years. Liquidity is a product of size and quantity of buyers. As the market grows there will be more investors drawn to it. With a larger number of investors comes an increased level of liquidity. There are many investors who could be interested in these instruments, both in the countries where the loans are originated and elsewhere.

As for ICICI one of the driving factors behind their participation in a microcredit securitization was to help fulfill requirements of the Indian government. In India many banks are encouraged to direct 40% of their lending to "priority sectors." In many cases microfinance fulfills that designation. This provides banks that are looking to move closer to that percentage to do so in an efficient and profitable manner. Ready access to information that is timely and accurate is still a concern for much of this industry. At this point it is really dependant upon the individual organization. As an organization grows and matures it also become more sophisticated in its information technologies by necessity. For the larger, more established MFIs information is less of an issue. However, until the knowledge and infrastructure that is necessary for good information is passed on to the less mature organizations they will have greater difficulty participating in the securitization market.

Standardization is truly where the microcredit industry will face challenges. Standardization is important because it allows investors to compare one instrument to another in an accurate manner. The primary ways in which loans should be standardized are the length of time for which the loans are made, the method by which the loans are collected (amortized over the period of the loan), and the method by which the default rate is measured. The Microbanking Bulletin recognized the importance of this problem and made it the focus of their November 2002 issue. "Standardization is a challenge when we consider the number of parties involved and the different perspectives of each. Agreeing to common standards also implies that we will need to change current practices, sometimes used for years. This exercise therefore requires an open-mind and understanding that the benefits of standardization for the

sector by far outweigh the inconveniences of going through the exercise.” These comments by the editor of the *Microbanking Bulletin* demonstrate the concern that the issue has generated, as we would expect. The true test will be the extent to which individual MFIs adopt the standardized operating and reporting guidelines. Gaining access to international capital markets will clearly provide an incentive for that to take place.

In the near term large-scale standardization and the creation of a secondary market with width and depth is unlikely. Instead much of the financing for securitizations is likely to come through private placements. In a private placement a bank, like ICICI would purchase the pool of loans for their own portfolio, or would issue certificates that serve as claims to the pools cash flows to one or two large investors. This form of securitization allows individual deals to occur without fitting in to rigid industry-wide standards that are required for secondary market instruments. Particularly with short-term instruments there is likely a sufficiently sized market to support the number of micro-loans that could theoretically be securitized. Either way interest in investing in emerging market securities continues to grow. With real interest rates in the developing nations remaining at very low levels investors are seeking out high quality investments in emerging markets that offer a healthier return. Net private credit flows, which is primarily composed of bond purchases, is expected to reach \$45 billion in 2004 in emerging market economies—IIF (2004, p. 11).

Clearly of major importance in considering more widespread use of securitization of micro loans is anticipating the impact it is like to have on the MFIs and on the borrowers. As it is still early and there is little evidence to turn to for an answer it is difficult to fully assess the impact. Despite this lack of experience there is good reason to believe that securitization will have little impact on the day to day operation of MFIs, although it could transform the current structure of the MFIs in significant ways. On a day-to-day basis there is really little to change. The loans must still be serviced and paid back. The MFI employees know this, the purchasers know this, and most importantly the borrowers know this. If anything it will create even greater pressure for the MFIs to operate efficiently and to keep all loans current. While the MFI will no longer have the loans on their balance sheet it is still of interest to them that the loans get paid back. If they demonstrate that their loans are good investments it will become easier and less costly to have them securitized. This is of great significance in microcredit as the loans are only 50 weeks in length and thus the MFI has a whole new pool of loans every year.

The MFI now has an obligation to ensure that the current pool of loans fulfills the buyer's expectations. As a result there is now a second party interested in the repayment of the loan and the emphasis on efficiency and loan repayment is reinforced. One of the possible outcomes of intense repayment pressures is coercion of borrowers. While that is a danger in the absence of this kind of securitization deal it is clearly intensified when the MFI itself comes under pressure from investors—Bernasek (2003). This is something that should be monitored and closely and safeguards put in place to ensure that it does not occur.

One likely area of conflict is the refinancing or restructuring of a loan. A great risk in developing nations is that of a catastrophic event. Whether this be an act of God or an act of government the status on a large number of loans is generally affected. In the event of natural disasters for example, MFIs have frequently had to restructure loans with longer repayment periods in order to ensure full repayment of the loan. MFIs are often pressured to forgive loans under such circumstances but Grameen Bank has insisted on loan restructuring rather

than loan forgiveness in such circumstance and in general that seems to be the norm. None the less it is not clear whether or not the securitization of loans would give an MFI pause in restructuring loans, on a large scale or even on an individual basis. Because of the pressure put on the guarantees backing the securitizations in the event of a restructuring MFIs flexibility in restructuring loans may be diminished. Given that the ability of an MFI to restructure loans in the event of some catastrophic event affecting borrowers is necessary for maintaining high repayment rates and ultimately for the sustainability of the MFI, securitizations will have to provide some mechanism for accommodating such loan restructuring.

On a larger scale and over a longer term securitization could dramatically impact MFIs. If an MFI were to securitize most to all of their loans they would become purely a servicing company. If an MFI were to change its strategic direction in this respect the impact could trickle down to the individual borrowers. As a servicer the MFI would have the incentive to take on only those loans that it can include in pools that will later be securitized. Higher risk borrowers could be left behind as their loans would be undesirable to include in such a pool. If they were included they could potentially reduce the repayment rate and thus cause the buyer to require higher amounts of protection in future securitizations.

In order to ensure that the original mission of the MFI is not lost, it may consider keeping some loans on its own balance sheet so that an emphasis on the poorest is not lost in the interest of high quality loans. If interest rates on the loans are sufficiently high the MFIs could include some higher risk loans in their pools. While this would add to the risk involved with the securitization, interest rates may be sufficiently high to compensate the investor for the added risk. Securitization could also give those organizations interested in reaching the poorest of the poor the opportunity to encourage lending to those borrowers. If they enter the market seeking to purchase pools composed of loans, at least 50% of which are made to the poorest borrowers, they could essentially create the impetus MFIs need to increase their lending to such borrowers.

The fact that the loans expire in one year can actually serve as an advantage to MFIs in securitization deals. Each year the MFI can reevaluate how much of its portfolio it wants to securitize. If it decides that keeping a portion of its portfolio would be of use they can simply withhold it from the next year's securitization. Securitization also allows the MFIs to be strategically flexible. Theoretically the funds that an MFI raises from a securitization are not committed. If the MFI feels that more money needs to be spent on infrastructure upgrades, efficiency improvements, or other operating expenses rather than new loans they can simply adjust their allocation.

Ultimately the question of how much of their loan portfolios MFIs should securitize arises. While there is the potential for an MFI to securitize its entire portfolio is this the most advantageous thing for them to do? Will MFIs lose control over their operations with more of their loans securitized? The influence of purchasers of these securities is somewhat analogous to the influence of shareholders on management. There is the potential for a conflict of interest between borrowers and investors. If an MFI is regularly securitizing most, or all, of its portfolio and is relying on the proceeds of securitizations to keep its rate of growth high will face greater pressure to abide by the wishes of secondary purchasers and the securitizing institutions. MFIs generally face similar pressures from donors. They attempt to balance the expectations and requirements of donors with their own vision of how best to lend to their borrowers.

While balancing their own interests with those of providers of funds is not new for MFIs, the additional pressure from investors and securitizing institutions may negatively impact the support that MFIs currently receive. Philanthropic organizations, generous individuals, and socially oriented government programs are currently significant contributors to the success and growth of MFIs. As an MFI utilizes securitization more and more conflicts with donors may result. Often times donors have preferred to see their money going directly to lending rather than to operational expenses. That attitude could transfer to the securitizations as the funds would likely be used for guarantees and enhancements rather than going directly to borrowers. MFIs will face the challenge of education donors about the potential benefits of such an arrangement. If donors were to see that their funds could be leveraged on a 10 to 1 basis or better they may be even more inclined to contribute than before. MFIs abilities to reconcile potentially conflicting interests are then likely to be factors in the success of securitization.

5. CONCLUSION

The potential for the microfinance industry to benefit from greater access to international capital markets through securitization deals like the one negotiated by SHARE, ICIC Bank and Grameen Foundation USA is significant. There are also significant challenges involved in the widespread use of such financial instruments for Microfinance Institutions and for international investors. And while it is too early to anticipate the likelihood of such a development it is clear that experiments like this one will continue to emerge as the process of economic globalization facilitates opportunities for closer ties between investors in the North and entrepreneurs in the South.

What are the implications of this for economic development more broadly? microfinance seems to be a particularly good candidate for innovative funding opportunities through international capital markets. The industry makes loans to poor people who engage in highly productive, albeit small-scale activities, and the poor borrowers repay the loans at an incredibly high rate. A win-win outcome is potentially created as more funds are made available for such loans and international investors gain access to a new investment opportunity. How many other candidates are there likely to be for such an outcome?

Traditional development projects such as investments in infrastructure, health and education are unlikely to be good candidates for international investment. These long term social investments will continue to depend on governments and their access to funds. Developing country governments, most of which are debt burdened, are unlikely to be able to raise the money needed for such investments in international capital markets. In this case there is no real alternative to increased development assistance from developed countries and a significant reduction in the debt burdens of the developing countries.

A closer connection between the process of economic development and international capital markets appears to offer opportunities for innovative ways of funding certain kinds of development projects. In this case we have seen the possibilities for the microfinance industry. If new opportunities for funding can be created for this strategic development area and for others like it, there is reason to be hopeful about the pursuit of economic development in this era of economic globalization. That being said, if the areas in which such opportunities are unlikely to be significant then it will be important to bolster funding for development

with the more traditional means of official development assistance and loans from multilateral institutions.

ENDNOTE

1. The information on the details of the Share/ICIC/Grameen Foundation USA deal was provided to the authors via interviews with a representative of Grameen Foundation USA.

REFERENCES

- Abe, Kiyoshi, Microcredit for the Poorest Countries, in *The Future of Banking*, edited by Benton E. Gup, Quorum Books, 2003, 317–332.
- Bass, Jacqueline. *Innovations in Microfinance*. Washington, D.C.: USAID, 2000.
- Bernasek, A. Banking on Social Change: Grameen Bank Lending to Women, *International Journal of Politics, Culture and Society*, Vol. 16, no. 3, Spring 2003, 369–385.
- Consultative Group to Assist the Poorest (CGAP). Occasional Paper: Microcredit Interest Rates. Washington, D.C., 2002.
- Daley-Harris, Sam. *State of the Microcredit Summit Campaign Report 2003*. *The Economist*. Shuffling the Buffalo. Vol. 370 Issue 8361, February 7, 2004.
- Fabozzi, Frank J. *Fixed Income Securities*. New York: John Wiley & Sons, 1996.
- Gibbons, David S., and Jennifer W. Meehan. “Financing Microfinance for Poverty Reduction.” In *Pathways out of Poverty: Innovations in Microfinance for the Poorest Families*. Ed. Sam Daley-Harris. Bloomfield, CT: Kumarian Press, 2002.
- Grameen Foundation USA. Grameen Foundation USA Announces Historic \$4.3 Million Securitization Deal in India. Washington, D.C.: Grameen Foundation USA, 2004.
- Grameen Bank Monthly Update for August 2004, Statement No. 1, Issue No. 296, September 15, 2004.
- Institute of International Finance, Inc. *Capital Flows to Emerging Market Economies*. Washington, D.C.: IIF, 2004.
- Microbanking Bulletin. *Focus on Standardization*. 2002. <http://www.mixmbb.org/en/>
- Mushinski, D. and R. Phillips. Microcredit in the International Encyclopedia of Business and Management, London, Thomson Learning, 2002.
- Stiglitz, J. E. and A. Weiss, Credit Rationing in Markets With Imperfect Information, *American Economic Review*, vol. 171, 1981, 393–410.
- Stiglitz, J., Peer Monitoring and Credit Markets, *World Bank Economic Review*, vol. 4, no. 3, 1990, 351–366.
- Varian, H. R. Monitoring Agents With Other Agents. *Journal of Institutional and Theoretical Economics*, vol. 146, no. 1, 1990, 153–174.
- Yunus, Muhammad. *Banker to the Poor: Microlending and the Battle Against World Poverty*. New York, Public Affairs, 2003.
- Yunus, Muhammad. *Grameen Bank at a Glance*. The Grameen Bank web site: <http://www.grameen-info.org/banldGBGlance.htm>, 2004.

12. WAITING FOR CAPITAL: THE IMPACT OF CORRUPTION IN INDONESIAN FINANCIAL MARKETS

GORDON MENZIES, CHRIS TERRY, AND ROWAN TRAYLER

1. INTRODUCTION

Over the two decades prior to the 1997 Asian Crisis the Indonesian archipelago experienced a sustained period of economic growth, doubling real output per capita and lifting millions out of poverty—Sarel, (1997). This spectacular economic performance made the events of the subsequent years all the more surprising. The collapse of the Indonesian rupiah, the disastrous revaluation of foreign-currency-denominated debt, and the resulting political upheaval are all well documented—IMF, (2002).

One concerning legacy of the crisis has been the surprisingly persistent current account surpluses, with their attendant capital outflows. For example, the IMF pencilled in a current account figure near zero for 2001, while the actual outcome was around 5 per cent of GDP. It is arguably inappropriate for a country at Indonesia's stage of development to be *exporting* capital. Non-sovereign borrowers have made some tentative progress in gaining access to world capital markets, although the recovery of capital inflows has been slower than in other crisis-affected countries—IMF, (2002). In 2002, Indonesia was the only country in South-East Asia to record a net outflow of foreign direct investment—Economist, (2003b). The current account is projected to remain in surplus by over 2 per cent of GDP in 2004, with private capital outflows of around the same magnitude—IMF, (2004a).

The crisis also highlighted corruption as a key issue in the political and economic life of Indonesia. Many of the practices of so-called 'Crony Capitalism' remained hidden during the relatively prosperous years prior to the crisis. But the extent of corruption, and its disastrous effects, are now well and truly under international gaze. Table 1 shows international comparisons of different measures of corruption and governance.

Table 1. Indicators of investment climate, selected countries

Countries	Global Competitiveness Report Public Institutions Ranking 2003	IMD World Competitiveness Yearbook Government Efficiency Ranking (Population >20 million)		Transparency International		International Country Risk Guide Political Risk	
		1999	2003	Corruption Perception Index Score ¹ / 2003	Country Ranking 2003	Index Ranking	1997	Feb 03
Indonesia	72	25	27	1.90	122	86	127
Philippines	66	11	21	2.50	92	52	67
Thailand	32	9	5	3.30	70	40	50
Malaysia	29	6	3	5.20	37	35	50
Vietnam	60	...	...	2.40	100	57	67
Singapore	6	...	...	9.40	5	7	12
China	44	10	9	3.40	66	63	63
India	56	17	19	2.80	83	77	106
South Korea	18	22	18	4.30	50	32	35
No. of countries ranked	108	30	30		133	129	140

¹ Relates to perception of the degree of corruption as seen by business people, academics and ranges between 10 (highly clean) and 0 (highly corrupt).
Source: IMF, (2004b).

It is the argument of this paper that corruption has the potential to repel foreign capital. It is well known in the debt literature that foreign borrowing can only occur if there are credible penalties for default—Eaton, (1993). But corruption can erode the penalties for defaulting debtors. It follows that support for lending by foreigners must likewise erode. Any creditor considering making a loan to Indonesia now must take account of the pitfalls of corruption, which may help explain why Indonesia is still ‘waiting for capital’.

We do not argue that other factors are unimportant; the Ministry of Economic Affairs lists transport problems, unreliable water supplies and nationalist opposition to foreign ownership of assets—Economist, (2003b), as potential reasons why foreign capital has dried up. Nevertheless, corruption seems to raise intense difficulties for creditors, especially if they get ensnared in protracted debt-recovery negotiations.

These drawn-out negotiations have been a noteworthy feature of post-crisis Indonesia. Debtors have a number of reasons to delay coming to an understanding with their creditor:

- A corporate debtor with unhedged foreign liabilities, waits for an exchange rate appreciation to reduce their rupiah debt;
- A government refuses to fulfil a promise to buy back an enterprise from a foreign investor, waiting for the investor to sell at a discount to a national company;
- A debtor in strategic default (that is in default because it can get away with it), earns money on withheld interest payments while there is delay.

These delays are particularly onerous when the legal system is not functioning properly. It does not matter so much if one party wants to slow a resolution if it is not within their

power to do so—the legal system simply overrides their wishes. However, if the legal system is not strong enough to do this, for example, due to corruption, then resolution will prove elusive if it is not in the interests of both of the parties.

The paper is organized as follows. Section 2 describes the post-crisis environment in which many corrupt practices came to light. Section 3 looks at the rule of law and creditors rights reinforcing the need for a functioning legal system. Section 4 concludes.

