

Bond Markets and Financial Stability: Evidence from the Asian Experience

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Abstract Since the advent of the financial crisis of 1997-98, the development of bond markets in Asia is the center of interest of the governments of the region. This effort reflects the prevalent view recently emphasized the importance of domestic bond markets in the prevention of financial fragility in an open capital flows context. The aim of this article is to investigate about the nature and mechanisms of the links between the development of bond markets and financial stability. The analysis focuses on the experience of nine Asian countries over the period 1997 - 2009. The tests cover specific aspects of the development of a bond market hand, and financial stability indicators of capital adequacy, asset quality and profitability in the other hand. The empirical study reveals a significant role of the domestic bond markets in reducing financial vulnerability of the region.

Keywords: *bond markets, financial soundness indicators, financial crisis, Asia*

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1. Introduction

Since the Asian financial crisis in 1997-98, policymakers in Asia have put a high priority on bond market development as a way to promote financial deepening and help avoid financial crises.

Many local, regional and international initiatives have been taken towards Recovery of Asian bond markets. Sustained reforms were initiated at the level of each country. Other important steps were taken in intra-regional cooperation. These include the consecutive creation of two Asian Bond Fund and the Asian Bond Market Initiative. For their part, international financial institutions have contributed to this movement by issuing bonds in local currency for this countries as well as technical assistance development of the regulatory infrastructure of these markets.

Despite this important reflection on the development of the bond markets in Asia, the financial stabilization policy through these markets is not certain insofar that development initiatives are able to promote financial stability in the region, as these markets are the first to collapse in times of stress and crisis [1]. This is particularly problematic that the foundations of the relationship between markets bond and financial stability lack consistent empirical evaluations. It is always wondered about the optimal ratio of debt securities companies [2], but the question of the best balance between bond financing and Bank financing was rarely made. Even more recent works on market Bond are purely descriptive studies or technical analyzes specific

microstructure of the bond markets (World Bank, 2006, Committee on the Global Financial System, 2007).

The objective of this article is to fill this insufficiency of existing work dealing with this topical subject. It aims to clarify the potential impact that could have the emergence of bond markets on the outlook for financial stability, based on the Asian experience. The central question is whether how far the financial stability may depend on the development of bond markets. We interrogate here in particular on the relevance of policies to prevent the financial crises based on the relaunch of bond markets. By specifying indicators of bond markets development which allow us to take account of the exposure of banks to credit concentration and the double currency and maturity mismatch, this article seeks to examine the nature and mechanisms underlying the links between bond markets and financial stability in the case of Asian countries. Financial stability being measured by indicators of capital adequacy, asset quality and profitability.

This paper is organized as follows: Section 2 looks back at the relationship between bank-based and market-based financial systems in the theoretical literature. Section 3 provides an inventory of the recent bond markets development achieved by the Asian economies since the financial crisis, and evaluates in light of the evolution of financial soundness indicators. The analysis of the facts is supported by an econometric study in Section 4. Finally, conclusions are drawn and suggestions for financial stabilization policies are advanced to emerging countries from the Asian experience, in Section 5.

2. Relationship between Bank-based and Market-based Financial Systems: Overview of the Theoretical Literature

2.1. The Theoretical Case for a Bank-based System

Besides debates concerning the role of financial development in economic growth, financial economists have debated the comparative importance of bank-based and market-based financial systems for over a century [3]. As discussed, financial intermediaries can improve the (i) acquisition of information on firms, (ii) intensity with which creditors exert corporate control, (iii) provision of risk-reducing arrangements, (iv) pooling of capital, and (v) ease of making transactions. These are arguments in favor of well-developed banks. They are not reasons for favoring a bank-based financial system.

Rather than simply noting the growth-enhancing role of banks, the case for a bank-based system derives from a critique of the role of markets in providing financial functions.

In terms of acquiring information about firms, Stiglitz [4] emphasizes the free-rider problem inherent in atomistic markets. Since well-developed markets quickly reveal information to investors at large, this dissuades individual investors from devoting resources toward researching firms. Thus, greater market development, in lieu of bank development, may actually impede incentives for identifying innovative projects that foster growth. Banks can mitigate the potential disincentives from efficient markets by privatizing the information they acquire and by forming long-run relationships with firms [5]. Banks can make investments without revealing their decisions immediately in public markets and this creates incentives for them to research firms, managers, and market conditions with positive ramifications on resource allocation and growth. Furthermore, Rajan and Zingales [6] emphasize that powerful banks with close ties to firms may be more effective at exerting pressure on firms to repay their debts than atomistic markets.

On corporate governance, a large literature stresses that markets do not effectively monitor managers [7]. First, takeovers may not be an effective corporate control device because insiders have better information than outsiders.

This informational asymmetry mitigates the takeover threat as a corporate governance mechanism since ill-informed outsiders will outbid relatively well-informed insiders for control of firms only when they pay too much [4]. Second, some argue that the takeover threat as a corporate control device also suffers from the free-rider problem. If an outsider expends lots of resources obtaining information, other market participants will observe the results of this research when the outsider bids for shares of the firm. This will induce others to bid for shares, so that the price rises. Thus, the original outsider who expended resources obtaining information must pay a higher price for the firm than it would have paid if “free-riding” firms could not bid for shares in a liquid equity market. The rapid public dissemination of costly information reduces incentives for obtaining information, making effective takeover bids, and wielding corporate control [8]. Third, existing managers often take actions—poison pills—that

deter takeovers and thereby weaken the market as an effective disciplining device [9]. Fourth, although in theory shareholder control management through boards of directors, an incestuous relationship may blossom between boards of directors and management [10]. Members of a board enjoy their lucrative fees and owe those fees to nomination by management. Thus, boards are more likely to approve golden parachutes to managers and poison pills that reduce the attractiveness of takeover. This incestuous link may further reduce the effectiveness of the market as a vehicle for exerting corporate control [11]. Chakraborty and Ray [12] examine bank-based and market-based financial systems in an endogenous growth model, concluding that banks can partially resolve the tendency for insiders to exploit the private benefits of control.

The liquidity of stock markets can also adversely influence resource allocation. Liquid equity markets may facilitate takeovers that while profiting the raiders may actually be socially harmful [13].

Moreover, liquidity may encourage a myopic investor climate. In liquid markets, investor can inexpensively sell their shares, so that they have fewer incentives to undertake careful – and expensive – corporate governance [13]. Thus, greater stock market development may hinder corporate governance and induce an inefficient allocation of resources according to the bank-based view. As noted above, Allen and Gale [11] argue that bank-based systems offer better intertemporal risk sharing services than markets with beneficial effects on resource allocation.

In response to the problems associated with relying on diffuse shareholders, large, concentrated ownership may arise to prevent managers from deviating too far from the interests of owners, but as stressed above, this brings its own complications. Large investors have the incentives and ability to acquire information, monitor managers and exert corporate control. Concentrated ownership, however, raises other problems. Besides the fact that concentrated ownership implies that wealthy investors are not diversified [15], concentrated owners may benefit themselves at the expense of minority shareholders, debt holders, and other stakeholders in the firm, with adverse effects on corporate finance and resource allocation. Large investors may pay themselves special dividends, exploit business relationships with other firms they own that profit themselves at the expense of the corporation, and in general maximize the private benefits of control at the expense of minority shareholders.

Furthermore, large equity owners may seek to shift the assets of the firm to higher-risk activities since shareholders benefit on the upside, while debt holders share the costs of failure. Finally, concentrated control of corporate assets produces market power that may corrupt the political system and distort public policies. Thus, from this perspective, concentrated ownership is unlikely to resolve fully the shortcomings associated with market-based systems.