2. THE POST CRISIS ENVIRONMENT

In this section we review the factors that created the post-crisis environment. We will examine the background to the crisis, policymakers' response to the crisis, the failure to apply the rule of law to enforce creditor rights and possible motives for debtors stalling the bargaining process.

2.1. Background to the Crisis

Over the 30 years prior to the 1997 crisis, Indonesia had achieved a sustained period of economic growth (averaging seven per cent per annum), and was known as one of the Asian 'tigers.' The data in Figure 1 shows that between 1978 and 1996 the value of output per head (in constant dollar terms) in Indonesia doubled, maintaining its place among its neighbours such as Singapore, Malaysia and Thailand, whereas output per head in the US economy rose by only 20 per cent over this period. Given that Indonesia's output per person over the period rose from just over \$US1,000 to almost \$US3,000, (as shown by the data in Figure 1)

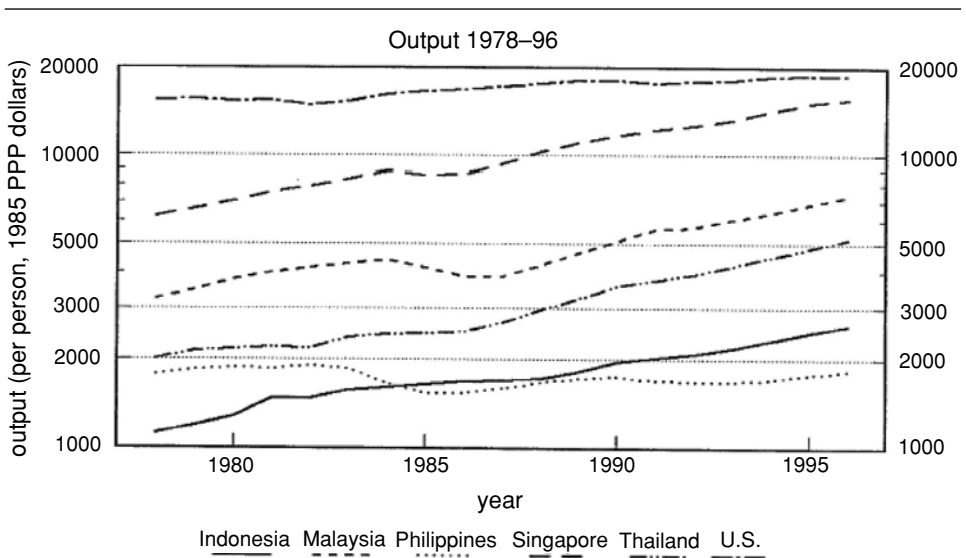


Figure 1. Five ASEAN countries and the USA: Output per person

Source: Sarel (1997, p. 9).

it is an emerging economy, and, given its population of over 235 million, Indonesia is a very large emerging economy.

During the mid 1990s the outstanding growth performance of the Asian tigers attracted considerable attention in the literature, especially the issue of how long these economies could sustain their superior growth rates. Krugman, (1994) suggested that growth in Asia was the result of the growth in inputs with very little contribution from improvements in the productivity of their inputs (that is, their total factor product, TFP) and that there are limits to the mobilisation of inputs, which would result in a decline in the growth rates of these economies.

“The newly industrializing countries of Asia, like the Soviet Union of the 1950s, have achieved rapid growth in a large part through an astonishing mobilization of resources. Once one accounts for the role of rapidly growing inputs in these countries’ growth, one finds little left to explain. Asian growth, like that of the Soviet Union in its high-growth era, seems to be driven by extraordinary growth in inputs like labor and capital rather than by gains in efficiency”—Krugman, (1994).

This view was shared by others, such as Young, (1995), who attempted to decompose the source of growth between the rate of factor accumulation and improvements in factor productivity and concluded that the latter played a very small role as a source of growth in these Asian economies. According to this view, growth rates in these economies would not be sustained and this might infer (if, coincidentally, the predicted slow-down in productivity occurred at the time of the financial crisis) that their post-crisis growth performance would not return to their pre-crisis rate. To some degree Indonesia’s post-crisis experience is consistent with this expectation. However other studies, such as that by Sarel, (1997) found that total factor productivity was a more important contributor to growth in most ASEAN countries (including Indonesia).

Sarel’s study covered the period 1978–96 and confirmed that growth in inputs, especially capital, was the major source of growth, but more importantly found that the contribution of TFP was underestimated by researchers such as Young. According to Sarel’s study, the average annual growth in TFP was 2.2 per cent in Singapore, 2.0 per cent in Thailand and Malaysia and 1.2 per cent in Indonesia, which compare very favourably to the US rate of 0.3 per cent—Sarel, (1997).

In Indonesia’s case, real GDP grew by an average annual rate of 8 per cent in the six years before the 1997 financial crisis, when real GDP fell by 13 per cent (in 1998), and, has grown at around 4 per cent over the post-crisis period to 2003. Hence, on this issue hindsight shows that Krugman’s assessment was too pessimistic, especially if one accepts that other matters have contributed to the economy’s growth rate not returning to the 7 per cent experience. It would seem that structural and governance problems are the more likely causes of the slower recovery in Indonesia.

2.2. Policymakers’ Response

According to Grenville, (2004), “The Indonesian crisis was surprising both in the event and puzzling afterwards. This was a country that had experienced three decades of 7% annual growth, that had coped successfully with a series of setbacks, that had one of the longest serving and most experienced teams of economic policy makers, that had no serious macro

imbalances, and had adequate foreign exchange reserves. Why did it experience a crisis far more serious—in terms of the fall in the exchange rate, the damage to the banking system, the fall in GDP and the tardiness of the recovery . . .—than its Asian neighbours?”

Some of the reasons that have subsequently been advanced to explain its impact were well known prior to the crisis.

First, there was the failure to apply the rule of law because of corruption, especially in the forms of rent-seeking behaviour by politicians (and their cronies), bureaucrats and the courts—Robinson and Hadiz, (2004). Second, as reported by the Independent Evaluation Office (IEO), there was an unsound banking system, due to imprudent and related-party lending and ineffectual prudential supervision due in part to cronyism and corruption—IEO, (2003). Finally, there were the potentially unstable capital inflows. According to Grenville, (2004) Indonesia’s “. . . pre-crisis capital inflow was potentially volatile because it was largely herd driven, led by portfolio managers more interested in diversifying and rebalancing their portfolios than in making fine judgements about risk. ‘Emerging markets’ had become the market favourites. . . . The problem was that these markets were tiny, and were not able to absorb such flows easily.”

The IMF acknowledged as reported by The Independent Evaluation Office (IEO), (2003), that its surveillance of the Indonesian economy failed to raise the alarm “. . . because the crisis occurred against the background of sound macroeconomic fundamentals, including good export growth performance, relative price stability, and broad fiscal balance. There were vulnerabilities . . . in the form of sector weaknesses, highly leveraged corporate balance sheets, weak public and corporate sector governance, and rising short-term unhedged external indebtedness.”

The IMF’s surveillance of member countries is conducted annually under Article IV of the Articles of Agreement and covers “the country’s economic policies and potential vulnerabilities.” This is routine surveillance, as opposed to the surveillance involved when financial support is provided to assist with adjustment programs such as the arrangements the IMF established with the Indonesian government.

Indonesia’s crisis (and that of neighbouring countries) was perceived as an exchange rate and financial account crisis (that is, a massive fall in capital inflow and a massive rise in capital outflow) due to a loss of confidence by domestic and foreign investors. An element of contagion was involved, triggered by the depreciation of the Thai baht and a substantial increase in foreign-currency short-term funding—IEO, (2003). However, even during the first five months of the crisis (that is from July to November 1997) there were a range of views about the true value of the rupiah. Lehman Brothers expressed confidence in August 1997 that the currency shocks would be temporary and a senior executive of Stanley Morgan Asia predicted on 5 November 1997 that the rupiah, when trading at 3,900 rupiah to one US\$, would settle at 3,100 rupiah to one US dollar—Robinson and Hadiz, (2004). Goldman Sachs’ in its November 1997 “Emerging Markets Currency Report” expressed similar sentiments and it was reported that hedge funds were investing in rupiah denominated assets in the expectation that the currency had ‘overshot’—IEO, (2003).

As noted by Grenville, the crisis unexpectedly deepened into a serious economic and social crisis due to the 13 per cent fall in real GDP in 1998 which increased unemployment and returned many people to poverty (Table 2). It also caused systemic insolvency within

Table 2. Percentage of population in poverty, 1996, 1999 and 2002

	1996	1999	2002
National Poverty Line	15.7	27.1	16.0
International poverty lines			
1 dollar a day	7.8	12.0	7.4
2 dollars a day	50.5	65.1	53.4

Source: World Bank estimates quoted in IMF, (2004a).

**Figure 2.** The rupiah/US\$ exchange rate, 1997–98

Source: IEO, 2003, p. 14.

the banking system as well as the business sector. Such a consequence was canvassed by Montgomery, (1997) in an analysis of the financial system (in which the banks played a dominant role) and its contribution to economic performance. The banking system was the major acceptor of credit risk posed by business (both through its loans and through guarantees of corporate bonds) and despite improvements in the prudential supervision regime, the level of non-performing loans was nearly 14 per cent of total bank loans in 1995, and banks also had a substantial foreign exchange exposure, as well as an indirect exposure through the companies to which it had made loans—Montgomery, (1997).

The massive depreciation of the rupiah in late 1997 and especially in early 1998 (Figure 2) coupled with the exposure of the banking system and corporate sector to such an external

shock propelled the economy into recession. While some banks suffered runs, the payment system ultimately survived due to the government eventually agreeing to extend a blanket guarantee of deposits.

Indonesia sought the support of international agencies, such as the IMF and the World Bank and this was provided in the form of funding together with agreed programs of reform and policies that intend to help redress the underlining problems. These undertakings were set out in letters of intent (LOI) by the government of Indonesia, having regard to prior negotiations with the IMF about its conditions.

Prior to mid 1997 the value of the rupiah was set by Bank Indonesia (the central bank) on a crawling peg basis. In July 1997 the Bank responded to speculative pressure on the rupiah motivated by the depreciation of the Thai baht, by tightening monetary policy and supporting the currency in the foreign exchange market (by selling some of its holdings of foreign exchange reserves). In August 1997 it decided to float the rupiah (having regard to IMF advice) and substantially increased the interest rate on its one-month certificates (from 11.625% to 30%) and in September the government tightened fiscal policy (by deferring expenditure on large infrastructure projects). Over this period the rupiah depreciated from being worth around 2,000 rupiah equal to one US dollar to around 3,000 rupiah to one US dollar. This was a serious depreciation of the currency, but in hindsight it was dwarfed by the eventual 80 per cent decline (Figure 2).

In September 1997 the Indonesian government approached the IMF about their currency concerns to establish “precautionary” funding (that is, funding that is not intended to be drawn down, but could be) as a response to their concerns. The IMF suggested a number of policies the government could adopt that would help to restore confidence in the rupiah. However, by October the government, concerned by the depreciating currency, sought a three-year “Stand-By-Arrangement” with the IMF to replace the precautionary arrangement. This was concluded in early November 1997 for SDR 7.34 billion (equivalent to \$US10 billion) with \$US6 billion to be drawn down by March 1998.

The amount of the funding was based on an assessment of the scale of Indonesia’s balance of payments problem, part of which could be estimated (this being a proportion of foreign short-term funding that would not be rolled over given the currency’s depreciation), as well as funding available to Indonesia from other external sources (such as the World Bank and the Asian Development Bank). In broad terms, the main determinant of the amount and timing of financial support was confidence, of both foreign and domestic investors, since their decisions largely determined the extent of the net capital outflow.

The financial (or capital) account balance swung from a surplus to a deficit after 1997, due to “large-scale capital flight by domestic residents”—IEO, (2003, Annexure 1). Capital inflows fell dramatically, contributing to the crisis (Figure 3).

Under the November 1997 arrangement, Indonesia was required to maintain its tight monetary and fiscal policies, close and liquidate 16 problem banks (another 34 were subject to Bank Indonesia’s rehabilitation program) and implement a number of structural reforms that would improve efficiency and transparency. The purpose of the arrangement was to provide the capacity for the government to restore confidence in the currency, which was perceived at the time to be the essential problem. Initially the measures seemed to be effective as the rupiah stabilised at around 3,500 rupiah to one US dollar, but confidence in the arrangement was eroded when the Indonesian President decided not to comply with the

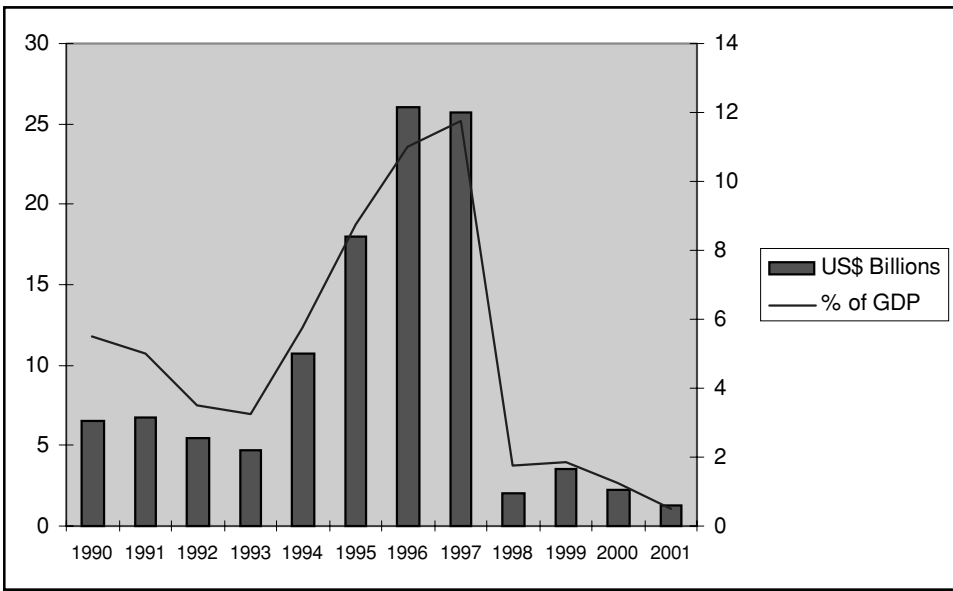


Figure 3. Private capital inflows, 1990 to 2001

Source: IMF, 2002, p. 52.

requirements. Some of which (such as certain bank closures) would have adversely impacted on commercial interests of some of his family members and cronies. Moreover, the effect of providing liquidity to troubled banks rather than closing them resulted in an easing of monetary conditions (and some of the funds were used for related-party loans). The rupiah responded by falling sharply in value during November (falling below 5,000 rupiah to one US dollar in mid December 1997, as shown in Figure 2).

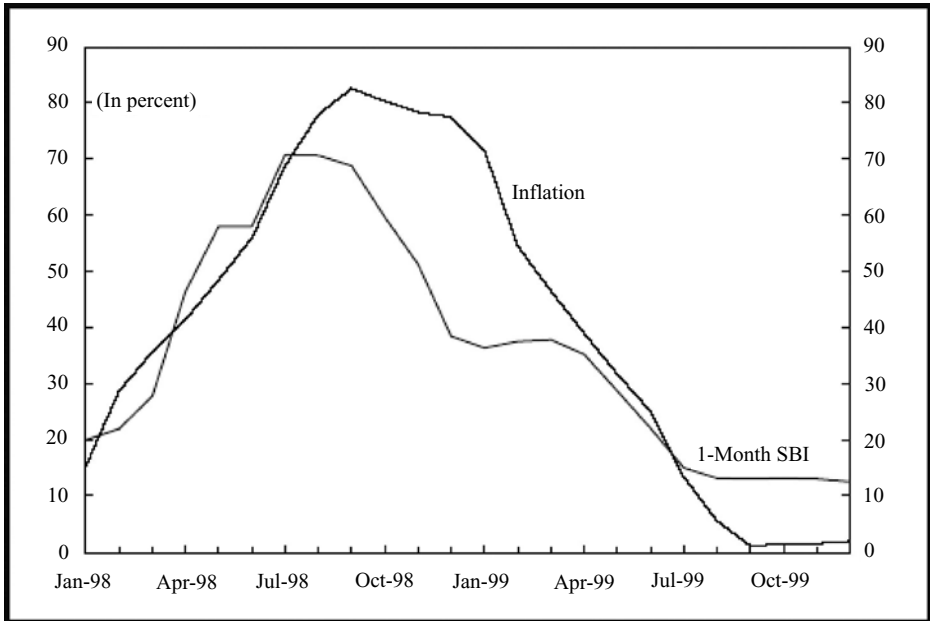
The situation went from bad to worse. The IMF recognised that the crisis was much severer than first thought and sought a more comprehensive response by the government in January 1998. Initially the government issued a new LOI that included undertakings covering structural reforms and the establishment of the Indonesian Bank Restructuring Agency (IBRA). However the President again reversed his stance and challenged the legitimacy of the IMF conditions. The foreign exchange market again lost confidence in the rupiah, which crashed in value to over 14,000 rupiah to one US dollar in January 1998.

Following the President's re-election in March 1998, the Indonesian government began to accept the need to implement the structural reforms sought by the IMF (and the IMF accepted that an easier fiscal policy would assist the government to respond to the social problems created by the crisis). In May 1998 the President resigned, being replaced by Vice-President Habibie, and in August 1998 the new government negotiated an Extended Fund Facility (EFF) to replace the November 1997 Stand-By-Arrangement, using the undrawn amount that was equivalent to US\$6.3 billion. The IMF approved the 26-month EFF in August 1998, and it covered the period through to November 2000.

Table 3. Economic growth and investment, 1995–2001

	1995	1996	1997	1998	1999	2000	2001
Real GDP growth, %	8.2	7.8	4.7	−13.1	0.8	4.9	3.4
Real fixed investment growth, %	14.0	14.5	8.6	−33.0	−18.2	16.7	7.7

Sources: IEO, 2003, p. 17.

**Figure 4.** Inflation and interest rates, 1998 to 2000

Source: IMF 2004b, p. 6.

By mid 1998 it was becoming clear that the crisis in Indonesia was deepening—becoming an economic and not ‘simply’ a currency crisis. The added dimensions included an inflation problem, (see Figure 4), and, mounting corporate and bank insolvency (due in part to the effect of the rupiah’s depreciation increasing the domestic currency cost of repaying foreign-currency loans). The emerging recession (see Table 3) was due in part to the 33 per cent decline in real private investment expenditure in 1998.

Most of the net outflow in 1997 was in the form of portfolio investment, whereas direct investment was substantially negative between 1999 and 2001. Over the course of 1997/98 substantial foreign exchange intervention occurred, leading to a run down in reserves (Figure 5). Data on both the financial and current accounts are presented in Figure 6.

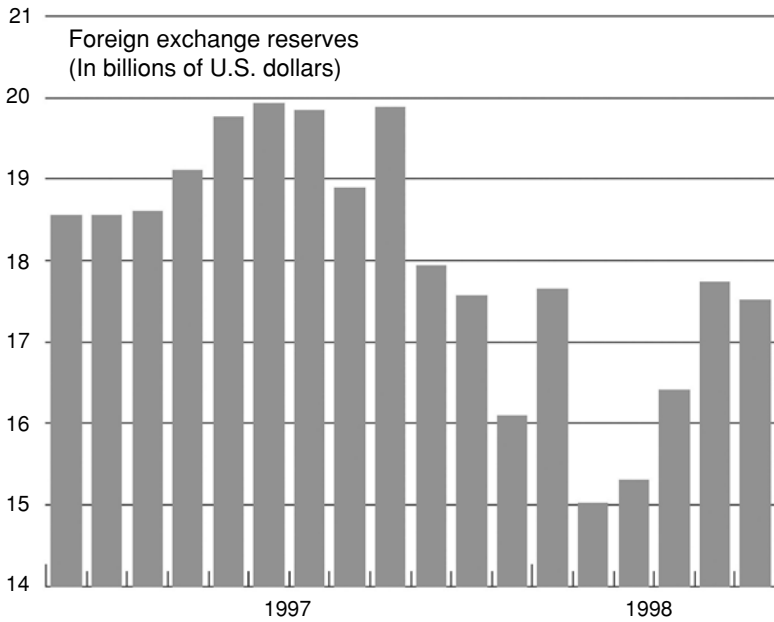


Figure 5. Foreign currency reserves, 1997–98

Source: IEO, 2003, p. 14.

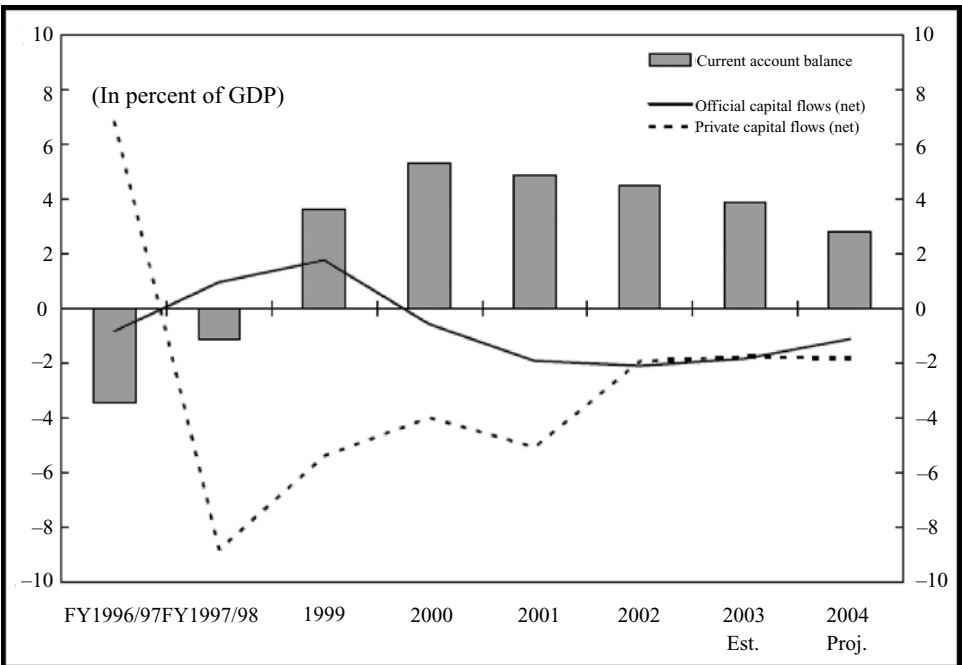


Figure 6. Net capital flows, 1996–97 to 2004 (Projected)

Source: IMF, 2004a, p. 8.

In early 2000 the new (democratically elected) Indonesian government sought to replace the Extended Fund Facility (involving further financial assistance worth approximately US\$4.8 billion) that would cover the period to the end of 2002. The government, in its January 2000 LOI, undertook to restore the economy's macroeconomic performance as well as to implement a wide ranging set of structural reforms, such as a more aggressive approach to the restructuring of the banking system, arrange the settlement of outstanding corporate debt as well as to establish an effective legal basis for dealing with bankruptcies.

Summing up the IMF's role, support was provided through an initial Standby-By-Arrangement that was replaced by an Extended Fund Facility (EFF) in August 1998 that was renewed in January 2000 to cover the period to the end of 2002. These arrangements provided both funding and policy advice to assist the government of Indonesia to deal with the crisis and its problems. The policy advice had a macroeconomic dimension, and, structural and institution-building dimensions to reduce corruption and to uphold the rule of law in commerce.

On the macroeconomic front the government made good progress lowering the inflation rate (as well as interest rates) to around 5 per cent at the time of writing. It also restored foreign exchange reserves (US\$36 billion in 2003), although the balance of payments 'improvement' (shown by the data in Figure 6) is scarcely evidence of a dynamic export-led economy. Rather, it reflects a tendency towards capital flight, and, weak import growth due to low physical investment. Recent current account surpluses have exceeded the various IMF targets—IME, (2004b).

Public debt increased from a pre-crisis level of 25 per cent of GDP to over 100 per cent in 2000. This was driven by a number of factors. They included: the need for borrowing to provide funds to support the banking system's liquidity and solvency; the valuation effects on public external debt arising from the depreciation of the rupiah; higher budget deficits, due to higher interest cost on the increased debt, increased expenditures on subsidies to lessen the impact of the crisis on the poor, and, the higher than expected costs of the decentralisation program. The level of debt relative to GDP has been reduced to just over 65 per cent by 2003 due in part to the proceeds from the sale of assets by IBRA and through privatisations as well as to the rebound in the rupiah (which increased the rupiah value of the sale of foreign currency assets).

The economy's performance has improved since the late 1990s (up to the time of writing) but has not achieved its pre-crisis performance in terms of the rate of real investment, capital inflow, exports and economic growth. It remains to be seen if the new president, Mr. Yudhoyono, can succeed in preventing unemployment hitting double digits, tackle difficult fiscal issues (such as fuel subsidies) and deal with labour unrest. While progress has been made with institution building and bank restructuring, corruption in commercial dealing remains an impediment to improved economic growth—IME, (2004a.), IMF, (2004b), IEO, (2003).

3. THE RULE OF LAW AND CREDITORS RIGHTS

Commercial dealings in Indonesia have been conducted within the workings of its political and legal system, which allowed the 'power elite' a degree of discretion not enjoyed by the elite in many other countries. The degree of influence of the members of the Suharto family increased prior to the crisis because of the development of their commercial interests. They

Table 4. Fiscal costs of selected banking crisis, % of GDP

	Gross Outlay	Recovery	Net Cost
Indonesia, 1997–present	51.4	12.0	39.4
Korea, 1997–2000	31.2	8.0	23.1
Malaysia, 1997–2000	7.2	3.2	4.0
Thailand, 1997–2000	43.8	9.0	34.8

Source: IMF (2004b).

were granted commercial privileges by the government along with favoured business leaders (some being known as Suharto’s cronies) and the protection of these interests deepened the crisis and slowed the recovery—Robinson and Hadiz, (2004).

Foreign investors, Indonesia’s banks and IBRA (because of its role in bank restructuring and revitalising insolvent corporations) have all faced the difficulties posed by inadequate protection of creditor rights.

“Weaknesses in the legal structure and corruption in the courts have tilted the system in favour of borrowers who have the resources to fight creditors through the legal system”—IMF, (2004b).

IBRA, which operated from early 1998 to early 2004, had three main objectives; to stabilize and revitalize the banking system; to maximize recoveries from taken-over (mainly impaired) assets, and; to revitalize the corporate sector by restructuring corporate debt and returning taken-over assets to the private sector—IMF, (2004b).

An indication of the scale of the cost to the domestic governments of the banking crisis in Indonesia and three of its neighbours is provided by the data in Table 4. The costs arise from taking over the non-performing loans from insolvent banks and the recoveries arise from the subsequent sale of the banks and or their loans. Observe that the cost of the banking crisis to the government (that is Indonesian taxpayers) represented approximately 40 per cent of Indonesia’s GDP.

Prior to the crisis there were over 230 banks within the banking system, most being small privately owned, together with a small number of large state-owned (and regional government owned) banks. IBRA’s approach to stabilising and revitalising the banking system was to close the most distressed private banks moving their deposits to a state bank and disposing their assets. (By the end of 2003 the number of banks had declined to 138.) IBRA also took-over less distressed banks, becoming the majority shareholder, to allow them to continue to operate. IBRA’s aim here was to recapitalise the banks along with new capital from the original owners and subsequently recover its investment (or at least part of it) through the sale of its shareholding. Four insolvent state-owned banks were merged into Indonesia’s largest bank, Bank Mandiri (still being state owned), which held 23 per cent of the market in 2003. Due to problems in disposing assets, by 1999, IBRA remained the owner of 26 per cent of Indonesia’s banking assets—IMF, (2004b). Part of its difficulties arose because IBRA attempted to improve corporate governance by corporate borrowers before disposing of the loans. Despite the difficulties, by 2003 the banking system was operating on a more stable basis than in 1999, as shown by the data in Table 5—IMF, (2004b). The main concern is the quality of the assets of the state banks; meaning that their quality is overstated in the data.

Table 5. Indicators of banking soundness

	1999		2001		2003 1/	
	State Banks	Private Banks	State Banks	Private Banks	State Banks	Private Banks
	(In percent)					
Asset structure						
Recap bonds-to-total assets	59.9	43.7	52.1	44.7	43.1	24.2
Net loans-to-total assets	18.1	14.1	22.1	22.0	30.6	31.4
Asset quality						
Reported NPLs-to-total loans	14.8	35.3	10.0	12.7	6.2	5.6
Compromised assets-to-total loans 2/	...	...	33.4	21.7	23.9	11.2
Loan loss reserves-to-compromised (ROA)	...	...	31.7	43.9	36.8	69.2
Earnings						
Net interest income-to-average assets	-3.8	-4.5	3.2	3.5	4.2	4.3
Net profits-to-average assets (ROA)	-9.6	-6.8	1.2	-0.2	1.9	2.1
Capital adequacy						
Equity-to-total assets	-8.9	2.2	4.7	6.3	7.5	10.1
Capital adequacy ratio (CAR)	-10.4	6.2	19.0	17.1	21.4	24.9
Net compromised assets-to-tier 1 capital			181.6	94.9	92.3	17.2
Liquidity						
Liquid assets-to-total assets	15.2	34.5	14.5	18.3	12.9	28.0

IMF, (2004b).

The aggregate debt of the corporate sector (meaning non-financial firms) exceeded US\$100 billion at the time of the crisis. This was owed (approximately equally) to domestic and foreign creditors with the majority being denominated in a foreign currency. The collapse of the rupiah meant that most companies ceased payment on their debt since many had become insolvent—IMF, (2004b). The resolution of these debts exposed major weaknesses in the process of recovering debts in Indonesia from the creditors' viewpoint.

Indonesia's out-dated 1904 Bankruptcy Ordinance and corrupt court practices meant few creditors and debtors used this process for dealing with insolvency. Moreover, the scale of the outstanding debts due to the crisis overwhelmed the public servants, who acted as receivers and administrators and who were not able to cope with this volume.

The introduction of new bankruptcy legislation, which was passed in 1998, was proposed to strengthen the legal framework for bankruptcy proceedings. Also the legislation provided for out-of-court negotiations, which were especially necessary during the period of the crisis. In November 1998 the Jakarta Initiative Task Force (JITF) was established to facilitate voluntary restructuring.

Initially the JITF made little progress. It required experienced negotiators and strong political backing and its aim of providing a one-stop facility for restructuring plans was rather heroic in the circumstances. In January 2000 the government established an inter-ministerial committee to apply pressure on debtors to cooperate with the JITF in its attempt to broker debt restructuring. While it assisted the JITF to be more effective not all debtors were susceptible to pressure from the committee—IMF, (2004b).

Considering the Indonesia experience, it has to be asked why the voluntary approach to restructuring corporate debt ran into so much difficulty. This is of particular relevance to the issue of capital flows. The quality of Indonesia's corporate external debt is something

of an ‘advertisement’ for Indonesia’s potential investors, with the problems of the day it is not surprising that there was an exit of capital. In mid-2002, the IMF estimated that over half of the estimated \$US55 billion of corporate external debt was distressed. To understand the difficulties faced by a voluntary approach, it is useful to review the so-called London Approach, which the Jakarta Initiative sought to emulate.

The London approach to corporate restructuring is a set of conventions developed in the United Kingdom over the last three decades of the 20th Century. From the mid-1970s to mid-1980s, the Bank of England involved itself directly with corporate workouts. Over time, it divested itself of the formal powers to do so, preferring instead to adopt the role of ‘honest broker’ in situations of corporate distress. The so called “London Rules” involve an approach to crisis management, and a long term reform agenda. The two guiding principals of the London Approach are:

Creditors had to be prepared to seek a non-judicial solution and support an independent review of the company’s viability. While the review was in process a creditor standstill was in force, and the companies continued to trade normally. The Bank of England acted as a facilitator of this crucial first stage.

Depending upon the result of the review above; the principal creditors formed a joint view about the long-term viability of the company. If viable, new money was provided on an agreed basis from all the creditors (often a pro-rate arrangement) and measures such as interest holidays, extension of maturities, or debt-equity swaps were also considered. These measures were conditioned on a long term business plan which may have involved management changes, sales of assets or divisions, or even the takeover of the company.

The application of the London Approach to Indonesia has been made difficult by the large number of creditors involved in loan packages, the lack of an ‘honest broker’ with the stature of the Bank of England, the weaknesses in the legal framework, and the corruption or theft of original loan documents—Meyerman, (2000). Anecdotal evidence obtained by the one of the authors from an IBRA officer confirms this practice. They indicated it was sometimes possible to pay a ‘fee’ to a bank employee to tamper with loan documents, reducing the amount or other loan conditions. Most fundamentally, however, the London approach relies on voluntary agreement, and, as we outlined in the introduction, debtors have many reasons to stall deals. We now return to this issue, examining the potential reasons in some detail.

3.1. To Stall or not to Stall

Two factors have acted together to make it possible for debtors to delay negotiated agreements in Indonesia. First, the foregoing discussion implies that the crisis was of such a magnitude that the ill-prepared governmental, financial and legal entities were simply overwhelmed. In a chaotic environment, strategic default became possible. Second, if the debtors were the favoured business leaders—the Cronies—they were afforded a protection that allowed them to ignore the legitimate demands of creditors—Robinson and Hadiz, (2004).

However, it is one thing to say that delay was possible; it is another to say that it was in the debtors’ interests. There were a number of scenarios where debtor delay seemed optimal.