In sum, proponents of bank-based systems argue that there are fundamental reasons for believing that market-based systems will not do a good job of acquiring information about firms and overseeing managers, and could, in some cases, be considered as a favorable mechanism to contagion between markets during the subprime crisis to G7 countries [16] and BRIC [17]. This will hurt resource allocation and economic performance.

Banks do not suffer from the same fundamental shortcomings as markets. Thus, they will do a correspondingly better job at researching firms, overseeing managers, and financing industrial expansion.

2.2. The Theoretical Case for a Market-based System

The case for a market-based system is essentially a counterattack that focuses on the problems created by powerful banks.

Bank-based systems may involve intermediaries with a huge influence over firms and this influence may manifest itself in negative ways. For instance, once banks acquire substantial, inside information about firms, banks can extract rents from firms; firms must pay for their greater access to capital. In terms of new investments or debt renegotiations, banks with power can extract more of the expected future profits from the firm (than in a market-based system). This ability to extract part of the expected payoff to potentially profitable investments may reduce the effort extended by firms to undertake innovative, profitable ventures. Furthermore, Boot and Thakor [18] model the potential tensions between bank-based systems characterized by close ties between banks and firms and the development of well-functioning securities markets.

Banks -as debt issuers-also have an inherent bias toward prudence, so that bank-based systems may stymie corporate innovation and growth. Weinstein and Yafeh [19] find evidence of this in Japan. While firms with close ties to a “main bank” have greater access to capital and are less cash constrained than firms without a main bank, the main bank firms tend to (i) employ conservative, slow growth strategies and do not grow faster than firms without a “main bank”, (ii) use more capital intensive processes than non-main bank firms holding other features constant, and (iii) produce lower profits, which is consistent with the powerful banks extracting rents from the relationship.

Allen and Gale [11] further note that although banks may be effective at eliminating duplication of information gathering and processing, which is likely to be helpful when people agree about what information needs to be gathered and how it should be processed, banks may be ineffective in non-standard environments. Thus, banks may not be effective gatherers and processors of information in new, uncertain situations involving innovative products and processes. Similarly, but in a model of loan renegotiations, Dewatripont and Maskin [20] demonstrate that in a bank-based system characterized by long-run links between banks and firms, banks will have a difficult time credibly committing to not renegotiate contracts. In contrast, more fragmented banking systems can more easily commit to imposing tighter budget constraints. The credible imposition of tight budget constraints may be necessary for the funding of newer, higher-risk firms. Thus, concentrated banks may be more conducive to the funding of mature, less risky firms, while more market-based systems, according to these theories, more easily support the growth of newer, riskier industries.

Another line of attack on the efficacy of bank-based systems involves their role in exerting corporate control over firms and the corporate governance of banks themselves. Bankers act in their own best interests, not

necessarily in the best interests of all creditors or society at large. Thus, bankers may collude with firms against other creditors. For instance, influential banks may prevent outsiders from removing inefficient managers if these managers are particularly generous to the bankers [21].

For the case of Germany, Wenger and Kaserer [22] show that bank managers are enormously powerful. They not only have the corporate control power over firms that derives from being large creditors to those firms, banks also vote the shares of a larger number of small stockholders. Thus, the bank management has rested control of the banks from the owners of the banks and also exerts a huge influence on the country’s major corporations, they also provide examples in which banks misrepresent the accounts of firms to the public and systematically fail to discipline management. Also, Rajan and Zingales [23] argue that in response to adverse shocks that affect the economy unevenly, market-based systems will more effectively identify, isolate, and bankrupt truly distressed firms and prevent them from hurting the overall economy than a bank-based system.

Furthermore, relying on a bank-based financial system may be problematic because of the difficulties in governing banks themselves [24]. While subject to debate, many argue that information asymmetries between bank insiders and outsiders are larger than with nonfinancial corporations. Under these conditions, it will be very difficult for diffuse equity and debt holder to monitor and control bank insiders. The governance problem facing depositors is of course exacerbated in the presence of deposit insurance. Furthermore, greater opacity implies even greater complexities in writing incentive contracts to align managerial incentives with bank equity holders and creditors. Perhaps because of the particularly severe informational impediments to governing banks, banks are even more likely than nonfinancial corporations to have a large, controlling owner. This concentration of ownership in conjunction with greater opaqueness may make it easier for bank insiders to exploit both other investors in the bank and the government if it is providing deposit insurance. The history of Mexico, for example, is replete with incidents of powerful families using their control over banks to exploit other creditors and taxpayers [25].

Finally, proponents of market-based financial systems claim that markets provide a richer set of risk management tools that permit greater customization of risk ameliorating instruments. While bank-based systems may provide inexpensive, basic risk management services for standardized situations, market-based systems provide greater flexibility to tailor make products. Thus, as economies mature and need a richer set of risk management tools and vehicles for raising capital, they may concomitantly benefit from a legal and regulatory environment that supports the evolution of market-based activities, or overall growth may be retarded.

2.3. Complementarity between Bank and Market Financing

Some reject the importance of the bank-based versus market-based debate and instead argue that the issue is overall financial development, not the particular institutional arrangements that provide financial services

to the economy. As noted above, information, transaction, and enforcement costs create incentives for the emergence of financial markets and intermediaries. In turn, these components of the financial system provide financial functions: they evaluate project, exert corporate control, facilitate risk management, ease the mobilization of savings, and facilitate exchange. Thus, this “financial functions view” rejects the primacy of distinguishing financial systems as bank-based or market-based [26].

According to this view, the crucial issue for growth is whether the economy has access to a well-functioning financial system; the exact composition of the financial system is of secondary importance.

Another criticism for emphasizing market-based versus bank-based differences is that markets and banks may provide complementary growth-enhancing financial services to the economy [27]. For instance, stock markets may positively affect economic development even though not much capital is raised through them. Specifically, stock markets may play a prominent role in facilitating custom-made risk management services and boosting liquidity. In addition, stock markets may complement banks. For instance, by spurring competition for corporate control and by offering alternative means of financing investment, securities markets may reduce the potentially harmful effects of excessive bank power. The theoretical literature is making progress in modeling the co-evolution of banks and markets [5]. Furthermore, microeconomic evidence also emphasizes potential complementarities between intermediaries and markets. Using firm-level data, Demirgüç Kunt and Maksimovic [28] show that increases in stock market development actually tend to increase the use of bank financing in developing countries.

As a conclusion, bank and bond finance have different advantages. Bonds and securitized finance generally are thought to have better risk-sharing characteristics. Risks can be more efficiently diversified when they are spread across a large number of individual security holders. This spreading of risks and the existence of liquid secondary markets in standardised securities encourages creditors to make long-term commitments and allows debtors to borrow for extended periods of time.

Banks, in contrast, have a comparative advantage in the information-impacted segment of the economy. They invest in building dedicated monitoring technologies. (This is one way of thinking about what distinguishes banks from other financial market participants.)

Consequently they are well placed to identify and lend to small, recently established enterprises about which public information is scarce. In addition, by pooling the deposits of households and firms with non-synchronised demands for liquidity, they are able to provide maturity transformation services for small savers reluctant to lock up their funds for extended periods. As concentrated stakeholders, they contribute to effective corporate governance and are prepared to incur the costs of litigation when legal recourse is required.