There were opportunities for theft of assets that required owners to remain in control of their business. For example, if the owners of a business or bank faced few ‘self-denying

ordinances' within their business, and had a free financial hand, they could engage in asset-stripping. Perhaps as a result of this, some debtors were concerned that IBRA would sell loans on a basis that would allow them to be swapped for equity, loosening the control of the owners.

The changing macroeconomic environment (meaning variables such as interest rates and the value of the rupiah) complicated the process of valuing loan contracts and provided a motive for strategic non-cooperation by debtors. For example, consider a corporate debtor that held unhedged \$US liabilities. They may have been reluctant to wind the business up at an unfavourable exchange rate. Drawing out negotiations with the creditors had an option value for them. Seen from their perspective, if the exchange rate appreciated subsequently, they could then have wound up the business at a favourable exchange rate, or, used their control of the company to expatriate funds in an illegitimate manner. Either way, there is an option value of waiting. The expected value of the currency change does not have to be positive for there to be an option value of waiting. All that is required is that the debtor can put off valuing the assets should the exchange rate go against them (i.e. depreciate).

Companies that were likely to be sold also had some incentives to draw out the process. Consider the owner of an enterprise that was under the control of a bank asset restructuring agency, such as the former Indonesian Bank Restructuring Agency (IBRA). It may have been that delays in payment, or legal misadventures, signalled to foreign purchasers that the enterprise was risky, thereby reducing demand by foreigners. Further suppose that when it came time for the agency to sell, the owner had a domestic associate waiting in the wings to buy the enterprise. It was not unheard of for the original owners of banks to attempt to buy them back at fire-sale prices from IBRA. The *Economist*, (2003a) reports a case in which Bank Central Asia (BCA) was allegedly sold to its original owners, beating a bid from the UK bank, Standard Chartered. The report also sites rumours of originalowner of two other banks, Bank Lippo and Bank Internasional Indonesia bidding to buy their banks.

More generally, any financial misappropriation allows the guilty party to gain the use of the funds until they are called to account by the legal system. If the legal system is corruptible, then the guilty party may succeed in delaying proceedings by illegal means.

The case of Tri Polyta seems to have proceeded along these lines. One of the original owners of the petrochemical company was former President Suharto's son, Bambang. Four years ago, the firm stopped paying interest on \$US185 million worth of bonds. More recently, a consortium of creditors had filed a bankruptcy suit seeking to foreclose on the assets, amid allegations that Tri Polyta could pay its creditors. The consortium of creditors received support from a US Federal Court, which ordered that interest and principal be repaid. However, an Indonesian District Court refused to uphold the US decision—*Jakarta Post*, (2003).

The Tri Polyta case for Indonesia is that devoting resources towards voluntary agreement initiatives, such as the Jakarta Initiative Task Force, may have no effect if vested interests are gaining from the continuance of strategic default.

4. CONCLUSION

The 1998 bankruptcy legislation established a new Commercial Court to deal with bankruptcy cases in a transparent way and provided for the appointment of ad hoc judges with expertise in bankruptcy matters. The transparency was to be achieved by publishing the

Table 6. The Transparency International Global Corruption Barometer 2003
A selection of intuitions and countries

Country	Courts %	Political Parties %	Medical Services %	Police %
Hong Kong	8.9	15.4	3.3	35.4
Indonesia	32.8	16.3	1.8	10.2
Japan	3.7	51.9	7.3	9.6
Korea (South)	10.3	27.9	3.7	5.0
Malaysia	8.5	24.6	1.3	32.0
USA	9.1	39.1	10.1	7.2

Source: Transparency International, (2003).

reasons for its judgments as well as dissenting judgements. Despite this institution-building initiative, implementation of fairer law has not been universally achieved.

“... studies have found that up to 70 percent of its decisions are in fact based on sound or defensible legal reasoning. It is the remaining 30 percent or so of, usually, high profile controversial decisions that continue to tarnish the Court’s reputation”—IMF, (2004b).

An attempt is being made to strengthen the effectiveness of the Commercial and the Supreme Courts as well as to deal with corruption more generally in the legal system through the establishment of an anti-corruption commission. This reflects that “... many of the goals of legal and judicial reforms have not yet been met”—IMF, (2004b).

Despite the efforts of Indonesia to reform its bankruptcy laws and its implementation, it is evident much effort remains for it to achieve its goals due to the culture of corruption that existed prior to the crisis. An indication of Indonesia’s standing internationally is provided by the data in Table 1 at the beginning of this paper. While there are many factors that contribute to Indonesia’s slow recovery, its adverse investment climate would appear to play a role.

Whether one is very pessimistic about corruption (it will never lose its grip on political life), or mildly pessimistic (it will wane with political reform, but you’ll have to wait a while), the case for a strong legal system, which does not have to rely on self-enforcing agreements, is strong. This might seem obvious—after all, everywhere has a legal system—but the statement is a matter of degree. Table 6 is from Transparency International that conducted a survey of corruption were people were asked, “if they had a magic wand and you could eliminate corruption from one of following institutions, what would your first choice be?” it is interesting to note that Indonesia rated highest for its courts, which is the major theme of this paper.

Thus the perceptions of Indonesians, and the analysis of this paper coincide. We are left to conclude that continued legal reform is a prerequisite for the return of foreign capital to Indonesia.

REFERENCES

- Eaton, J., Sovereign Debt: A Primer, *World Bank Economic Review* 7(2), 1993, 137–172.
 Economist (a), Friends and Family *Economist magazine*, 16 October 2003.
 Economist (b), Still Living Dangerously *Economist magazine*, 23 October 2003.
 Grenville, S., The IMF and the Indonesian Crisis, *Bulletin of Indonesian Economic Studies*, Vol. 40, No. 1, 2004, 77–94.
 IMF *Indonesia: Selected Issues*, IMF Country Report No. 02/154, 2002.

- IMF (a), Staff Report, *Indonesia 2004 Article IV Consultation and Post-program monitoring discussion*, IMF Country Report 04/188, 2004.
- IMF (b), *Indonesia: Selected Issues*, IMF Country Report No. 04/189, 2004.
- Independent Evaluation Office (IEO), *The IMF and Recent Capital Account Crises: Indonesia, Korea and Brazil*, IMF, 2003.
- Jakarta Post, JSX Delists Tri Polyta, Gives Kopitime 3 Months Grace, *Jakarta Post*, 8 July 2003.
- Krugman, P., The Myth of Asia's Miracle, *Foreign Affairs*, Vol. 73, November–December 1994, 72–78.
- Lovitt, J., Galtung, F., Transparency International releases first TI Global Corruption Barometer survey, developed with Gallup International, *Transparency International Global Corruption Barometer*, 3 July 2003, 1–6.
- Meyerman, G., The London Approach and Corporate Restructuring in East Asia, *Managing Financial and Corporate Distress: Lessons from Asia*, eds. Adams, Charles, Litan, Robert E., and Pomerleano, Michael, Brookings Institution Press, Washington D.C., 2000, 299–324.
- Montgomery, J., The Indonesian Financial System: Its Contribution to Economic Performance, and key Policy Issues, *IMF Working Paper*, WP/97/45, 1997.
- Reserve Bank of Australia, Asian Capital Flows, *Bulletin*, August 2004, 56–61.
- Robinson, Richard and Verdi R. Hadiz, *Reorganising Power in Indonesia*, RoutledgeCurzon, London, 2004.
- Sarel, M., Growth and Productivity in ASEAN Countries, *IMF Working Paper*, WP/97/97, 1997.
- Transparency International: [HTTP://WWW.transparency.org](http://www.transparency.org)
- Young, A., Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience, *Quarterly Journal of Economics*, Vol. 110, August 1995, 641–80.

13. CREDIT RATINGS IN CHINA

WINNIE P. H. POON

1. INTRODUCTION

The total amount of outstanding corporate bonds in China is relatively low in comparison to other major Asian financial markets. According to PR Newswire (2003), the total outstanding amount in China was RMB¹133 billion (about US\$16 billion) in 2002, which represents about 1.3% of the country's GDP compared to at least 10% of the respective GDP in other Asian markets. Although the corporate bond market in China is very underdeveloped, its potential for growth is substantial because the market demand for bond investment is increasing. The considerable growth potentials of the market and surging trends in corporate bonds are substantiated by the research findings from the Shenzhen Stock Exchange, China as in February 2003 (PR Newswire, 2003). The findings of this research report by Shenzhen Stock Exchange indicate that, the demand from institutional investors could go up to RMB94 billion (over US\$11 billion). On the supply side, corporations would consider raising RMB140 to 279 billion (about US\$19.9 to 33.7 billion) from the bond market.

In addition, Thomson Financial believes that China is a potentially lucrative market with vast unfilled funding needs (Lunsford, 2004). Until January 2004, the international rating agencies have rated fewer than 100 Chinese firms when there are more than eight million corporations and over 100 banks desiring capital with which to expand (Baglole, 2004; and Lunsford, 2004). If the Chinese regulatory authorities allow foreign credit agencies to rate their domestic bonds and open up the rating industry for more competition, then the opportunity for credit rating business will be huge. At present, Chinese bonds that are offered only to the domestic market do not require international credit ratings, unless they intend to raise capital from international capital markets or to cross-list on a foreign

stock exchange. For example, China Petroleum & Chemical Corp. and Huaneng Power International Inc., which are listed on the New York Stock Exchange, have requested credit ratings from Standard and Poor's Ratings Services (one of the four "Nationally Recognized Statistical Ratings Organizations" (NRSROs) in the U.S.). Moreover, none of the foreign credit ratings are officially recognized by the regulatory bodies in China.

The World Bank has recommended that China develop a sophisticated bond market to make use of its large amount of private funds and reduce its dependence on infrastructure projects in the State budget (China Daily, 1998b). Rating agencies perform an important role in the development of bond markets. One of the major problems that has hindered the growth of the Chinese bond market is the absence of "authentic" issuer ratings on bonds (China Daily, 1998a). There seems to be a general consensus among Chinese practitioners about the growing need for "authentic" credit ratings for issuers in China's rating industry (China Daily, 1998b).

Kennedy (2003) believes that the domestic credit rating agencies in China have not had any effect on the decisions of investors of Chinese corporate bonds, and he attributes that to Chinese government control of the corporate bond market. Investors do not seem to pay attention to their ratings, and even an AAA rating is of little value to some speculators (Kennedy, 2003). Some investors may ask whether or not a bond issue is guaranteed by the government or not, but are not concerned about its credit rating. If most investors fail to take credit ratings seriously, the development of the rating industry will be slow or even impeded (China Daily, 1998b).

The main purpose of this paper to present an in-depth study of the credit ratings in China because they are very crucial to the potentially lucrative, but underdeveloped, Chinese bond market. Section 2 provides the regulatory framework for the bond market and the credit rating industry in China. Their recent developments are reviewed in Section 3. Section 4 describes the major domestic rating agencies, and Section 5 contrasts the long-term issuer ratings that are assigned by local and international rating agencies. The significant issues of the credit ratings in China are discussed in Section 6. The conclusions and recommendations are given in Section 7.

2. REGULATORY FRAMEWORK

The regulatory framework for the bond market and the credit rating industry in China are described in this section. Figure 1, which is based on EIU (2003), provides an overview of China's financial system. In addition, Standard and Poor's (2003) provides a thorough discussion of China's market infrastructure, legal infrastructure, regulatory framework, and informational infrastructure in its country governance study of China. The State Council has ultimate and overruling authority over all regulatory bodies in the financial sector. The National Development and Reform Commission (NDRC), which is supervised by the State Council, is responsible for the research into and overseas implementation of nationwide strategic planning. Companies that raise capital from domestic or overseas financial markets must obtain approval from the NDRC (S&P's, 2003).

Since 1983, the People's Bank of China (PBOC), the central bank, has served dual roles as the regulator of the financial industry, especially the banking regulator, and the manager of monetary policy. The State Council set up the China Banking Regulatory Commission (CBRC) in March 2003 following a decision by the National People's Congress standing

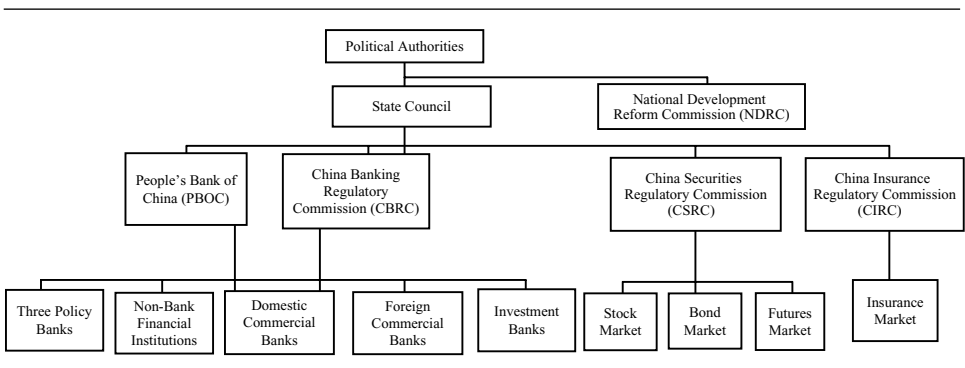


Figure 1. An Overview of China's Financial System

Note: This figure is based on "China's Financial System, 2003–4" in *China Hand* by the Economist Intelligence Unit, The Economist (EIU), 2003.

committee. The CBRC was established to transfer bank supervisory functions and regulatory responsibilities from the PBOC to the CBRC so that the PBOC would be able to formulate and implement monetary policy more efficiently (EIU, 2003; and S&P, 2003). Before passing the Securities Law in 1998, which defines the role of the China Securities Regulatory Commission (CSRC) as the sole securities regulator, the supervisory responsibilities for China's capital markets were split between the PBOC and the CSRC (EIU, 2003).

Since 1984, domestic enterprises have been allowed to issue bonds with the approval of the PBOC (Kennedy, 2004). Credit ratings in China began in 1987 (Harrison, 2003), when the State Council issued the "Temporary Regulations on the Management of Corporate Bonds". This prompted provincial branches of the PBOC to create credit rating departments. These departments then evolved into independent credit rating firms and other rating agencies emerged in following years (Kennedy, 2003 and 2004). The temporary regulations were effective until the release of the "Regulations on the Management of Corporate Bonds" (or the "Corporate Bond Regulations") on August 2, 1993 (State Council, 1993). One of these regulations specified that enterprises could obtain credit ratings from accredited credit agencies when they issued corporate bonds², but it did not indicate the names of any agencies. Since 1994, the PBOC has promulgated regulations stipulating that listed bond issuers and bank loans borrowers must obtain credit ratings (China Daily, 1998a).

On December 16, 1997, in an attempt to keep the rating industry in order, the PBOC announced that all corporate bond issuers must obtain credit ratings from PBOC-approved rating agencies before their issues (PBOC, 1997; and Kennedy, 2003). The PBOC would only recognize corporate bond ratings that were conducted by the rating agencies approved by its headquarters. It then gave licenses to nine nationally-recognized credit rating agencies³, including China Chengxin Credit Management Co., Ltd. (CCX), Dagong Global Credit Rating Co., Ltd. (Dagong), and Shanghai Far East Credit Rating Co., Ltd. (SFE), to rate corporate bonds. It would not accept any corporate bond ratings performed by other agencies. These accredited agencies could engage in corporate rating business across the nation (PBOC, 1997). However, some of these agencies were criticized for not being able to establish their own credibility (Harrison, 2003).

After massive defaults and the Asian financial crisis, the regulatory authorities became more cautious and determined to place more restrictions on the bond market. From late 1999, all corporate bond issuers had to receive approval from the NDRC and final authorization from the State Council (Kennedy, 2003). The PBOC would then determine the interest rates on the approved bond issues, subject to the interest rate ceiling imposed by the State Council. That is, it could not be more than forty percent above the savings deposit rate for the same maturity (Harrison, 2003; Kennedy, 2003; and Hong Kong Securities, 2004). To reduce default risk, issuers were required to have guarantors for their bond issuers. Lastly, if issuers intended to list their bonds on the Shanghai or Shenzhen Stock Exchange, they were required to obtain approval from the CSRC. Interestingly, bond issues were to be rated after, and not before, they were approved by the NDRC and the State Council (Kennedy, 2003). This suggests that bond ratings do not seem to have any influence on the likelihood of the NDRC and the State Council approving the issue.

In June 2003, the China Insurance Regulatory Commission (CIRC) announced that insurance companies could only invest in corporate bonds rated AA or above by approved credit rating agencies, which were CCXI, Dagong, SFE, and China Lianhe Credit Rating Co., Ltd. (Lianhe) (Kennedy, 2003). Since October 8, 2003, domestic securities companies have been permitted to issue corporate bonds to the general public through listing on a stock exchange or to qualified institutional investors through private placement. In accordance with the “Tentative Procedures for the Administration of Securities Company Bonds” given out in August 2003 by the CSRC, a securities firm is required to have minimum audited net assets of RMB1 billion (over US\$120 million) and profits in the previous year to qualify as a bond issuer. The size of its issue must be at least RMB500 million (over US\$60 million) (EIU, 2003).

Recently, the CSRC prepared a draft on “Measure on Regulating the Securities Credit Rating Business”. This demonstrates an effort to formalize the accreditation process for credit rating agencies, and to accredit those agencies with more standard criteria on minimum asset requirements, rating experience, rating system, and prohibited activities, etc. (Kennedy, 2003). The final version of this regulation is not yet available to the public.

3. RECENT DEVELOPMENTS

The recent developments in the bond market and the credit rating industry in China are presented below.

3.1. Bond Market

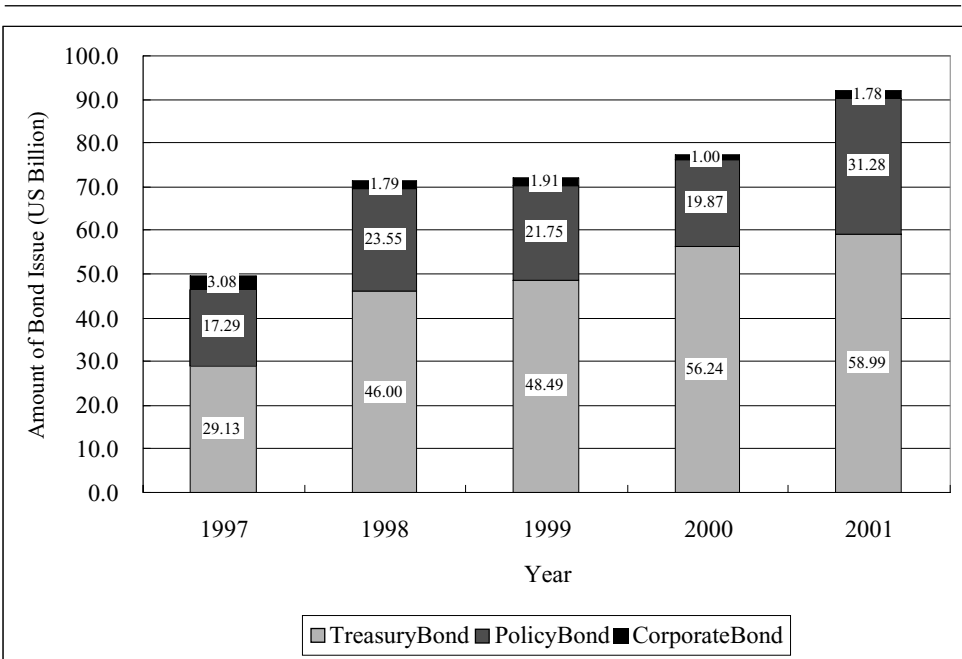
China’s bond market is relatively small and underdeveloped compared to its equity market, and it remains in the infancy stage. Corporate bonds have been a small percentage of China’s financial assets (Kennedy, 2004). Unlike in the U.S. bond market, individual investors, instead of institutional investors, dominate the investor base for the China’s bond market (S&P’s, 2003). For example, retail investors hold about 60% of treasury bonds (EIU, 2003). There are three major kinds of bonds traded in China’s bond market—treasury bonds, policy bonds (also called policy financial bonds or financial bonds), and corporate bonds (also called enterprise bonds). According to S&P’s (2003), in 2002, 63% of the total bond issues were treasury bonds, 33% were policy bonds, and 4% were corporate bonds. Based on Harrison (2003), Table 1 and Figure 2 display the amount and classification of bond issues in China

Table 1. Bond Issues in China from 1997 to 2001 (in US\$ Billion)

Year	Treasury Bonds	Policy Bonds	Corporate Bonds	Total	Annual Percentage Change
1997	29.13 (59%)*	17.29 (35%)	3.08 (6%)	49.5	
1998	46 (64%)*	23.55 (33%)	1.79 (3%)	71.34	44%
1999	48.49 (67%)*	21.75 (30%)	1.91 (3%)	72.15	1%
2000	56.24 (73%)*	19.87 (26%)	1 (1%)	77.11	7%
2001	58.99 (64%)*	31.28 (34%)	1.78 (2%)	92.05	19%

Note:

1. The data of bond issues are based on Harrison (2003).
2. Percentage of each year is in parenthesis.
3. * indicates the highest percentage in each year.

**Figure 2.** Classification of Bond Issues in China During the period 1997 to 2001 (in US Billion)

Note: This figure is based on Harrison (2003).

from the period 1997 to 2001. Consistent with the statistics from S&P's (2003), treasury bonds contribute the highest percentage of total issues, while corporate bonds share only an insignificant percentage in China's bond market over recent years. The EIU (2003) argues that the limited corporate issues are the consequence of a deliberate policy of transferring investor savings to treasury instruments rather than corporate bonds.

Policy bonds occupied about one-third of the market from 1997 to 2002. They are called “policy bonds” because they are issued by the three policy banks in China: the China Development Bank, the Agricultural Development Bank of China, and the Export-Import Bank of China (ChinaBond, 2004). These banks were established in 1994 to channel funds from the government to the state sectors, and to carry out projects assigned by the NDRC and other central government bodies (EIU, 2003). Most of their funding is raised by bond issues. Examining the annual percentage change, there is an upward trend in the overall bond issues, which is mainly caused by the expansion in the treasury bond sector.

As of June 2004, only local companies had been allowed to issue bonds in China. It is expected that foreign companies will have the opportunity to issue bonds in the coming years (Hong Kong Securities, 2004). With reference to Harrison (2003), a Chinese company can issue bearer or registered bonds if it meets the following conditions.

- For a company that it can limit by shares, it should have at least RMB30 million (about US\$3.6 million) of net assets. For a limited liability company, the minimum net assets are RMB60 million (about US\$7.2 million).
- The total amount of the bonds does not exceed 40 percent of the company’s net assets.
- The average profits that can be distributed over the previous three years are sufficient to pay one year’s interest on the bonds.
- The funds are utilized in a way that is consistent with state industrial policy.
- The interest rate on the bonds does not exceed 140 percent of the savings deposit rate for the same maturity.

Limited improvement has been made in the development of a secondary debt market (EIU, 2003). Although foreign banks that are licensed for renminbi trading have been allowed to participate in trading bonds in the interbank market since October 1998, in general, domestic bonds are not available to foreigners (EIU, 2003).

3.2. Credit Rating Industry

As mentioned in the previous section, credit ratings began in China in 1987 (Harrison, 1987). There are about 20 domestic rating agencies in China, but most of them are small and lack advanced technology (China Daily, 1998b). They attempt to seek expertise and employ the rating methodologies of international credit rating agencies (Kennedy, 2003). The major credit rating agencies in China are described in the next section.

In addition to local rating agencies, the top three international rating agencies, Moody’s Investors Service (Moody’s), Standard and Poor’s Ratings Services (S&P’s), and Fitch Ratings Ltd. (Fitch) have approached the nascent credit rating industry in China in their own ways in recent years. Fitch formed a joint venture with CCX in 1999 and divested its 30% share in 2004. Moody’s signed a two-phase co-operative agreement with Dagong in 1999. On February 12, 2003, to prepare for further development or independent credit research work in China, Moody’s set up Beijing Moody’s Venture Information Technology Service Ltd. (BMVITS) in Beijing (SinoCast, 2003). Standard and Poor’s has been active in assigning both interactive ratings (solicited ratings) and pi⁴ ratings (unsolicited ratings) to the major Chinese banks and the Chinese companies listed on international stock exchanges such as the New

York Stock Exchange (NYSE), the London Stock Exchange (LSE), and the Stock Exchange of Hong Kong Limited (SEHK).

Some analysts or institutional investors cast doubt on the creditability of rating work in China *per se* because they fear that the domestic accounting standards⁵, emergent regulations, poor corporate governance, government intervention and lack of transparency reduce the reliability of rating results (Baglole, 2004). They believe that the rating work in China is not very useful if it is based on possibly inaccurate information. Therefore, they are unwilling to value the credit rating work in China, and in particular, they give little credence to the work of domestic rating agencies (Baglole, 2004).

4. MAJOR CREDIT RATING AGENCIES IN CHINA

The major players in China's domestic corporate bond business are Shanghai Far East Credit Rating Co., Ltd., China Chengxin International Credit Rating Co., Ltd., Dagong Global Credit Rating Co., Ltd., and China Lianhe Credit Rating Co., Ltd. (Kennedy, 2003). Kennedy (2003 and 2004) provides interesting discussions on the role of China's credit rating agencies. A concise description of these four agencies and the newly established Xinhua Financial Network are presented in the following.

4.1. Shanghai Far East Credit Rating Co., Ltd. (SFE)

Shanghai Far East Credit Rating Co., Ltd. was founded in March 1988. The major shareholders of SFE are the Shanghai Academy of Social Sciences and Shanghai Huyin Financial Information Consultation Center. The company has more than 50 staff members consisting of academics, accountants, and economists. It has several functional departments including the Credit Rating Department, the Securities Rating Department, and the Project Assessment Department, etc. SFE obtained permission from the PBOC to rate domestic corporate bonds in 1997. In addition, the Shanghai Branch of the PBOC has granted SFE the qualification to rate enterprises that apply for bank loans by issuing loan certificates to them (these are known as "bank loan certificate ratings"). As of July 2004, it had rated 1,104 enterprises that issue long-term or short-term bonds, and has issued approximately 2,000 loan certificate ratings. The Xinhua Financial Network of Xinhua Finance in Hong Kong and SFE formed a strategic alliance called "XFN-Far East China Credit Rating" (XFN-Far East) to conduct credit rating analyses in 2002. They assign issuer ratings to listed companies in China and Hong Kong based on publicly available information. Similar to S&P's, they label these unsolicited ratings as "PI" ratings (SFE, 2004). In December 2003 SFE became the first Chinese member of the Association of Credit Rating Agencies in Asia⁶ (ACRAA) (XFN, 2004).

4.2. Xinhua Financial Network (XFN) of Xinhua Finance

Xinhua Finance was incorporated in November 1999 and is headquartered in Hong Kong. Its worldwide offices with more than 280 employees, are located in major cities such as Beijing, Tokyo, New York, Chicago, and London. Xinhua Finance provides financial services through its 12 international offices and 19 regional news bureaus around the globe. Through its four core divisions—indices, financial news, ratings, and investor relations—it aims to become an internationally recognized source of information and data on the Chinese markets. To provide China's financial information for institutional investors, and to transmit financial data

to the rest of the world in a manner that is similar to Bloomberg in the West, the Xinhua Financial Network (XFN) was founded in 2000 (The Economist, 2003; and Flannery 2004). The Xinhua News Agency (Xinhua), the official news agency in China, owns 20% of XFN (Flannery, 2004). As mentioned above, XFN joined with SFE to form XFN-Far East, which gives issuer credit ratings to listed companies. As of May 2004, XFN-Far East had rated more than 170 Chinese companies listed on the Shanghai Stock Exchange and the Shenzhen Stock Exchange in China, the Stock Exchange of Hong Kong, the New York Stock Exchange, and the Singapore Stock Exchange, etc. Xinhua-Far East strives to adopt international rating standards to assign issuer ratings based on its unique knowledge of the Chinese market (XFN, 2004).

4.3. China Chengxin Credit Management Co., Ltd. (CCX) and China Chengxin International Credit Rating Co., Ltd. (CCXI)

Both China Chengxin Credit Management Co., Ltd. and China Chengxin International Credit Rating Co., Ltd. (CCXI) are based in Beijing. China Chengxin Securities Rating Co., Ltd. was established on October 8, 1992 and was approved by the PBOC to conduct businesses in credit rating, investment advisory, and information services. It was renamed as China Chengxin Credit Management Co., Ltd. (CCX) in 2002. In the credit rating business, CCX issues ratings on loan certificates, financial institutions, corporate bonds, and investment funds, etc. (CCX, 2004).

To improve its existing rating technique and adopt the latest international rating methodology, CCX set up CCXI, the first Sino-foreign credit rating agency, with Fitch on August 24, 1999 with the approval of the PBOC and the Ministry of Foreign Trade and Economic Corporation (CCXI, 2004). However, on July 19, 2004, Fitch announced that it had divested its 30% interest in CCXI to align with its global strategy of securing majority control over its overseas subsidiaries. Fitch's Beijing Representative Office is now responsible for its rating activities in China (Fitch, 2004).

4.4. Dagong Global Credit Rating Co., Ltd. (Dagong)

Dagong Global Credit Rating Co., Ltd. was initiated in 1989 and registered in Beijing in 1994 with the State Administration of Industry and Commerce under the approval of China State Economic and Trade Commission and the PBOC (Dagong, 2004; and Moody's, 1999). It has branches in major cities in China including Shanghai, Shenzhen, Xian, and Jilin. In addition to offering information and consulting services to various industries, Dagong is one of the major providers of credit ratings on corporate bonds, convertible bonds, insurance companies, and asset-backed securities, etc (Dagong, 2004). In anticipation of the emerging debt market in China, Moody's signed a co-operative agreement with Dagong on July 30, 1999 to meet the growing demand for education and training in credit analysis (Moody's, 1999; and Xinhua, 1999). Dagong expected that the co-operation would help to bridge the gap in rating standards between China and other countries. Two phases of co-operation were planned in the agreement (Xinhua, 1999). First, Dagong and Moody's would jointly develop a rating system customized for China's domestic capital markets. Moody's would provide Dagong with technical assistance in credit analysis, credit research, and credit training, but it would not be engaged in the rating of any specific project with Dagong (Moody's, 1999; and

Xinhua, 1999). Second, the companies would form a joint venture when their co-operation became more mature (Moody's, 1999; and Xinhua, 1999).

4.5. China Lianhe Credit Rating Co., Ltd. (Lianhe)

In 1997, China Lianhe Credit Rating Co., Ltd (Lianhe) obtained approval from the PBOC to rate domestic corporate bonds. Lianhe is based in Beijing and has branches across the country. It has more than 100 credit analysts and academics from Beijing University working on credit research and analysis. Lianhe is also accredited by the NDRC and the CIRC to rate corporate bonds. It has significant market shares of the corporate bond and convertible bond markets (Lianhe, 2004).

5. COMPARISON OF RATINGS

Local rating agencies in China have been criticized for not being completely independent (China Daily, 2001). Kennedy (2003) casts doubt on the competence and objectivity of analyses of these domestic agencies. His concerns are whether domestic agencies are under pressure from issuers (and potentially the issuers' government supporters) to issue higher ratings than are deserved, and whether these agencies have given out AAA ratings indiscriminately because they are desperate for business.

This section compares the local and international rating agencies. Table 2 shows their rating scales for long-term issuer ratings. Table 3 presents the comparison of long-term issuer ratings on a sample of Chinese banks and listed companies assigned by two local credit agencies (CCXI and Xinhua-Far East), and the three major international credit agencies (S&P's, Moody's, and Fitch).

The 14 banks and five listed companies are used because they were rated by both local and international rating agencies. As previously mentioned, Chinese issuers do not need international credit ratings unless they want to raise capital from international capital markets or to cross-list on a foreign stock exchange. For example, two of the listed companies in Table 3, China Petroleum & Chemical Corp. and Huaneng Power International Inc., sought

Table 2. Long-Term Issuer Ratings

Rating Agency	Highest Grade								Lowest Grade
Standard & Poor's	AAA	AA	A	BBB	BB	B	CCC	CC	SD, D
Moody's	Aaa	Aa	A	Baa	Ba	B	Caa	Ca	C
Fitch	AAA	AA	A	BBB	BB	B	CCC	CC, C	DDD, DD, D
Xinhua-Far East	AAA	AA	A	BBB	BB	B	CCC	CC	C
CCXI	AAA	AA	A	BBB	BB	B	CCC	CC, C	D

Sources:

China Chengxin International Credit Rating Co., Ltd. (CCXI), retrieved from <http://www.ccxi.com.cn/pdf/ccxi/2004bank.pdf>, July 31, 2004.

Fitch Ratings Ltd. (Fitch), International Long-Term Credit Ratings, retrieved from http://www.fitchratings.com/corporate/fitchResources.fjm?detail=1&rd_file=ltr, July 31, 2004.

Moody's Investors Service (Moody's), Moody's Rating Symbols & Definitions, retrieved from http://www.moody's.com/moodys/cust/displaySummary.asp?busLineId=800000000084&document_id=2002000000426899, July 31, 2004.

Standard and Poor's Ratings Services (S&P's), S&P Long-Term Issuer Credit Ratings Definitions, retrieved from http://www2.standardandpoors.com/NASApp/cs/ContentServer?pagename=sp/sp_article/ArticleTemplate&c=sp_article&cid=1021558138770, July 31, 2004.