The point is not that banks or bond markets are better; there is little systematic evidence of the unconditional superiority of one financial form over the other. Rather, there is a growing body of evidence that countries benefit from well diversified financial systems with a role for both well regulated banks and well functioning securities markets.

Banks have a comparative advantage in providing external finance to smaller, younger firms operating in information-impacted segments of the economy, while securities markets, including debt markets, do the job more efficiently for large, well established companies. Similarly, banks and securities markets are subject to different risks. Hence, in financial structure, as in other areas, diversification may help an economy attain a superior position on the frontier of feasible risk-return trade-offs. That is, the existence of a well diversified financial system, with a role for both banks and securities markets, should be conducive both to an efficient allocation of resources compatible with sustainable medium-term economic growth and to financial stability - and specifically to minimisation of the risk of late 1990s-style financial crises.

3. Role of Domestic Bond Markets in the Financial Stability: Stylized Facts on Asia

3.1. The Lessons of Asian FINANCIAL CRISES of 1997-98

The 1997-98 financial crisis in Asia has revealed the strong dependence between banks and firms in Asian countries which opened on the international capital markets. It was highlighted as one of the main causes of the financial imbalances which have led to a crisis situation of 1997-98.

3.1.1. Strengths and Weaknesses of the Asian Model

Since the 1960s and until the mid-1990s, sustained rapid growth, with impressive structural change and substantial amelioration in the standard and quality of living of its population (ADB, 1997). Except Japan and The Philippines, all East Asian economies were growing at exceptionally high rates during the 1980s and early 1990s.

In 1990-1996, East Asia, which accounted for around a fifth of current world gross output, was responsible for half of international growth and for two-thirds of global investment. The banking system has played a key role in the accumulation regime, it was based on the willingness and commitment of public authorities through regulatory arrangements and action of public banks. This unique institutional arrangement was very consistent because of the financial and social weakness of the class that was to lead industrial projects, because, apart from the exclusive use of state-owned enterprises, it was the only feasible option to implement a proper policy development. Indeed, the industrial and commercial structure in most Asian countries is dominated by conglomerate structures controlled by a few families, with the exception of Japan.

The sturdiness of the relationship finance industry and, from there, the sustainability of the plan of development of these countries was based on a relatively tight banking system with the outside. Asian countries have long contained the entry of foreign banks by a policy control of licenses, while the existence of a strict exchange control determined the direction of a high domestic savings by preventing s 'expatriating. Public authorities fixed the interest rate on deposits at a lower than market level and regulating the new entrants and the level of internal

competition to encourage and ensure opportunities for annuities in the banking sector. The closure of the system was provided by the regulation of interest rates borrowers. These could be further modulated by sector or even functions to reflect government priorities in industrial policies. It should be noted as a preliminary that the financial system as it has been described has contributed to the success of Asian economies in the early stages of their development.

Table 1. Main modalities of financing Asian firms (1997)

Market	Domestic Credit (in USD Billions)	Domestic Credit (% of Total)	Equity (in USD Billions)	Bonds (in USD Billions)
China	931.28	76.30	211.72	38.50
Hong Kong	299.98	38.60	413.32	30.27
Indonesia	75.49	67.30	29.05	3.66
Japan	7669.54	58.00	2160.58	1918.23
Korea rep	383.25	66.50	41.88	120.72
Malaysia	121.21	44.10	93.17	37.64
Philippines	41.10	52.00	31.21	0.24
Singapore	96.22	35.70	106.32	10.72
Thailand	172.51	83.00	22.79	9.11
Total Asia	9694.36	60.72	3003.72	2158.37

Sources: Author from the Asian Development Bank (2013).

According to Krugman [29], deficient regulation of banking activities, some lack of transparency, and various implicit governmental guarantees (which created "moral hazard"), led banks and other financial institutions in Southeast Asia to a situation of over indebtedness and of excessively high levels of non-performing loans. As a result, over investment in fixed capital and land created a financial bubble. When the bubble burst, banks using assets as collateral for their loans entered a period of crisis, aggravated further by the collapse in their stock market values.

3.1.2. International Capital Flows and Financial Imbalances

Until 1999, Asia attracted almost half of the total capital inflow into developing countries. The economies of Southeast Asia in particular maintained high interest rates attractive to foreign investors looking for a high rate of return. As a result the region's economies received a large inflow of money and experienced a dramatic run-up in asset prices. At the same time, the regional economies of Thailand, Malaysia, Indonesia, Singapore, and South Korea experienced high growth rates, 8–12% GDP, in the late 1980s and early 1990s. This achievement was widely acclaimed by financial institutions including IMF and World Bank, and was known as part of the "Asian economic miracle." (World Bank, 1993).

The causes of the debacle are many and disputed. Thailand's economy developed into an economic bubble fueled by hot money. More and more was required as the size of the bubble grew. The same type of situation happened in Malaysia, and Indonesia, which had the added complication of what was called "crony capitalism". The short-term capital flow was expensive and often highly conditioned for quick profit. Development money went in a largely uncontrolled manner to certain people

only, not particularly the best suited or most efficient, but those closest to the centers of power.

In East Asia, capital inflows have been mainly related to bank loans and FDI rather than to portfolio investments, except in the case of South Korea (Table 1).

International reserves were rising in the years preceding the crises, both in absolute value, and as months of merchandise imports (except in South Korea in 1996). Only in Malaysia the ratio of international reserves to M2 decreased significantly between 1993 and 1996. Domestic credit growth was substantial in Southeast Asia (although not in Indonesia) in the two years preceding the speculative attacks, but this was not the case of Korea. International interest rates were low in Japan, but they were higher in the US and Western Europe. A severe currency overvaluation only appeared in The Philippines and Thailand, but not in Indonesia, Malaysia and South Korea, according to estimates of bilateral real effective exchange rates (REERs) by Chinn [30] and Chinn and Dooley [31].

Among the former, overinvestment, financial liberalization, large foreign debt (especially in short-term liabilities), and the "herding" behavior in foreign capital and currency markets, surely played a role. The latter are high current account deficits along with currency appreciation in some ASEAN members (although the external deficit was low in Indonesia, while Malaysia did not suffer from severe overvaluation). In the case of Korea, main weaknesses were large foreign portfolio inflows in 1995-1997 and substantial short-term debt accumulation in 1996-1997.

Overinvestment is related to very high investment rates and is also associated to diminishing returns to capital. Although reliable data on the evolution of ICORs are scant, available information tends to suggest that capital returns were decreasing since the late-1980s, especially in manufacturing sectors featuring overcapacity.

Financial liberalization proceeded in the 1990s in a very dynamic fashion, especially in Southeast Asia. Until the late-1980s, government intervention in the financial sector was extensive. Public ownership of banks and other financial institutions, ceilings on deposit and lending rates, directed credit allocation, and controls on capital inflows and outflows, were pervasive.

East Asia initiated the deregulation and liberalization of its financial system as a result of a widening domestic resource gap (as domestic savings proved to be insufficient to finance all investments in manufacturing, real estate or infrastructure) and/or its participation in international agreements and institutions (article VIII of the IMF; GATT, GATS and WTO; OECD in the case of Korea). As a result, ceilings on deposit and loan interest rates were lifted, direct credit control was abolished, and cross-border capital transactions were liberated from administrative limitations.

Moreover, governments in the region eliminated restrictions on corporate debt financing and allowed for more competition in financial services. Foreign banks were authorized to buy and sell large amounts of foreign and domestic currency; as banking supervision was weakened, domestic banks borrowed heavily from abroad and lent recklessly; manufacturing companies became free to take out loans from domestic and foreign financial

institutions; and the government abandoned coordination of borrowings and investments.