Xinhua Far East China Ratings (Xinhua-Far East), retrieved from http://www.xfjm.com/dl/Rating_Methodology.pdf, July 31, 2004.

Table 3. Long-Term Issuer Ratings of Chinese Banks and Listed Companies

Issuer	Industry	Local Rating	Standard & Poor's Rating		Moody's Rating	Fitch Rating
			Rating	Currency		
<i>Banks</i>		<i>By CCXI</i>				
1. Agricultural Bank of China	Banks	AAA	BB(pi)	Local	A2	-
2. Bank of China	Banks	AAA	BBB-	Foreign	A2	BBB+
3. Bank of Communications	Banks	AA	BB	Foreign	Baa2	-
4. China Construction Bank	Banks	AAA	BBB-	Foreign	A2	-
5. China Development Bank	Banks	AAA	BBB+	Local/Foreign	A2	A-
6. China Everbright Bank Co. Ltd.	Banks	BBB+	B(pi)	Local	Ba1	-
7. China Merchants Bank Co. Ltd.	Banks	AA	BB(pi)	Local	Ba1	-
8. China Minsheng Banking Corp. Ltd.	Banks	A+	B(pi)	Local	-	-
9. CITIC Industrial Bank	Banks	A	-	-	Baa3	-
10. Guangdong Development Bank Co. Ltd.	Banks	BB+	CCC(pi)	Local	B1	-
11. Hua Xia Bank Co. Ltd.	Banks	A-	B(pi)	Local	-	-
12. Industrial & Commercial Bank of China	Banks	AAA	BB+	Foreign	A2	BBB+
13. Shanghai Pudong Development Bank Co. Ltd.	Banks	AA-	BB(pi)	Local	Ba1	-
14. Shenzhen Development Bank Co. Ltd.	Banks	BBB+	B(pi)	Local	Ba3	-
<i>Listed companies of various industries</i>		<i>By Xinhua-Far East</i>				
15. Baoshan Iron & Steel Co. Ltd. ^{viii}	Material	AA-(pi)	BBB	Foreign	-	-
16. China Mobile (HK) Ltd. ^{ix}	Telecommunications	AA+(pi)	BBB+	Local/Foreign	A3	A-
17. China Petroleum & Chemical Corp. ^c	Energy	AA+(pi)	BBB	Foreign	-	-
18. CNOOC Ltd. ^b	Energy	AAA(pi)	BBB+	Local/Foreign	A2	BBB+
19. Huaneng Power International Inc. ^d	Utilities	AAA(pi)	BBB+	Local/Foreign	-	BBB+

Sources:

China Chengxin International Credit Rating Co., Ltd. (CCXI), retrieved from <http://www.ccx.com.cn/pdf/ccxi/2004bank.pdf>, July 31, 2004.Fitch Ratings Ltd. (Fitch), retrieved from <http://www.fitchratings.com/>, July 31, 2004.Moody's Investors Service (Moody's), retrieved from <http://www.moody.com/cust/default.asp>, July 31, 2004.Standard and Poor's Ratings Services (S&P's), retrieved from <http://www2.standardandpoors.com>, July 31, 2004.Xinhua Far East China Ratings (Xinhua-Far East), retrieved from http://www.xfm.com/dl/Ratings_Results.pdf, July 31, 2004.

credit ratings from S&P's because they cross-list on the NYSE, LSE and/or SEHK in addition to listing on the Shanghai Stock Exchange. Interestingly, both of them receive just the cutoff point of investment-grade ratings, that is, BBB and BBB+ ratings from S&P's and Fitch. In contrast, Xinhua-Far East gives these listed companies their top ratings of AA+ and AAA. Table 2 indicates the scales of long-term issuer ratings of both local and international rating agencies, and they are very similar. The notations used by Xinhua-Far East and CCXI are almost the same as those used by S&P's and Fitch.

Referring to Figure 1, which is based on EIU (2003), the PBOC and the newly established CBRC are the dual regulators of China's banking industry. Under the administration and regulation of the PBOC and the CBRC, there are three policy banks, four state-owned commercial banks (the Big Four), ten smaller second-tier commercial banks, one privately owned bank⁷, more than 70 foreign and joint-venture banks, and various investment banks (EIU, 2003).

Referring to Table 3, CCXI gave its top rating "AAA" to the China Development Bank (one of three policy banks) and the Big Four: the Agriculture Bank of China, the Bank of China, the China Construction Bank, and the Industrial and Commercial Bank of China. In contrast, S&P's assigned BBB and speculative-grade ratings to these five banks, and Moody's offered A2 ratings. Fitch gave A- and BBB+ to the policy bank and two of the Big Four banks, respectively. The Guangdong Development Bank Co. Ltd. is the only bank that received a speculative-grade rating from the local rating agency. All of the other banks in the sample obtained investment-grade ratings from CCXI. In contrast, excluding the policy bank and the Big Four, the rest of the banks obtained speculative-grade ratings from S&P's, and Baa or below ratings from Moody's. In sum, the local ratings on the sample issuers appear to be significantly higher than the international ratings even though the rating scales of the local and international agencies are similar.

6. SIGNIFICANT ISSUES

Based on the review and discussions in the previous sections, the problems with credit ratings in China that are discussed next are the main reasons why both domestic investors and international analysts give little weight to the credit ratings assigned by China's credit rating agencies. In addition, the regulatory environment can be more supportive and provides more coordination and standardization of regulations among regulatory bodies. These significant issues are elaborated and discussed below.

6.1. Credibility, Objectivity and Independence

Credit agencies in China have been criticized for not being completely independent and not being able to establish their own credibility (China Daily, 2001; and Harrison, 2003). Some analysts and institutional investors cast doubt on the credibility and objectivity of rating work in China and they give little credence to the credit ratings given by domestic rating agencies (Harrison, 2003; Kennedy, 2003; and Baglole, 2004). S&P's (2003) states that, *"although there are over a dozen local credit rating agencies with the number constantly increasing, none of them has been able to establish a recognized domestic benchmarking standard"*.

6.2. Indicator of Default Risk

Individual investors in China may be confused with the concept of credit spread because they have difficulties in relating default risk, credit spread, and credit ratings. For instance, examining the domestic corporate bond issues from January 2001 to August 2003, Kennedy (2003) demonstrates that the credit spreads of AAA bonds with similar maturities vary widely, and that the credit spreads of long-term bonds are not significantly higher than those of short-term bonds. It appears that China's credit ratings do not accurately represent the level of default risk of bonds for setting interest rates or prices, and are unable to lessen the information asymmetry between bond investors and issuers.

6.3. Supportive Regulatory Environment

The regulatory environment for the bond and credit rating markets can be more encouraging and supportive. For example, regardless of the level of default risk, there is a ceiling imposed by the State Council on the interest rate of a corporate bond: that is, it cannot be more than forty percent above the savings deposit rate for the same maturity (Harrison, 2003; and Hong Kong Securities, 2004). In addition, to prevent from possible repayment defaults, China has been very cautious in developing its bond market. In fact, the financial authorities have imposed strict annual quotas on corporate bond issues (China Daily, 1998b). In the past few years, the Chinese government has approved very few bond issue applications, mainly from large, state-owned enterprises (Kennedy, 2003). Fewer corporate bond issues imply the need for fewer bond ratings. Imposing a strict quota on annual bond issues indirectly jeopardizes the growth of the credit rating industry.

6.4. Coordination and Standardization of Regulations Among Regulatory Bodies

The coordination and standardization of regulations among regulatory bodies under the State Council can be improved. For example, the PBOC, CSRC, CIRC, and CBRC have separate lists of approved credit rating agencies and their own criteria for accrediting those agencies. Although the names of the agencies on their lists overlap, there is no single list of nationally-recognized credit rating agencies across all regulatory bodies. In addition, insiders like the Chief Executive Officer of China Chengxin International Credit Rating Co., Ltd. frankly point out the key problems in the rating industry in China—“*the rating system is not standardized, the business scope is narrow, the law is outdated, the information is not available and the results of credit ratings are not fully used*” (China Daily, 2001).

7. CONCLUSIONS

Like the bond market in China, China's credit rating industry is still in its formative stage and has many challenges and obstacles to overcome. None of the local credit rating agencies have been able to establish their own domestic and international credibility. The top three global credit rating agencies, S&P's, Moody's and Fitch, have already approached the nascent credit rating industry in their own ways. However, to date, domestic bonds in China do not require international credit ratings, and regulatory bodies officially recognize no foreign ratings. This study also indicates that local ratings on the sample issuers appear to be higher than the international ratings, even though the rating scales of the two groups are similar.

Fewer government constraints on the bond market and the rating industry would be helpful because the current ones may hamper growth and development. For example, the firm interest rate ceiling and strict annual bond quota may not be necessary. The regulatory bodies should provide more independence, encourage more objectivity, and promote the importance of credibility to the local rating agencies. The government should provide a more enabling and supportive regulatory framework instead of having more independent regulatory bodies or separate sets of rules. More coordination among the regulatory bodies under the State Council and more standardization of regulations on the rating industry are needed. For example, a common list of nationally-recognized credit rating agencies and a set of standardized accreditation criteria should be used by all regulatory bodies under the State Council. They should also be announced and available to the public. In addition, to

promote healthy competition and improve the quality of credit ratings, well-qualified and experienced foreign credit rating agencies should not be excluded from the common list.

The government statistics should be readily available to rating agencies and the issuers should be more transparent, especially for unsolicited ratings, because they rely heavily on publicly available information and financial reports. After all, reliability of the underlying data is very important. Different from most developed bond markets, individual investors rather than institutional investors dominate the investor base in China. A credit culture should be cultivated among these less sophisticated investors. In addition, the government should facilitate the establishment of a larger and more diversified institutional-investor base in using bond ratings from approved rating agencies. For example, fund managers, insurance companies, and non-bank financial institutions should be required to invest in only highly rated bonds, provided that the ratings are credible and there is no rating inflation.

In conclusion, to develop a well-functioning bond market in China, it will be critical to have a well-developed, independent, and credible rating industry which will lessen the information asymmetry between bond issuers and investors, and facilitate setting bond prices and interest rates.

ENDNOTES

1. The currency used in China is called "Renminbi" or RMB in short. The exchange rate as at September 27, 2004 of RMB8.28/USD is used throughout this paper.
2. Although the regulation did not say that enterprises "must" obtain credit ratings, the underlying intention was to make having a credit rating compulsory for bond issuers (Kennedy, 2004).
3. The original list of PBOC-approved credit rating agencies is in Chinese and is available from the author upon request.
4. S&P's rating with a "pi" subscript is based on publicly available information about the issuer. It relies upon less comprehensive information than do solicited interactive ratings and does not indicate in-depth meetings with an issuer's management (S&P's, 2004).
5. Chinese companies are not required to adopt international accounting standards unless they are listed as "B" shares on the Shanghai and Shenzhen Stock Exchanges, which are mainly for foreign investors to purchase, or on overseas stock exchanges, such as listing as "H" shares on the Stock Exchange of Hong Kong, Ltd. or "N" shares on the New York Stock Exchange.
6. The Association of Credit Rating Agencies in Asia (ACRAA) was established in September 2001 with the support of the Asian Development Bank (ADB), and attempts to promote the harmonization of rating standards and practices in Asia (ADBI, 2004; and XFN, 2004).
7. According to the EIU (2003), China Minsheng Bank is the only private bank in China. It was established in 1995 and is mainly owned by New Hope Corp., China's largest privately owned conglomerate.
- viii. Listed on the Shanghai Stock Exchange as A share in China.
- ix. Listed on the Stock Exchange of Hong Kong Limited in Hong Kong, and the New York Stock Exchange in the United States.
 - c. Listed on the Shanghai Stock Exchange as A share in China, the Stock Exchange of Hong Kong Limited in Hong Kong, the New York Stock Exchange in the United States, and the London Stock Exchange in the United Kingdom.
 - d. Listed on the Shanghai Stock Exchange as A share in China, the Stock Exchange of Hong Kong Limited in Hong Kong, and the New York Stock Exchange in the United States.
- (pi). unsolicited ratings mainly based on public information. All ratings are as at July 31, 2004.

REFERENCES

- Asian Development Bank Institute (ADBI), Role of credit agencies in development, *ADBI e-newsline*, June 9, 2004. [Online] Available: <http://www.adbi.org/e-newsline/040609.html>.
- Baglolle, J., Chinese Credit Ratings: A Huge Leap of Faith, *Far Eastern Economic Review*, January 8, 2004, 39–42.
- ChinaBond.com.cn (ChinaBond), retrieved from <http://www.chinabond.com.cn/chinabond/zqzs/index.jsp>, July 7, 2004 (in Chinese).

- China Chengxin Credit Management Co., Ltd. (CCX), retrieved from <http://www.ccx.com.cn>, July 6, 2004.
- China Chengxin International Credit Rating Co., Ltd. (CCXI), retrieved from <http://www.ccx.com.cn>, July 6, 2004.
- China Daily, China—Nation's First Credit Rating JV Established, September 14, 1998a. [Online] Available: <http://www.lexisnexis.com/universe>.
- China Daily, China—Rating Agencies Expect Boost from Expanded Bond Market, September 21, 1998b. [Online] Available: <http://www.lexisnexis.com/universe>.
- China Daily, Credit Rating System Growing, November 3, 2001. [Online] Available: <http://www.lexisnexis.com/universe>.
- China Lianhe Credit Rating Co., Ltd. (Lianhe), retrieved from <http://www.lianheratings.com.cn>, July 6, 2004 (in Chinese).
- Dagong Global Credit Rating Co., Ltd. (Dagong), retrieved from <http://www.dagongcredit.com> and <http://218.30.101.58/dagong/english>, July 6, 2004.
- Economist Intelligence Unit, The Economist (EIU), China's Financial System 2003–4, *China Hand*, 2003.
- Fitch Ratings Ltd. (Fitch), Fitch Ratings Announces Divestment of China Chengxin International Credit Rating Co., *Press Release (Latest CDO/CDx Headlines)*, July 19, 2004.
- Flannery, R., Xinhua Shares the Wealth, *Forbes Magazine*, February 9, 2004, 21. [Online] Available: <http://www.forbes.com/global>.
- Harrison, M., *Asia-Pacific Securities Markets*, Fourth Edition, 2003, Sweet & Maxwell Asia, 237–280.
- Hong Kong Securities, China Focus: Hot Bonds, *Evolution of the Hong Kong Bond Market*, May/June 2004, 24–27.
- Kennedy, S., China's Credit Rating Agencies Struggle for Relevance. *The China Business Review*, November–December 2003, 36–40.
- Kennedy, S., China's Languishing Credit-Rating Industry: Canary in the Mine? Presented at the 56th Annual Meeting of the Association for Asian Studies, San Diego, California, March 4–7, 2004.
- Lunsford, P., Credit Ratings in China Can Be Mere Guesswork, *CollectionIndustry.com*, January 9, 2004. [Online] Available: http://www.hkccma.com/forum_creditingguess.htm.
- Moody's Corporation (Moody's), Moody's and Dagong Credit Rating, China, Form Cooperative Agreement, *Shareholder Relations—News Release*, July 30, 1999.
- People's Bank of China (PBOC), Announcement of PBOC-Approved Credit Rating Agencies of Corporate Bonds, December 16, 1997, retrieved from *China InfoBank Database*, June 29, 2004 (in Chinese).
- PR Newswire, Xinhua Financial Network Announces an Equity Investment in Shanghai Far East Credit Rating Co., Ltd., June 25, 2003. [Online] Available: <http://www.lexisnexis.com/universe>.
- Shanghai Far East Credit Rating Co., Ltd. (SFE), retrieved from <http://www.fareast-cr.com>, July 6, 2004.
- SinoCast China Business Daily News (SinoCast), Moody Settles down in Beijing, April 9, 2003, 1, retrieved from *ProQuest On-line Database*, October 16, 2003.
- Standard and Poor's Ratings Services (S&P's), Corporate Governance in China, *Country Governance Study*, November 2003.
- Standard and Poor's Ratings Services (S&P's), S&P Long-Term Issuer Credit Ratings Definitions, retrieved from http://www2.standardandpoors.com/NASApp/cs/ContentServer?pagename=sp/sp_article/ArticleTemplate&c=sp_article&cid=1021558138770, July 31, 2004.
- State Council in China (State Council), Regulations on the Management of Corporate Bonds, August 2, 1993, retrieved from *China InfoBank Database*, July 7, 2003 (in Chinese).
- The Economist, Bush Telegraph, May 24, 2003, 69–70.
- Xinhua News Agency (Xinhua), Moody's Signs Co-operative Agreement with Chinese Rating Agency, July 30, 1999. [Online] Available: <http://www.lexisnexis.com/universe>.
- Xinhua News Agency (Xinhua), Banking Expert on Problems with Treasury Bond Mark, September 11, 2003. [Online] Available: <http://www.lexisnexis.com/universe>.
- Xinhua Finance Network (XFN), retrieved from <http://www.xfn.com>, July 6, 2004.

14. FINANCE AND DEVELOPMENT: GRANGER-CAUSALITY TESTS FOR PREWAR AND POSTWAR U.S.A., U.K., AND JAPAN

MASANORI AMANO

1. INTRODUCTION

In every country, the pursuit of determinants of growth and development has been at the center of interests of policymakers and research workers. However, the empirical search for the determinants of growth had been surprisingly few until the earlier work of Kormendi and Meguire (1986) and Barro (1991) appeared. Their work and many succeeding ones try to regress per capita income or its growth rate on monetary and fiscal conditions, investment, and the stock of human capital, etc., of the countries in question to get close correlations between them. Hence the name of *growth regressions* is used.¹ In fact, after those two or three studies were brought to the attention of economists, many papers along similar lines mushroomed rapidly. One school of those growth regressions mentions various economic and institutional factors that explain and 'cause' growth and development, not specifically limiting themselves to the financial and monetary variables. Another school of growth regressions focuses on financial variables as regressors, and considers if the growth of per capita output was caused by the development of financial institutions (FIs) or the causal chain is the other way around. The former causal direction is what their results suggest and conforms to the prediction of seminal work of Gurley and Shaw (1955, 1960). They argue that the development of FIs increases saving flow by more diverse offering of saving instruments by FIs, raise investment volumes with enriched menus of loan packages and with risk reduction through the economy of scale and risk-pooling, and also enhances the quality of investment by specialized screening techniques of the FIs. In other words, the development of FIs precedes and helps the development of the real side of the economies through those channels. I call this causal and time ordering the 'Gurley-Shaw (GS) hypothesis', although

this terminology is not an established one. The previously mentioned studies use regression analysis.

There is another group that deals with the finance–development relationship, using time series analysis, particularly the Granger-causality concept. The work in this group is generally thought to better suit the examination of causality but, in contrast to the regression analysis dealing with finance–development nexus, the direction of causation they derived is not clear-cut. In other words, time series analysts differ in their results concerning whether the GS hypothesis holds or not.

In this chapter, I first survey the existing work that uses single-equation regression to deal with the determinants of growth and development of many countries in general (group one), and then the work which uses time series analysis, focusing on the existence and directions of causality between financial development and the development of economic activity (group two).

The next section, Section 2, is a survey of the work belonging to group one and group two according to the criterion described above. Section 3 is our own analysis using the concept of Granger-causality that will examine if the GS hypothesis holds in the prewar and postwar development processes of the U.S.A., U.K., and Japan. Section 4 contains a summary and further remarks, which is followed by descriptions of the data that are used in this chapter.²

2. REGRESSION ANALYSIS OF GROWTH AND DEVELOPMENT

The concept and phenomenon of growth and development has occupied keen interests of many economists of the past (Reynolds 1977; Adelman 1974). In this section I review the empirical work of growth and development, putting aside the historical approach that uses growth accounting (Denison 1967; Abramovitz 1979). I classified the papers to be reviewed into group one and group two. The former consists of the traditional (single-equation) regression analysis, and includes (a) what is called ‘growth regression,’ whose explanatory variables, monetary as well as non-monetary, range widely, and (b) the analysis that focuses on the finance–growth nexus and the direction of causation between finance and growth. Group two is time series analysis, which, limiting the relevant variables to a small number, is mainly concerned with causal relationships between financial and economic development (or growth), using Granger-causality.

2.1. Cross-Country Growth Regression (Group One)

Kormendi and Meguire (1986) is the earlier paper of growth regression (see also Wallich 1969). It is a wonder that in the postwar period the empirical work dealing with growth and development had not been abundant until the mid-eighties, compared to its sophisticated mathematical counterparts.

Kormendi and Meguire (1986) relate the growth rates of their sample countries (an average rate for each country) to variables such as initial per capita income, the population growth rate, variability of output growth, money supply growth and its variability, the growth of government spending and of exports, and the rate of inflation. Their two results that conform to theory and recent experiences are that higher variability of money supply reduces growth and that higher investment–output ratio enhances the growth rate. Revine and Renelt (1992) offer rather surprising observations, which are backed up by their careful empirical work, that the partial correlations between the growth and investment–output ratio and between growth

and exports-output ratio are robust, independent of other explanatory variables, while the relationships between growth, on the one hand, and monetary variability and fiscal/monetary policy variables, on the other, are not so; they also note that, generally, growth regression is not so robust as to be useful for policymaking.

Barro (1991) too is regarded as an earlier seminal work. He showed, for the period 1960–1985 and for 98 countries, that the following variables help raise the growth of per capita income: higher initial human capital, the lower initial level of per capita income (Gerschenkron 1962), lower government spending-output ratio, higher political stability, and smaller market distortions. In more recent work, Barro (1997) shows higher inflation tends to lower growth, but an economy with more democratic society and/or more independent central banking is likely to achieve higher growth.

Fischer (1991 1993) is based on the similar framework to the above papers, using data from 32 developing countries for around 1960 through 1990. He derives the conclusions, among others, that the following conditions make for higher economic growth: stable macroeconomic environments, suitable economic policy, a low rate of inflation and a small budget deficit (both through higher capital accumulation and productivity growth), and also a small foreign exchange markets distortion (measured by high black market exchange premiums, through its adverse effect on capital formation).

As was noted earlier, group one (growth regression) includes a subgroup that is concerned with whether economic development, typically measured by higher per capita income or its higher growth, was correlated with preceding financial development. Pagano (1993) and Levine (1997) provide useful surveys of this topic, Pagano concisely, while Levine extensively. They develop their analytical background along the line of Gurley and Shaw (1955, 1960) which is summarized in Section 1 of this chapter. FIs (financial institutions) can raise the quantity and quality of financial flows of the economy through their specialized roles in capital markets and risk pooling.

The earliest regression analyses on this line are King and Levine (1993a, 1993b). They showed the financial development, as measured, e.g., by bank lending and deposits, was in fact correlated with growth and development, as indexed, e.g., by per capita income growth and technical progress. Presumably because of a criticism of Mankiw's (1995) review on growth regression, which implies that regression analysis after all cannot claim that statistically significant explanatory variables are causal factors of the explained (left-hand) variable, the subsequent work came to put more efforts in showing the causal nature of regressions. These efforts include Rajan and Jingales (1998), Levine, Loayza, and Beck (2000), and Beck, Levine, and Loayza (2000). To establish that financial development caused higher economic growth and not the other way round, the first paper tries to exclude the possibilities of reverse causality. The second paper employs the recently developed dynamic panel regression in addition to more conventional cross-section instrumental variable techniques. The third paper uses the same method as the second and exhibits the role of financial development not only in causing higher per capita income but also in encouraging higher total productivity growth. Benhabib and Spiegel (2000) went on, using similar methods to the last two papers, to show that financial development leads to higher human capital accumulation. In view of those papers, therefore, time series analysis, which would be more appropriate to extract causal relationships, will have its own role in examining the causality between financial development and the growth of total factor productivity (and also human capital accumulation).

Levine and Zervos (1998) counters the criticisms that are often raised against the work on the finance–development nexus, which implies that most of the work picks up indirect finance, neglecting direct financial routes such as those through bond and equity markets, by counting in financial flows via direct routes. However, if all the financial routes are included, the finance–development nexus would be almost self-evident (more financial flow leads to more rapid development and capital formation). Rather, it will be analytically more convenient and reasonable to limit oneself to indirect financial routes, particularly for the economies in a developing (emerging) stage, because in those economies, direct finance is in a primitive stage and indirect routes are dominant compared to other routes (Patrick 1966).

In stark contrast to the papers reviewed above, Atje and Jovanovic (1993), using analytical frameworks of Greenwood and Jovanovic (1993) and Mankiw, Romer, and Weil (1992), and based on the OLS, show that stock market development, but not banking development, is significantly related to the per capita income level and its growth rate. This result is surprising and at variance with the vast literature on the finance–development nexus. Their empirical results seem worth taking note but may have something to do with the rather weak robustness property of growth regression in general (Levine and Renelt 1992).

My viewpoint of growth regression is that it is not a strong guide for detecting the causality from one of indexes of financial development to one of indexes measuring economic development, even after controlling for the multiplicity of distinctness of the economies in question. To end this section I would like to cite the following sentences from Mankiw's (1995) extensive review on growth regressions:

'Policymakers who want to promote growth would not go far wrong ignoring most of the vast literature reporting growth regressions (p. 308): 'Relying on estimates from cross-country regressions (· · ·) will likely lead to haphazard policy, which is surely worse than no policy at all (p. 309).'

2.2. Finance and Development: Views from Time Series Analysis

This section deals with the work using time series analysis (TSA), particularly Granger-causality, for detecting causal connections between financial development and higher income (or higher growth). 'Granger-causality' seems to be too specific (narrow) to call it TSA, but actually it is almost all that has been used for analyzing causality within TSA.

Jung (1986) is probably the first paper (at least one of the first ones) of the field. He chooses 56 countries of which 19 are developed countries, and uses M1 money multipliers (M1/base money) and the Marshallian k_2 (M2/nominal GDP) as financial development indicators. The economic development indicators are per capita real GDP or its growth rate. Conducting the Granger-causality tests, which are a variant of the F test, he shows that the case in which financial development causally leads economic development is more often than the other way round, and, as a result, the GS hypothesis is moderately supported. Patrick (1966) calls the above first causal order 'the supply-leading pattern,' while the second causal order (i.e. the reverse order) 'the demand-leading pattern.'³ Patrick suggests that in the early stage of development, 'the supply-leading pattern typically prevails, while in the later stage, 'the demand-leading pattern' is dominant. Jung calls Patrick's observation 'Patrick's hypothesis,' and maintains that his Granger-causality tests suggest Patrick's hypothesis holds in a mild form. His tests for Patrick's hypothesis consist of showing that, in developing countries, the supply-leading pattern is observed more often, while in developed countries,

the opposite pattern is observed in more times; in other words, his tests are not conducted for two periods of the same countries. Hence his conclusion, which is actually based on weak evidence, should be viewed with some reservation. In the next section I will test for Patrick's hypothesis as well as the GS hypothesis for two periods of the same length in the economic development of the U.S.A., U.K., and Japan.

Wachtel and Rousseau (1995) and Rousseau and Wachtel (1998) stand out among similar work in showing that the GS hypothesis holds with statistically significant manner. The former deals with longer time periods (about 80 years vs. 60 years) while the latter covers more countries (the former includes the U.S., U.K., and Canada; the latter adds Norway and Sweden). In both papers they showed in terms of Granger causality that the GS hypothesis is relevant, and rejected the opposite causal order which was supported by J. Robinson (1952) and Lucas (1988) (the 'Robinson-Lucas hypothesis'). One reason for them to have been able to show the hypothesis in a definite way may be that they classify the financial institutions finely, such as commercial banks, deposit banks, insurance companies, credit cooperatives, pension funds, etc., and then compile asset values for each or the subset of the above classification to use as financial development indicators.

Demetriades and Hussein (1996) and Neusser and Kugler (1998) share a common feature that both papers show that the GS hypothesis does not hold in a clear way. The former uses growth rates of financial and development indexes, as Rousseau and Wachtel (1998) do. Generally, taking growth rates leads to some loss of information possessed by level variables (Hafer and Kutan 1997). However, this procedure would not be the reason for the ambiguity of their results (cf. Roussau and Wachtel 1998). It might be due to their small sample size (38 years on average) or the data quality. In any case, it will be an intriguing subject for further inquiry. Neusser and Kugler (1998) choose OECD 13 countries for 1960 through 1990. Their financial development index is FIs' GDP (value added), while the economic development index is manufacturing industry's GDP or total factor productivity.

Both papers (one by Demetriades *et al.* and another by Neusser *et al.*) make a sharp contrast to Rousseau and Wachtel's because the former's Granger causality tests show, depending on the countries, either the GS hypothesis holds or the Robinson-Lucas hypothesis holds, or the causation is bidirectional.

Regarding the different statistical results of the various papers in this group, one can note, among them, differences in the choice of indexes of financial and economic development, choice of countries examined, choice of time periods, and the degrees of (dis)aggregation of FIs. It may be safe at this point to note that, as far as TSA (Granger-causality) is concerned, the challenge has just been started and, therefore, only a small part of facts has been brought to light so far. In view of the majority of opinions that TSA is a more suitable tool for examining causality, one may have to be content to confirm the need for further efforts to make appropriate choices concerning the items mentioned above.

In the next section, I apply Granger-causality tests for two periods before and after World War II of the U.S.A., U.K., and Japan to see if the GS hypothesis holds, hence if Patrick's hypothesis holds for the two periods as a whole.

3. FINANCE AND DEVELOPMENT: CAUSALITY IN THE U.S.A., U.K., AND JAPAN

I choose two periods for each country. Those are 1874–1920 and 1953–1999 for the U.S.A. and U.K., while 1894–1940 and 1954–2000 for Japan. The number of years included is 47

in each period. The choice of periods is a result of a compromise between some historical consideration and data availability. Although the former two countries started ‘modern economic growth’, around 1840 in the U.S.A. and 1775 in the U.K. according to Kuznets (1971), it is only after 1870 that (qualitatively reliable) financial data are available (until now for the author). I also excluded the period 1921–1952 because the normal economic activity was sizably marred by post World War I recession and the Great Depression in the first two countries. For Japan I excluded the war period and postwar reconstruction period, when its economy was taken far off the normal track.⁴

As the financial development indicators, I will use deposits of commercial banks ($bdyi$), claims of commercial banks on private sectors ($bcyi$, excluding the banks’ security holdings, but including bill discountings), the money multiplier for money supply M2 ($n2i = M2/\text{base money of each country}$), and Marshallian $k2$ ($k2i = M2/\text{nominal GDP of each country}$), where the first two variables are divided by nominal GDP to normalize the numerators by market size. Letter i attached to each variable is a country index: $i = a$ for the U.S.A., $i = b$ for the U.K., and $i = j$ for Japan. As an index measuring economic development, I use per capita real GDP, $qpoi$. All variables are the levels and are not growth rates or differences.⁶ The VAR (vector autoregression) system I consider has variables $qpoi$, one of financial development index, and base money/nominal GDP ratio ($bmyi$). The last variable is included to equip the system with the basic monetary trend (force) (see Rousseau and Wachtel 1998; the data used and their sources are described in an appendix). In deriving the optimal lag number of the VAR, the SBIC or the AIC criterion was not useful, because they decrease monotonically as the lag number increases. Hence I use the lag number which is designated by Engle-Granger (tau) cointegration tests.⁵ It turned out to be 3. Also, I omit a constant and a time trend in our three-variable VAR. They are not needed in cointegration tests, and our VAR yields essentially similar results on the causality to the case where a constant and a trend are present. The first equation of our VAR system then is written as

$$qpoi_t = \sum_{k=1}^3 a_k qpoi_{t-k} + \sum_{k=1}^3 b_k xi_{t-k} + \sum_{k=3}^3 c_k bmyi_{t-k} \quad (1)$$

where xi is one of the financial development indexes of country i ($i = a, b, j$). a_k , b_k , and c_k are constants to be estimated.

Before conducting the causality tests, it is in order to examine if the three variables has a cointegrating relationship. It is a long-run equilibrium relationship; only when this relationship obtains in the long-run, have the causality tests their meaning. If the three variables have a cointegrating relation, when one of them is regressed on the other two, the regression residual (i.e. the estimated error term) follows a stationary process (see, e.g., Enders 1995). But before checking it, I describe the Granger-causality test in outline. Applying the OLS to the above equation for a single period in one of the three countries, one derives the unrestricted sum of squared residuals, S_1 . Then, dropping the second term in (1) and applying the OLS again, one obtains the restricted sum of squared residuals S_0 . The F value for this case is

$$F = \frac{(S_0 - S_1)/p}{S_1/(T - m \cdot p)}, \quad (2)$$

where p is the number of equations in the null hypothesis, m is the number of variables in the VAR, and T is the observation number. F in (2) follows the F distribution of degrees of freedom $(p, T - m \cdot p)$, under the null hypothesis $b_1 = b_2 = b_3 = 0$. In our case $p = m = 3$, and $T = 47$. If the null is not rejected, the financial index is judged not to have caused the variation in per capita output.

I first take the financial indicator $xi = bdy$ for the former period of the U.S.A., 1874 through 1920. As for the Engle-Granger cointegration test, I only list the p value for the null hypothesis that the three variables have a cointegrating vector, which in this first case is $p = 0.60$. The p value indicates the probability of committing an error if one rejects the null hypothesis. Hence one can safely judge the three variables have a cointegrating (stable long-run equilibrium) relationship. The two sums of squared residuals are $S_1 = 3167E-4$ and $S_0 = 3823E-4$. Here, one has the $p = m = 3$ and $T - m \cdot p = 38$. Let us note that the critical value of $F(3, 38)$ is 2.86 at the 5% point, and 4.35 at the 1% point. From (2) one obtains $F = 2.62$, which is smaller than the 5% critical level, so that the null cannot be rejected at this level. The p value corresponding to $F = 2.62$ turns out to be $p = 0.06$. It is the probability of committing an error when one rejects the null hypothesis. Hence, in this case the null is quite close to being rejected.