This made the economies more vulnerable to volatile and easily reversible capital flows, in a context of persistent current account deficits and of large short-term capital inflows. Moreover, excessively rapid financial deregulation increased the proportion of non-performing loans held by banks and other institutions.

In fact, all East Asian economies implemented financial reform without establishing a comprehensive regulatory and supervisory framework. It seems paradoxical that some analysts have blamed East Asia's troubles to excessive state interference in the economy and to the existence of "crony capitalism". In fact, in order to intermediate high private (household) savings into corporate debt, a cooperative, reciprocal and long-term relation between firms, banks and the government is needed, without implying necessarily corruption or favoritism [32]. But this state guidance was exactly what was lacking in Southeast Asia since the late-1980s and in Korea since the early-1990s, due to an excessively rapid financial deregulation and, in more general terms, a too

drastic domestic liberalization, both of which were vigorously pursued in the 1990s and reduced the government's ability to prevent market failures. Especially in the case of South Korea, the crisis was not due to excessive state's interference but, on the contrary, it has instead been a crisis of under regulation, as the government abandoned in the 1990s-albeit gradually-its traditional role of monitoring properly foreign borrowing and of coordinating investments.

3.2. Emergence of the Bond Markets in Asia and Prospects for Financial Stability

Because of awareness of the issues raised above, discussions about regional cooperation in Asia concerning the promotion of local financial markets have been going on for quite a while. However, efforts to promote local bond markets really took off subsequent to the 1997 Asian financial crisis. During this episode, firms experienced disruptions in their balance sheet positions due to currency mismatches following the dramatic exchange rate devaluations suffered by many Asian economies.

Table 2. Pre-Crisis Asian Regional Bond Market Initiatives

Date	Event
2003	<p>Executives' Meeting of the East Asia Pacific central banks (EMEAP) announces creation of ABF1, consisting of US\$1 billion in sovereign and quasi-sovereign Asian bonds.</p> <p>ASEAN+3 launches Asian Bond Market Initiative (ABMI): Six voluntary working groups established to discuss issues relevant to development of domestic and regional bond markets.</p> <p>Groups include securitization, credit guarantees, local currency bonds, credit ratings, and foreign exchange transactions.</p>
2004	<p>Japan Bank for International Cooperation (JBIC) guarantees baht-denominated bonds issued by Thai firm Tri Petch Isuzu.</p> <p>"Pan Asian Bonds" issued by Japan and Korea: Senior debt issued by 46 small and medium Korean firms with guarantees from JBIC and IBK.</p> <p>Ringgit-denominated Malaysian bonds issued by ADB and the International Finance Corporation (IFC).</p> <p>EMEAP announces ABF2, consisting of a Pan-Asian Bond Index fund and eight single-market funds</p>
2005	<p>Release of ABMI "roadmap" for gathering and sharing information, as well as studies concerning issuing Asian currency basket bonds, regional efforts at promoting liquidity and cross-border trading, alternatives for tax treatment, and "Asian bond standards."</p> <p>EMEAP announces implementation of ABF2</p>
2007	<p>Chiang Mai Initiative(CMI) Bilateral swap arrangements increased to US\$80 billion. Agreed on self-managed reserve pooling arrangement.</p>

Sources: Author, ASEAN+3 Finance Ministers Meeting Statements, Jang and Hyun (2009), ASEAN+3, EMEAP.

3.2.1. Development of Bond Markets in Asia, after the 1997 Financial Crisis

The balance of outstanding issues in Asian bond markets (total for eight countries and regions) rose from approximately \$400 billion at the end of 1997 to \$4.4 trillion at the end of 2009, an increase of 11.3 times (Table 3). There was a 17-fold increase in government bonds and an eight-fold increase in financial institutions and corporate bonds. Fig. 1 traces growth in domestic credit balances, government bond balances and balances of financial institutions and corporate bonds in each country/region over the same period. The figures show a clear increase in the weighting toward government bond markets. The Indonesian and Thai government bond markets are not

shown in the graph. The balances of these markets were small at the end of 1997, and their growth rates are consequently high at 93.8 times and 90.7 times respectively.

Table 3. Balance of Issues on Asian Bond Markets

	End of 1997(A)	End of 2009(B)	B/A
Government bonds	142.0	2397.3	16.9
Financial institutes bonds	147.1	1173.2	7.9
Corporate bonds	97.9	811.8	8.3
Total	387.7	4382.3	11.3

Notes: The figures are totals for China, Hong Kong, Indonesia, South Korea, Malaysia, the Philippines, Singapore and Thailand.
Sources: BIS.

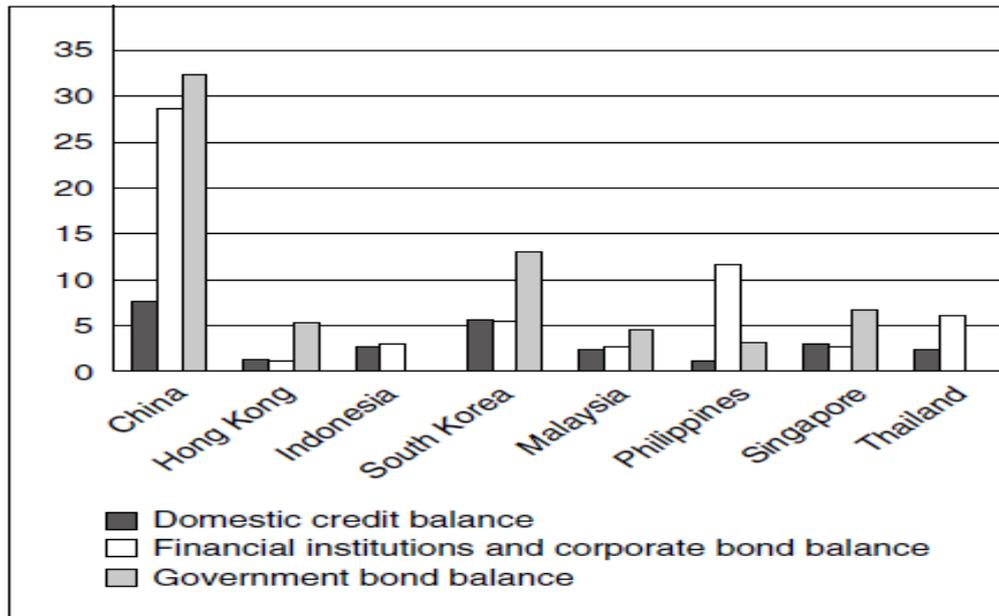


Figure 1. Expansion of Financial and Capital Markets

Notes: The graph compares increases (times) in balances between the end of 1997 and the end of 2009. Source: IMF-IFS, BIS.

When we compare growth in domestic credit balances and the balance of financial institutions and corporate bonds to identify changes in the methods used by businesses to procure funds, we find that the rate of increase in the latter is significantly higher in China, the Philippines and Thailand, but that there is little difference between the two in other economies. In terms of balances at least, this means that bond issues have not become more important as a debt-based method of procuring funds in any of the markets other than these three countries.

With a few exceptions, therefore, the balance of financial institutions and corporate bonds and the domestic credit balance have grown at similar rates.

If we compare balances of financial institutions and corporate bonds as a percentage of domestic credit

balances, we find that South Korea and Malaysia both have conspicuously high ratios (Figure 2). These two economies appear to have relatively mature markets for financial institutions and corporate bonds. In China, the rate of increase in the balance of financial institutions and corporate bonds has been extremely high over the past 12 years, but there is still substantial room for further expansion as a percentage of the domestic credit balance.

There has been a certain rise in the ratio of the corporate bond issue balance to GDP, and it would be reasonable to conclude that the corporate bond market is contributing to financial deepening (Table 4). However, a comparison of the economies studied shows that the ratio to GDP is high in Hong Kong, South Korea, Malaysia and Singapore and low in the other five.

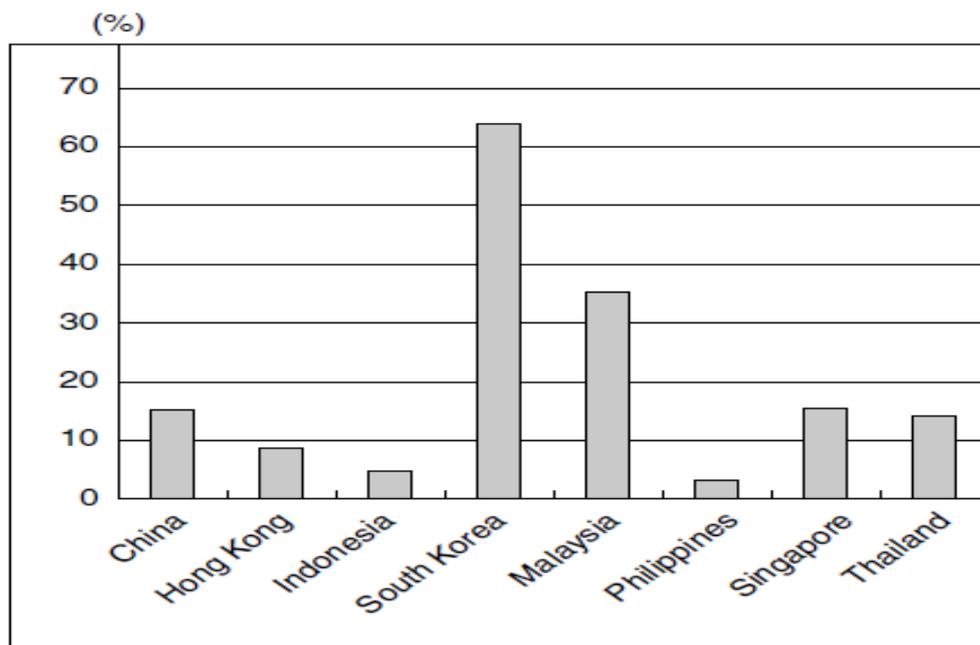


Figure 2. Balance of Financial Institutions Bonds and Corporate Bonds/ Domestic Credit Balance (End of 2009)

Source: IMF-IFS, BIS.

While China belongs to the latter group, its profile has risen rapidly in term of market scale (Figure 3). China now accounts for 58.5% of the balance for all markets in

the eight countries/regions, and 55.7% of financial institutions and corporate bonds.

Table 4. Bond Issue Balances as Ratios of GDP (End of 2009)

	End of 1995			End of 2002			End of 2009		
	Government bonds	Financial institutions	Bonds corporate	Government bonds	Financial institutions	Bonds corporate	Government bonds	Financial institutions	Bonds corporate
China	3.5	2.9	0.0	17.4	9.6	0.6	29.3	15.1	7.1
Hong Kong	5.3	11.6	2.6	10.0	32.4	0.9	33.1	35.4	0.9
Indonesia	0.0	0.7	0.9	32.2	0.5	0.9	15.6	0.9	0.9
Korea rep	13.2	19.8	20.0	33.9	25.0	53.2	45.8	35.6	35.3
Malaysia	37.0	16.4	17.8	35.8	16.7	21.7	44.4	20.6	27.9
Philippines	35.3	0.0	0.3	35.4	0.0	0.5	33.0	0.0	4.6
Singapore	15.5	8.6	3.0	38.4	19.0	11.3	46.9	12.3	20.6
Thailand	1.3	0.0	7.9	24.9	0.1	12.1	47.3	1.2	19.4

Source: Author, IMF-IFS, BIS.

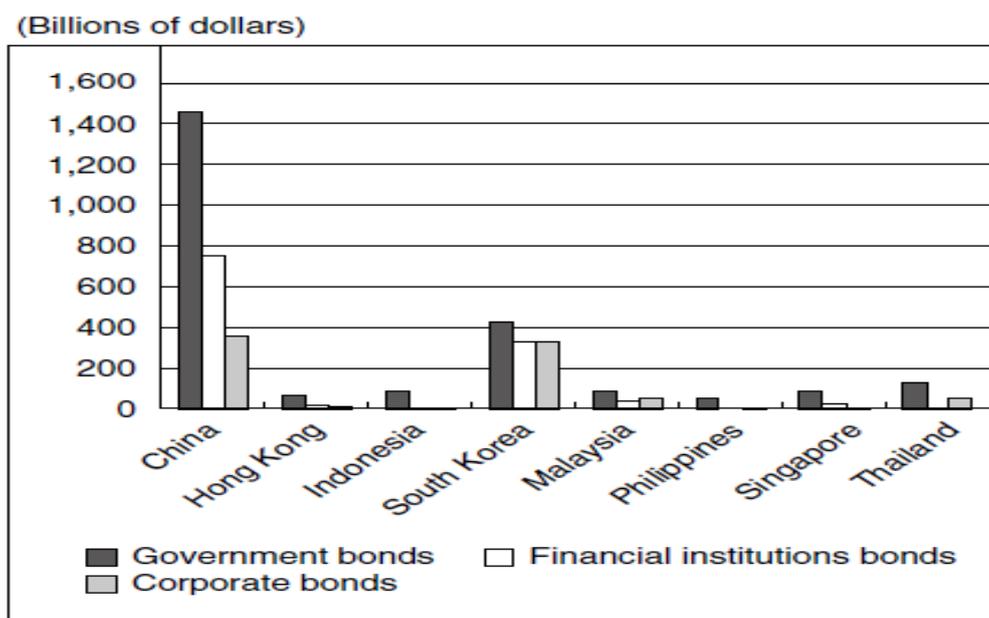


Figure 3. Balances of Bond Market Issues (End of 2009)

Source: IMF-IFS, BIS.

Since the currency crisis, therefore, balances of corporate bonds, including financial institutions bonds, have risen at approximately the same rate as domestic credit balances, and this growth has contributed to financial deepening.

Since the recent global financial crisis, Bond markets have continued to expand steadily. The balance of issues (total for nine countries/regions) increased by 16.5% over the previous year's level in 2009 and reached approximately \$4.4 trillion (growth rate based on local currencies). Government bonds increased by 11.2% to \$3.1 trillion, and corporate bonds by 31.6% to approximately \$1.3 trillion. The total for these nine economies has risen from 2.1% of the world total at the end of 1996 to 6.7% at the end of September 2009.

Immediately after the onset of the crisis, there was a tendency to curb government bond and corporate bond issues because of the turmoil that swept international financial markets. Since then, however, the balance of issues has remained on an upward trend for a number of reasons. First, government bond issues increased in step with economic stimulatory measures. Second, there has been an increase in bond issues by central banks as part of sterilized intervention in response to the appreciation of Asian currencies resulting from the recovery of capital inflows. Third, governments and major corporations, who

turned to overseas markets for their funds, have since returned to domestic markets. Fourth, the sustained recovery of domestic economies has brought growth in the business sector's demand for funds. Other positive factors include low-interest environments and the recovery of investors' appetite. The fact that credit spreads on corporate bonds with high ratings are tending to shrink is indicative of an increased willingness to invest.