The U.S.'s causality tests for the two periods and for four kinds of financial development indicators are summarized in the upper part of Table 1. Recall that the latter period extends from 1954 to 1970, consisting of 47 years. All the three-variable groups have a cointegrating relationship.

The lower part of Table 1 exhibits the results of reverse causality tests which concern if per capita GDP causes the variation in one of the financial development indexes, with base money-income ratio always present in the list of explanatory variables.

Table 1. Granger-Causality and Cointegration Tests: The U.S.A.

	Former Period (1874–1920)	Latter period (1953–1999)
<i>bdya</i>	2.62 ($p = 0.06$) [$p = 0.60$]	4.03 ($p = 0.01$) [$p = 0.23$]
<i>bcy</i>	3.71 ($p = 0.02$) [$p = 0.84$]	1.09 ($p = 0.36$) [$p = 0.26$]
<i>n2a</i>	1.50 ($p = 0.23$) [$p = 0.80$]	7.41 ($p = 0.00$) [$p = 0.20$]
<i>k2a</i>	1.34 ($p = 0.28$) [$p = 0.70$]	9.04 ($p = 0.00$) [$p = 0.15$]
Reverse Causality (from Development to Finance)		
<i>bdya</i>	0.53 ($p = 0.66$)	0.44 ($p = 0.73$)
<i>bcy</i>	4.33 ($p = 0.01$)	2.72 ($p = 0.06$)
<i>n2a</i>	1.79 ($p = 0.17$)	2.52 ($p = 0.07$)
<i>k2a</i>	2.17 ($p = 0.11$)	0.09 ($p = 0.97$)

Notes: The number in each cell is the F value of the Granger causality test. The numbers in parentheses are the corresponding p values for the null hypothesis $b_1 = b_2 = b_3 = 0$ (i.e. the financial variable does not cause the variation of per capita output). The numbers in square brackets are the p values for the null hypothesis that the VAR, including per capita output, the financial variable and base-income ratio, has a cointegrated relationship.

Table 2. Granger-Causality and Cointegration Tests: The U.K.

	Former period (1874–1920)	Latter Period (1953–1999)
<i>bdyb</i>	2.80 ($p = 0.05$) [$p = 0.97$]	0.55 ($p = 0.65$) [$p = 0.16$]
<i>bcyb</i>	n.a.	2.41 ($p = 0.08$) [$p = 0.17$]
<i>n2b</i>	1.78 ($p = 0.17$) [$p = 0.87$]	1.45 ($p = 0.24$) [$p = 0.23$]
<i>k2b</i>	2.02 ($p = 0.13$) [$p = 0.87$]	2.27 ($p = 0.10$) [$p = 0.27$]
Reverse Causality (from Development to Finance)		
<i>bdyb</i>	0.70 ($p = 0.56$)	2.66 ($p = 0.06$)
<i>bcyb</i>	n.a.	2.16 ($p = 0.11$)
<i>n2b</i>	0.98 ($p = 0.41$)	1.53 ($p = 0.22$)
<i>k2b</i>	0.88 ($p = 0.46$)	2.77 ($p = 0.05$)

Notes: See Table 1. n.a. indicates that the financial data is not available.

Here, the causation runs from financial variables to real economic activity, in the former period moderately, and in the latter period more clearly. The reverse causation is also weakly present but it is weaker than the proper causation. In the U.S.A., therefore, the GS hypothesis can be recognized in both periods, while Patrick's hypothesis cannot be seen to hold.

Table 2 displays the proper causation and reverse causation in the U.K. The two periods are identical with the U.S.A. Here, the data on commercial banks' credit extension to private sectors is not available for the former period. All groups have a cointegrating relationship. In the U.K. the proper causality appears more clearly in the former period than in the latter. Anyway it is not strong in either period. As for the reverse causality, it is quite clear in the latter period. Hence one can recognize that Patrick's hypothesis holds in this country in a moderate manner.

Finally, I turn to the Japanese case, the results of which are summarized in Table 3. All the three-variable groups have a cointegrating relationship. A distinctive feature here is that the contrast between the former and the latter periods: in the former period, all four financial variables do not have causality on the economic activity, while in the latter, three out of four financial variables possess clear-cut causal roles. Also, throughout the two periods, the reverse causation (from real economic activity to financial variables) cannot be seen except one case involving *k2j* in the former period. Regarding Japan, therefore, the GS hypothesis can be seen to hold only in the latter period, and the tests indicate that Patrick's hypothesis has not been relevant.

4. CONCLUDING REMARKS

This chapter has started by reviewing the work on the finance–development nexus, either using single–equation regression analysis or time series analysis (TSA). The former part, after reviewing the existing work, suggested that, as far as the pursuit of causal chains between financial development and development of real activity is concerned, the time series analysis

Table 3. Granger-Causality and Cointegration Tests: Japan

	Former Period (1894–1940)	Latter Period (1954–2000)
<i>bdyj</i>	0.57 ($p = 0.64$) [$p = 0.85$]	5.13 ($p = 0.00$) [$p = 0.52$]
<i>bcyj</i>	0.46 ($p = 0.71$) [$p = 0.80$]	1.73 ($p = 0.18$) [$p = 0.54$]
<i>n2j</i>	0.34 ($p = 0.80$) [$p = 0.86$]	3.78 ($p = 0.02$) [$p = 0.63$]
<i>k2j</i>	0.50 ($p = 0.68$) [$p = 0.95$]	5.40 ($p = 0.00$) [$p = 0.54$]
Reverse Causality (from Development to Finance)		
<i>bdyj</i>	1.98 ($p = 0.13$)	0.85 ($p = 0.48$)
<i>bcyj</i>	1.24 ($p = 0.31$)	0.70 ($p = 0.56$)
<i>n2j</i>	0.12 ($p = 0.95$)	0.63 ($p = 0.60$)
<i>k2j</i>	3.04 ($p = 0.04$)	0.33 ($p = 0.80$)

Note: See Table 1.

(TSA), particularly Granger-causality test, is more in order and promising. Even so, when one looks over the existing work using TSA, one has to face the variegation of their methodology, choice of time periods, degrees of (dis)aggregation of financial and real economic activity.

In concluding this chapter, I summarize my tentative Granger-causality tests for prewar and postwar periods of the U.S.A., U.K., and Japan. In the U.S.A. the Gurley-Shaw (GS) hypothesis (saying the leading role of financial development over real economic development) has been observed throughout the two periods. In the U.K. the GS hypothesis is moderately seen in the former period, while in the latter the reverse causality (Robinson-Lucas hypothesis) is dominant. Hence in this country, Patrick's hypothesis is relevant although in a moderate form. Finally, in Japan only in the latter period was the GS hypothesis seen to hold, but the reverse causality was not observed throughout.

It would be our next interesting and needed tasks to further enrich the contents of TSA as well as to provide economic explanations to the differences in the causal directions for the countries under consideration.

Data Appendix

·The U.S.A.

Nominal GDP and the GDP deflator are derived from R.J.Gordon, *The American Business Cycle: Continuity and Change*, Chicago, University of Chicago Press, 1986. Deposits and claims on private sectors of commercial banks, and the number of domestic population draw on U.S. Department of Commerce, *Historical Statistics of the United States*, 1975, and International Monetary Fund, *International Financial Statistics Yearbooks* (various years). The commercial banks' claims include bill discountings, but do not include security holdings (this qualification applies also to the U.K. and Japan). Money supply M2 and base money draw on R.J. Gordon, *op.cit.*, and IMF, *op.cit.*

·The U.K.

Nominal GDP, M2 (U.K.'s M3), and base money draw on B.R. Mitchell, *British Historical Statistics*, Cambridge University Press, 1988, and IMF, *op.cit.* Deposits and claims on private sectors of commercial banks, and the GDP deflator are derived from F. Capie and A. Webber, *A Monetary History of the United Kingdom, 1870–1982*, Vol. 1, 1985, and IMF, *op.cit.* The number of population is derived from B.R. Mitchell, *op.cit.* and IMF, *op.cit.*

·Japan

Commercial banks' claims on private sectors and deposits, and also the GDP deflator are derived from Japan Statistical Association, *The Historical Statistics of Japan*, Vol. 3, 1988, and the Bank of Japan, *Economic Statistics Annuals*. M2 and base money draw on S. Fujino, *Money Supply in Japan*, Keisoshobo, 1994, and the Bank of Japan, *op.cit.*

Nominal GDP is taken from K. Ohkawa *et al.*, *Long-Term Economic Statistics 1: National Income*, Toyokeizai-shinposha, 1974, and the Economic Planning Agency, *National Income Accounting Annuals*. The population is derived from M. Umemura *et al.*, *Long-Term Economic Statistics 2: Labor Force*, Toyokeizai-shinposha, 1988 and *Toyokeizai Economic Statistics Annuals*, Toyokeizai-shinposha.

ENDNOTES

1. The growth rates are the collection of the average of each country for some interval of years. Each group (vector) of explanatory variables is taken from each of sample countries. See Quah (1993) and Demetriades and Hussein (1996) for more details and some critiques of this procedure.
Along with the work mentioned above, Wallich (1969) can claim to be a pioneer of the field.
2. Section 2 and part of Section 3 are based on and extend my previous discussion in Amano (2004).
3. Patrick (1966) calls the second 'the demand-following pattern.' However, since 'supply leading' and 'demand following' refer to the same situation, the second would better be called 'demand-leading.'
4. Patrick (1984) divides the Japanese financial development into four stages: (i) 1868-ca 1910, (ii) ca 1910–1936, (iii) 1937–1952, and (iv) 1952–the 1970s. Particularly, he underlines the bordering year 1945.
5. In this case (of level variables), one does not need to incorporate the error correction mechanisms (see, e.g., Enders 1995). If I suppose the growth rate of *qpoi* or real GDP as a development index, the financial index would have to be a flow variable, i.e., the growth rate or the difference of the indexes in the text. In any case, when I put the growth of *qpoi* on the left-hand side, and the level on the right, the causality relations vanish in most of the cases.
6. The software package I used in this chapter is TSP, Version 4–5.

REFERENCES

- Abramovitz, M., Rapid Growth Potential and Its Realization: The Experience of Capitalist Economies in the Postwar Period, in Malinvaud, E. (ed.), *Economic Growth and Resources*, Vol. 1, London, Macmillan, 1979.
- Adelman, I., *Theories of Economic Growth and Development*, 2nd ed., Stanford, Stanford University Press, 1974.
- Amano, M., The Gurley–Shaw Hypothesis, Growth Regressions, and Granger–Causality, *Chiba Journal of Economics*, Vol. 19, 2004 (in press).
- Atje, R., Jovanovic, B., Stock Markets and Development, *European Economic Review*, Vol. 37, 1993, 632–640.
- Barro, R.J., Economic Growth in a Cross-Section of Countries, *Quarterly Journal of Economics*, Vol. 106, 1991, 407–443.
- , *Determinants of Economic Growth: A Cross-Country Empirical Study*, Cambridge, Mass., MIT Press, 1997.
- Beck, T., Levine, R., Loayza, N., Finance and Sources of Growth, *Journal of Financial Economics*, Vol. 58, 2000, 261–300.
- Benhabib, J., Spiegel, M.M., The Role of Financial Development in Growth and Investment, *Journal of Economic Growth*, Vol. 5, 2000, 341–360.
- Demetriades, P.O., Hussein, K.A., Does Financial Development Cause Economic Growth? Time Series Evidence from 16 Countries, *Journal of Development Economics*, Vol. 51, 1996, 387–411.

- Denison, E.F., *Why Growth Rates Differ*, Washington, Brookings Institution, 1967.
- Ender, W., *Applied Econometric Time Series*, New York, J. Wiley, 1995.
- Fischer, S., Growth, Macroeconomics, and Development, in Blanchard, O.J., Fischer, S. (eds.), *NBER Macroeconomics Annual 1991*, Cambridge, Mass., Cambridge University Press.
- , The Role of Macroeconomic Factors in Growth, *Journal of Monetary Economics*, Vol. 32, 1993, 485–512.
- Gerschenkron, A., *Economic Backwardness in Historical Perspective*, Cambridge, Mass., Harvard University Press, 1962.
- Greenwood, J., Jovanovic, B., Financial Development, Growth, and the Distribution of Income, *Journal of Political Economy*, Vol. 98, 1990, 1076–1107.
- Gurley, J.G., Shaw, E.S., Financial Aspects of Economic Development, *American Economic Review*, Vol. 45, 1955, 515–538.
- , *Money in a Theory of Finance*, Washington, D.C., Brookings Institution, 1960.
- Hafer, R.W., Kutan, A.M., More Evidence on the Money-Output Relationship, *Economic Inquiry*, Vol. 35, 1997, 157–176.
- Jung, W.S., Financial Development and Economic Growth: International Evidence, *Economic Development and Cultural Change*, Vol. 34, 1986, 333–346.
- King, R.G., Levine, R., Finance and Growth: Schumpeter Might Be Right, *Quarterly Journal of Economics*, Vol. 108, 1993a, 717–737.
- , Finance, Entrepreneurship, and Growth: Theory and Evidence, *Journal of Monetary Economics*, Vol. 32, 1993b, 513–542.
- Kormendi, R.C., Meguire, P.G., Macroeconomic Determinants of Growth: Cross-Country Evidence, *Journal of Monetary Economics*, Vol. 16, 1985, 141–163.
- Kuznets, S., *Economic Growth of Nations: Total Output and Production Structure*, Cambridge, Mass., Harvard University Press, 1971.
- Levine, R., Financial Development and Economic Growth: Views and Agenda, *Journal of Economic Literature*, Vol. 35, 1997, 688–726.
- Levine, R., Loayza, N., Beck, T., Financial Intermediation and Growth: Causality and Causes, *Journal of Monetary Economics*, Vol. 46, 2000, 31–77.
- Levine, R., Renelt, D., A Sensitivity Analysis of Cross-Country Regressions, *American Economic Review*, Vol. 82, 1992, 942–963.
- Levine, R., Zervos, S., Stock Markets, Banks, and Economic Growth, *American Economic Review*, Vol. 88, 1998, 537–558.
- Lucas, R.E., Jr., On the Mechanics of Economic development, *Journal of Monetary Economics*, Vol. 22, 1988, 3–42.
- Mankiw, N.G., The Growth of Nations, *Brooking Papers on Economic Activity*, No. 1, 1995, 275–326.
- Mankiw, N.G., Romer, D., Weil, D., A Contribution to the Empirics of Economic Growth, *Quarterly Journal of Economics*, Vol. 107, 1992, 407–437.
- Neusser, K., Kugler, M., Manufacturing Growth and Financial Development: Evidence from OECD Countries, *Review of Economic and Statistics*, Vol. 80, 1998, 638–646.
- Pagano, M., Financial Markets and Growth: An Overview, *European Economic Review*, Vol. 37, 1993, 613–622.
- Patrick, H., Financial Development and Economic Growth in Underdeveloped Countries, *Economic Development and Cultural Change*, Vol. 14, 1966, 174–189.
- , Japanese Financial Development in Historical Perspective, 1868–1980, in Ranis, G. et al. (eds.), *Comparative Development Perspectives*, Co., Westview Press, 1984.
- Quah, D., Empirical Cross-Section Dynamics in Economic Growth, *European Economic Review*, Vol. 37, 1993, 426–434.
- Rajan, R.G., Zingale, L., Financial Dependence and Growth, *American Economic Review*, Vol. 88, 1998, 559–586.
- Reynolds, L.G., Development Theory in Classical Economics, in Ballasa, B., Nelson, R. (eds.), *Economic Progress, Private Values, and Public Policy: Essays in Honor of William Fellner*, Amsterdam, North-Holland, 1977.
- Robinson, J., The Generalization of the General Theory, in her *The Rate of Interest and Other Essays*, London, Macmillan, 1952.
- Rousseau, P., Wachtel, P., Financial Intermediation and Economic Performance: Historical Evidence from Five Industrial Countries, *Journal of Money, Credit, and Banking*, Vol. 30, 1998, 651–678.
- Wachtel, P., Rousseau, P., Financial Intermediation and Economic Growth: A Historical Comparison of the United States, United Kingdom, and Canada, in Bordo, M.D., Sylla, R. (eds.), *Anglo-American Financial Systems: Institutions and Markets in the Twentieth Century*, New York, R. Irwin, 1995.
- Wallich, H.C., Money and Growth: A Cross-Section Analysis, *Journal of Money, Credit, and Banking*, Vol. 1, 1969, 281–302.

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