In 2009, bond issues increased by 39.3% over the previous year's level to approximately \$3.3 trillion. This total breaks down into \$2 trillion for central bank bonds, \$726 billion for government bonds and \$613 billion for corporate bonds. Bond issues by central banks as part of sterilized intervention in response to the appreciation of Asian currencies accounted for 60% of issues and were the driving force for the expansion of bond markets. This was especially true in Hong Kong and Indonesia, where central bank bonds accounted for over 95% of bond issues. The energy and infrastructure sectors account for the bulk of corporate bond issues, some of which are linked to economic stimulatory measures in each country/region.

Foreign currency-denominated bond issues increased by 89.8% year-on-year in 2009. The reasons for this growth include low interest rates in the United States, and the resulting recovery of willingness to invest. However, total issues for the nine countries/regions amounted to

\$63.2 billion, which is equivalent to less than 5% of the total for domestic government bonds and corporate bonds. The balance of issues stood at \$235 billion at the end of 2009, which is also around 5% of the figure for domestic markets, with government bonds, financial institutions bonds and corporate bonds each making up about one-third.

Beyond the substitution of funding to another, Asian economies appear to develop more diversified and efficient financial systems. This development is able to reduce the vulnerability of the private sector through a more stable funding favoring investment choices of long-term, as well as banks' exposure to various risks of credit and foreign exchange. These factors can be decisive to promote financial stability in the region and prevent future shocks of the kind that has just undergone.

3.2.2. Evolution of Financial Soundness Indicators

Financial stability in Asia is evaluated by the IMF financial soundness indicators (FSIs): Capital adequacy, Asset quality and profitability.

The capital adequacy indicator includes the regulatory capital to risk-weighted assets, this FSI measures the ability of the banking sector to absorb unexpected losses; the Asset Quality indicator includes the ratio of non-performing loans to gross loans, this FSI is intended to identify problems with asset quality in the loan portfolio; and the profitability indicator includes the ratio of return on assets, this FSI is intended to measure deposit-takers efficiency in using their assets.

The construction and use of indicators for monitoring financial stability are still experimental, but receive more important empirical level. This is particularly financial soundness indicators (FSIs) constructed by the IMF since. They provide information on the performance of the banking sector through the core indicators, as well as financial markets, non-bank financial sector, businesses and households across encouraged indicators (Appendix Box1). Compared to other indicators such as macro-prudential indicators or the aggregate indices of central banks (NBC, 2006, SNB, 2006), the FSIs are more convenient and allow international comparisons. The Table 5 shows the evolution of financial soundness indicators in Asia.

Table 5. Evolution of financial soundness indicators for Asia %

Indicators	China	Hong Kong	Indonesia	Japan	Korea rep	Malaysia	Philippines	Singapore	Thailand
Regulatory capital to risk-weighted assets									
2009	11.4	16.9	17.6	15.8	14.4	15.4	15.8	16.5	15.8
mean 2003-08	6.7	14.7	19.0	12.3	12.3	13.4	16.8	15.1	13.5
mean 1997-02	12.4	17.5	8.9	11.0	10.2	12.6	16.3	18.9	12.2
Apex 1997-99	12.8	18.5	-13.0	11.6	8.2	11.8	16.0	18.3	10.9
Non-performing loans to total gross loans									
2009	1.6	1.1	3.3	1.7	1.2	3.7	4.1	2.3	5.3
mean 2003-08	10.1	1.4	6.8	1.9	1.8	8.2	8.9	2.5	8.5
mean 1997-02	26.6	6.3	33.4	6.6	6.1	16.8	15.2	7.3	25.1
Apex 1997-99	28.5	7.2	48.6	6.1	8.3	18.6	16.6	14.1	42.9
Return on assets									
2009	0.8	1.6	2.6	0.2	0.4	1.2	1.2	1.1	1.0
mean 2003-08	0.7	1.8	2.5	0.2	1.0	1.4	0.9	1.2	1.2
mean 1997-02	0.1	1.3	-4.3	-0.3	-0.6	1.0	0.8	0.9	-1.7
Apex 1997-99	0.1	0.4	-19.9	-0.6	-3.2	0.3	0.3	0.4	-5.6

Source: Author, from "Global Financial Stability Report", IMF (2003, 2004, 2006, 2008, 2009, 2011).

Up until recently (1997-1998), the Asian financial sector was dominated by banks. These ensure the financing of the private sector regardless of its repayment capacity and his solvency as they lend to SOEs with low efficiency. As described in Section 3.1, with the opening to capital flows, this strong banking intermediation led to the financial crisis. This is reflected in all the countries affected by a strong accumulation of doubtful loans. Non-performing loans amounted to 48.6% in Indonesia, 42.9% in Thailand. The profitability of banks is therefore strongly deteriorated. Return on assets rose to -19.9% in Indonesia, -0.6% in Japan, -3.2% in Korea and -5.6% in Thailand. While the ratio of capital to risk weighted assets has been degraded, with the exception of some countries that have increased their capital adequacy as Hong Kong, Singapore and China.

Since the crisis, financial soundness indicators of the banking systems in the region have evolved following a growing trend. Most countries have already achieved a degree of macroeconomic stability through fiscal consolidation and improved the credibility of monetary policy, and have made progress in banking supervision

and transparency and private governance. While the development of bond markets in local-currency represented an alternative to bank financing of the private sector, which has strengthened the restructuring of both companies and banks, and to accelerate the resolution of the crisis.

The movement of financial disintermediation linked to the development of bond markets has prompted banks to strengthen their balance sheets, improve risk management and innovate to remain efficient. At the same time, the issue of corporate bonds has to deal with maturity and currency mismatches, and thereby reduce the financial vulnerability of the private business sector and banks. Today, the profitability of Asian banks has improved significantly as the regulatory capital, while non-performing loans have significantly lowered at satisfactory levels.

As the Asian economy grows and opens more to international trade and capital flows, it is essential to develop multiple financial intermediation channels. Parallel to this development, institutional and regulatory support is needed. Although the experiences of destabilization

in the bond markets are rare,¹ the Korean experience of bond market crisis is revealing and instructive.²

It recalls the potential risks that may be generated by an intensive and rapid expansion of private bond issuance when the institutional market infrastructure is fragile and under conditions where the major market players are facing distress (Lee & Kim, 2006).

4. Econometric Analysis

4.1. Methodology

The empirical analysis of the impact of the development of domestic bond markets on financial stability is conducted by using the Generalized Method of Moments (GMM). The panel includes selected Asian countries: China, Korea, Hong Kong, Indonesia, Japan, Malaysia, the Philippines, Singapore and Thailand, and covers the period 1997-2009. The use of this econometric approach is justified by sturdiness of its estimators. It has indeed exploited the advantages of panel data of countries and time series data simultaneously, and control unobservable country-specific effects and the potential endogeneity of the explanatory variables.

The general form of the model to analyze the impact of bond markets on financial soundness indicators (FSIs) is as follows:

$$FSI_{(i,t)} = f(\text{Specific_Market}_{i,t}, \text{Macro_Control}_{i,t}) \quad (1)$$

$$i = \{1, \dots, N\}$$

Where i and t denote the country and year respectively, and N includes nine Asian countries over the period T from 1997 to 2009. The financial soundness indicators (FSIs) are modeled according to the specific indicators for bond market development and macroeconomic control variables. The indicators of capital adequacy, asset quality and profitability defined in Section 3.2.2 are used. The capital adequacy is measured by the ratio of regulatory capital to risk-weighted assets, asset quality is measured by the ratio of non-performing loans to total gross loans and profitability is measured by return on assets.

In accordance with our problematic of verifying the hypothesis that the development of bond markets promotes financial stability by reducing the concentration of risk in banks and control of dual currency and maturity mismatches, three specific measures of development of domestic bond markets are determined and used.

- The first measure is the ratio of corporate bond issues in local-currency on bank credit allocated to the private sector (the ratio of private credit obligations). A low ratio of bonds on credit implies a strong dependence of private sector banks. This measure of bond market development can control the concentration of private sector risk in the banking system.

- The second measure consists in the proportion of local currency bonds issuance in total issuance (ratio of bonds

in LC). A small proportion of local-currency bonds means a strong dependence towards the foreign currency debt relative to local-currency. This measure of bond market development can control the problem of misalignment of exchange.

- The third measure is the proportion of local currency bond of total domestic financing (ratio of bond financing). This ratio indicates the relative importance of domestic bonds financing. A small proportion means a system based on bank loans and / or equity financing programs. This measure of bond market development can control the problem of maturity mismatch.

Macroeconomic control variables

An abundant literature has identified the macroeconomic origins of banking and financial crises. Compared to this, only a few studies have analyzed the crucial macroeconomic variables to promote financial stability. These studies consisted, in the majority, by country studies related to panel data banks, focused on the determinants of specific indicators of financial stability. For example, asset quality and profitability, and more recently the capital adequacy in Hong Kong [33], provisions in the OECD countries [34], and profitability in Italy [35]. In an aggregate study covering 96 countries over the period 1998-2004 Babihuga [36] analysis macroeconomic determinants of three basic indicators of financial stability.

The choice of macroeconomic control variables in our model is based on the main results of these studies. Macroeconomic variables appear to be significant in explaining the indicators of capital adequacy, asset quality and profitability are the economic cycle (measured by the cyclical component of real GDP generated by a Hodrik-Prescott filter); and inflation, interest and exchange made in terms of variation. All of these variables are selected to control the macroeconomic environment of financial institutions.

4.2. Bond Markets and Financial Stability Indicators: Empirical Results

The empirical analysis is based on the equation (1) above specified, using the three key indicators of financial stability, ie, capital adequacy, asset quality and profitability, as dependent variables. Specifically, the regressions use three financial ratios, ie, the regulatory capital to risk-weighted assets, non-performing loans to total gross loans and asset returns. Specific measures of bond market development described above, are tested, ie, the ratio of private credit bonds, the proportion of local-currency bonds and the proportion of bond financing. The regression results are presented in Table 6.

Macroeconomic control variables appear to be significant and of the expected sign in all specifications. The economic cycle is negatively correlated with the capital adequacy indicator. In a recession, financial systems tend to hold higher capital ratios. This indicator is strongly positively correlated to the ratio of non-performing loans, which suggests that economic booms are associated with deterioration in asset quality; and positively related to the ratio of asset returns, which suggests that economic growth coincides with high profitability of banks. The impact of inflation, interest rates and exchange rates is generally ambiguous.

¹ We identify the unique case of Russia and Korea.

² In early 2003, the Korean bond market had its third crisis since the Asian crisis of 1997-98. These three crises have in common the following: failure of the private sector (Daewoo, Hyundai and SK Group / LGCard), disengagement of households and businesses against bond funds, massive sales of bonds (especially state), drying up of liquidity and finally government intervention.

Table 6. results of GMM regression

	Financial Soundness Indicators (FSIs)								
	Capital Adequacy			Asset Quality			Profitability		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Measures of development of domestic bond markets									
Ratio of private credit obligations	4.182754* (1.059033)			-9.121306*** (-4.920714)			0.795544*** (2.808168)		
Ratio of LC bonds		-19.98447*** (-3.306524)			-32.97541*** (-5.113755)			2.901215* (1.776532)	
Ratio of bond financing			35.52366* (0.0788)			-4.539085 (-0.451008)			3.521048** (2.100294)
Macroeconomic Variables									
Economic Cycle	-0.987171* (-1.887009)	-4.801878*** (-6.479258)	-1.561423** (-2.326179)	5.378329*** (3.483548)	3.420053*** (5.304391)	5.168058*** (4.967578)	0.322104*** (4.898886)	0.222878* (1.834475)	0.309192*** (3.132485)
Inflation	0.040303* (0.420560)	0.541148*** (5.415755)	0.118826* (0.730120)	-0.186462* (-1.162776)	0.235459* (1.120476)	-0.096644* (0.5525)	-0.011538* (-0.370476)	-0.010550* (-0.521866)	-0.010075* (-0.456444)
Real Interest Rate	0.087567** (2.277980)	0.161510*** (2.202614)	0.120725*** (2.989822)	0.147272* (1.176359)	0.364066*** (5.279601)	0.235615* (1.957850)	-0.016820* (-1.390845)	-0.028633** (-2.884461)	-0.014338* (-1.202517)
Real Exchange Rate	0.043941* (1.975336)	0.095882*** (3.030716)	0.007143* (0.226125)	-0.063792* (-1.336703)	-0.141459** (-2.267599)	-0.024207* (-0.530478)	-0.001448* (-0.221235)	-0.004537* (-0.623948)	-0.008329* (-0.893765)
Observations	43	43	43	43	43	43	43	43	43
J-statistic	35.06791	13.83775	29.69716	30.13549	17.60083	40.75597	19.91452	12.43333	20.30651

Specifications (1), (2) and (3) show that bond market development contributes significantly to improving the capital adequacy, after controlling for macroeconomic factors of financial stability. This positive influence is exerted primarily by the ratio of the bond financing and bond issues in local-currency. Development of bond markets in local currency, to finance the economy and reduce the debt in foreign currency, is thus associated with an increase in regulatory capital, which implies greater resilience of the banking system to shocks and losses. This increase in the capital ratio is the result of a banks detention of less risky assets in their balance sheets by reducing the risk of maturity and currency.

A comparatively strong effect of bond market development is exerted on asset quality as suggested by the size of the coefficients obtained in the specifications (4), (5) and (6), after controlling for macroeconomic factors of financial stability. This effect is larger when the bond market development is measured by the ratio of bond financing. An increase in bond financing of the economy and a decrease in the debt denominated in foreign currency-emerge as important factors that could significantly improve the asset quality of the banking sector and therefore its solvency. This result is explained by the reduction of problems relating to double misalignment of maturity and change. It has been shown that these problems are major factors behind the difficulties and failures in the private sector during the Asian financial crisis, which has impacted on the banking sector leading to an increase in bad debts (Stone, 2000, 2001; Stone & Weeks, 2001).

The results further indicate that the bond market development has a significant positive effect on the profitability of banks, after controlling for macroeconomic factors of financial stability. This effect is more pronounced when measured by the ratio of corporate bonds on credit (Specification 7). The interpretation of this result is telling. Contrary to conventional thinking, the introduction of market mechanisms in the allocation of credits generator seems a better bank profitability.

The development of these markets strengthens banks discipline through better management of credit risk and assesses the profitability of investment projects to be financed. Competitive market pressures also encourage banks to innovate and remain efficient to attract their customers.

Finally, the results of empirical tests used to confirm that the bond market development contributes significantly to financial stability. Two interesting results emerge from this econometric study on the Asian sample. The first result is that the positive impact of bond market development is mainly carried by improving the quality of bank assets favored by reducing problems of double misalignment of maturity and change. The second result is that the development of these markets and the reduction of the concentration of private sector credit to banks allow them to significantly improve the profitability of their assets.

5. Conclusion

This article analyzes the recent experience of the local bond market development in Asia and examines its impact from a point of view of financial stability, referring to the financial turmoil it has suffered since 1997. The lessons learned from the crisis suggest the turbulence was caused, to varying degrees, by common factors such as poorly controlled liberalization of capital movements in the short term, the weakening of the banking systems or fixed exchange rate policies or semi-fixed to the dollar. The stylized facts of this article reveal particular, incompatibility between the opening of international capital markets and corporate finance private sector heavily dependent on banks. Markets securities of domestic long-term and liquid assets could help protect Asian economies shocks of the type they just suffered.

The empirical study confirms this dynamic relationship between bond markets and financial stability and suggests that the development of these markets can enhance the

strength of the financial sector in a period of crisis. The potential benefits of bond market development are manifold. But it seems clear that the stabilizing impact of bond markets is their contribution to reducing the problem of double misalignment of maturity and currency, leading to limit and diversify the risks associated with private sector financing and significantly improve the quality of assets, capital and resilience of the banking system. Reducing the concentration of private sector credit to banks promoted by the development of these markets also appears as a significant factor of improving the profitability and efficiency of banks.

In conclusion, Asian bond markets are promising and may play a crucial role for the essential transition in the context of financial integration. In the Asian region, it is still unfinished and there is much to be done. These include encouraging the participation of institutional and non-resident investors, increase liquidity, improve transparency and credit rating and reduce taxes on those markets. It should also emphasize the importance of developing the regulatory and institutional infrastructure, guaranteeing the stability of these markets.

References

- [1] Kaminsky, G. L., & Schmukler, S. L. (2008). Short-run pain, long-run gain: Financial liberalization and stock market cycles*. *Review of Finance*, 12(2), 253-292.
- [2] Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American economic review*, 48(3), 261-297.
- [3] Levine, R. (2000). Bank-based or market-based financial systems: which is better?. *University of Minnesota, mimeo*.
- [4] Stiglitz, J. E. (1985). Credit markets and the control of capital. *Journal of Money, credit and banking*, 17(2), 133-152.
- [5] Levine, R. (2002). Bank-based or market-based financial systems: which is better?. *Journal of financial intermediation*, 11(4), 398-428.
- [6] Kumar, K. B., Rajan, R. G., & Zingales, L. (1999). *What determines firm size?*(No. w7208). National Bureau of Economic Research.
- [7] Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The journal of finance*, 52(2), 737-783.
- [8] Grossman, S. J., & Hart, O. D. (1980). Takeover bids, the free-rider problem, and the theory of the corporation. *The Bell Journal of Economics*, 42-64.
- [9] DeAngelo, H., & Rice, E. M. (1983). Antitakeover charter amendments and stockholder wealth. *Journal of Financial Economics*, 11(1-4), 329-359.
- [10] Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *the Journal of Finance*, 48(3), 831-880.
- [11] Allen, F., & Gale, D. (2000). *Comparing financial systems*. MIT press.
- [12] Chakraborty, S., & Ray, T. (2007). The development and structure of financial systems. *Journal of Economic Dynamics and Control*, 31(9), 2920-2956.
- [13] Shleifer, A., & Summers, L. H. (1988). Breach of trust in hostile takeovers. In *Corporate takeovers: Causes and consequences* (pp. 33-68). University of Chicago Press.
- [14] Bhidé, A. (1993). The hidden costs of stock market liquidity. *Journal of financial economics*, 34(1), 31-51.
- [15] Acemoglu, D., & Zilibotti, F. (1997). Was Prometheus unbound by chance? Risk, diversification, and growth. *Journal of political economy*, 105(4), 709-751.
- [16] Hmida, M. (2014). Financial Contagion Crisis Effect of Subprime on G7: Evidence through the Adjusted Correlation Test and Non-linear Error Correction Models (ECM). *International Journal of Econometrics and Financial Management*, 2(5), 180-187.
- [17] Hmida, M. (2014). The financial contagion effects of the subprime crisis on BRIC countries. *International Journal of Managerial and Financial Accounting*, 6(3), 175-188.
- [18] Boot, A. W., & Thakor, A. V. (2000). Can relationship banking survive competition?. *The journal of Finance*, 55(2), 679-713.
- [19] Weinstein, D. E., & Yafeh, Y. (1998). On the costs of a bank-centered financial system: Evidence from the changing main bank relations in Japan. *The journal of Finance*, 53(2), 635-672.
- [20] Dewatripont, M., & Maskin, E. (1995). Credit and efficiency in centralized and decentralized economies. *The Review of Economic Studies*, 62(4), 541-555.
- [21] Black, S. W., & Moersch, M. (1998). Financial structure, investment and economic growth in OECD countries. *ADVANCES IN FINANCE INVESTMENT AND BANKING*, 5(1), 157-174.
- [22] Wenger, E., & Kaserer, C. (1998). German banks and corporate governance: A critical view. *Comparative Corporate Governance-The State of the Art and Emerging Research*, 499-536.
- [23] Rajan, R. G., & Zingales, L. (2003). Banks and markets: The changing character of European finance.
- [24] Caprio, G., & Levine, R. (2002). Corporate governance in finance: Concepts and international observations. *Financial sector governance: The roles of the public and private sectors*, 17-50.
- [25] Haber, S. (2005). Mexico's experiments with bank privatization and liberalization, 1991-2003. *Journal of Banking & Finance*, 29(8), 2325-2353.
- [26] Arestis, P., Luintel, A. D., & Luintel, K. B. (2004). Does financial structure matter?.
- [27] Billmeier, A., & Massa, I. (2009). What drives stock market development in emerging markets—institutions, remittances, or natural resources?. *Emerging Markets Review*, 10(1), 23-35.
- [28] Demirgüç-Kunt, A., & Maksimovic, V. (1996). Stock market development and financing choices of firms. *The World Bank Economic Review*, 10(2), 341-369.
- [29] Krugman, P. R., Dominquez, K. M., & Rogoff, K. (1998). It's baaack: Japan's slump and the return of the liquidity trap. *Brookings Papers on Economic Activity*, 1998(2), 137-205.
- [30] Chinn, M. D. (1997). Paper pushers or paper money? Empirical assessment of fiscal and monetary models of exchange rate determination. *Journal of Policy Modeling*, 19(1), 51-78.
- [31] Chinn, M. D., & Dooley, M. P. (1999). International monetary arrangements in the Asia-Pacific before and after. *Journal of Asian Economics*, 10(3), 361-384.
- [32] Wade, R., & Veneroso, F. (1998). The Asian crisis: the high debt model versus the Wall Street-Treasury-IMF complex. *New Left Review*, (228), 3.
- [33] Fan, J. P., & Wong, T. J. (2005). Do external auditors perform a corporate governance role in emerging markets? Evidence from East Asia. *Journal of accounting research*, 43(1), 35-72.
- [34] Bikker, J. A., & Metzmakers, P. A. J. (2002). „Bank provisioning behavior and procyclicality“, DNB Staff Reports, Nr. 111.
- [35] Quagliariello, M. (2003). Macroeconomics indicators useful in predicting bank loan quality? Evidence from Italy, Rome: Bank of Italy.
- [36] Babihuga, R. (2007). *Macroeconomic and financial soundness indicators: an empirical investigation* (No. 7-115). International Monetary Fund.