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East Asian Local Currency Bond Market Development: Since the Release of Asian Bond Market Initiative in 2003

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東アジアにおける現地通貨債券市場の発展：2003 年のアジア債券市場イニシアチブの公表以降の動きに着目して

リュウ　レン

The 1997 Asian financial crisis has convinced East Asian governments the urgency to develop regional bond markets. Later in 2003, the Asian Bond Markets Initiative (ABMI) was introduced, which was thought as the milestone for the local currency (LCY) bond market development in East Asia. This paper aims to investigate the current state of each East Asian LCY bond market from four dimensions: bond market size, access, efficiency and stability. The East Asian LCY bond markets have experienced substantial expansion in terms of absolute amount of bonds outstanding since 2003. Market access is also improved, as shown by the decreasing capital costs through bond markets and rising new bond issuance volume every year. The bond markets are more resilient with larger amount of long-term maturity bonds. However, there are still challenges ahead. The East Asian bond markets remain illiquid with wide bid-ask spreads and low turnover rate. "Buy-and-hold" investors make up a large share of market participants in the LCY bond markets. Compared with government bond markets, East Asian corporate bond markets are less developed, except for Malaysia, Korea and Singapore. In sum, East Asian LCY bond markets are still far from complete, more needs to be done.

1. Introduction

In the wake of the 1997 Asian financial crisis, East Asian[1] governments come to realize the policy urgency for developing regional financial markets. Researchers have made a consensus that the Asian financial crisis highlighted the need for the robust local capital markets in East Asia, which may help reduce the risks associated with excessive reliance on foreign capital, such as, currency and maturity mismatches (Chowdhury, 1999; McCauley, 2003; Hwang, 2016). Former Federal Reserve Chairman Greenspan put forward the "spare tier" argument that in case bank and equity finance opportunities were disrupted, bond markets would serve as alternative vehicles for capital financing (Greenspan, 1999). Since then the development of East Asian local currency (LCY) bond markets has caught wide

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1 Bond markets in East Asia, defined here, contain 10 bond markets in East Asia (China, Hong Kong, Indonesia, Japan, Korea, Singapore, Malaysia, Thailand, Philippines and Vietnam).

discussion. As a result, shortly after the occurrence of the crisis, Asian Bond Market Initiative (ABMI) was created in 2003 to guide the regional LCY bond market development. Following the release of ABMI, East Asian governments and working groups continued to release a range of measures to boost the regional bond markets, such as ASEAN＋3 Bond Market Forum (ABMF), Credit Guarantee and Investment Facility (CGIF) and Asian Bond Fund (ABF). East Asian LCY bond markets have witnessed substantial expansion.

Fostering a well-functioning LCY bond market brings a lot of advantages. First, a robust LCY bond market provides an alternative way for financing to the banking system (Turner, 2012). Most of the East Asian economies highly depend on the banks as financing channel, which helps accumulate massive risks exposure in the banking system and becomes one of the key causes of 1997 Asian financial crisis (Yamaguchi, 2014; Ratna et al., 2005). Second, East Asian economies embrace the highest level of gross savings and foreign reserves in the world. Well-functioning LCY corporate bond markets help channel the abundant capital into corporates lack of money. Third, advanced government bond markets enable the central bank to implement monetary policies through market operations (IMF, 2004). Finally, robust LCY bond markets may lower the capital cost because of the increasing competition in financial markets, which in turn promote the economic development. The strong correlation between the bond market development and economic growth has been widely demonstrated in the literature (Pradhan, 2015; Anwar et al., 2012; Levine, 2005).

McCauley and Park (2006) put forward two alternative paths of nurturing East Asian bond markets: (1) developing well-developed LCY domestic markets where domestic issuers can finance themselves through domestic capital pool; (2) fostering an integrated regional bond market where regional issuers can make the best of regional capital pool. They argue that the ideal approach to establish a regional bond market would be first to develop each domestic bond market to an acceptable level and then harmonize regulations in each economy to attract the regional foreign investors, and finally build a regional bond market. The development of domestic bond markets paves the way for the development of regional bond market (Amyx, 2004). Thus, the development of East Asian bond markets contains two key ingredients: domestic bond market and regional bond market. Against this background, this paper aims to investigate the development of East Asian LCY bond markets at the national levels. It adopts the bond market development indicators provided by the World Bank to assess the development of East Asian bond markets in four dimensions: bond market size, access, efficiency and stability.[2]

The rest of the paper is organized as follows. The second section gives a brief summary of governments' efforts to foster the East Asian bond market during the past decade. The third section looks into the current development of local LCY bond markets in East Asia from four dimensions: bond market size, access, efficiency and stability. The final section concludes. The final section concludes.

[2] The World Bank provides indicators monitoring the bond market development in four dimensions, that is, size, access, efficiency and stability. http://siteresources.worldbank.org/INTTOPACCFINSER/Resources/Bndind.pdf

2. Regional Efforts to Develop the Bond Markets

Since the 1997 Asian financial crisis, the development of regional bond markets has become one of the central pillars of financial cooperation in East Asia. East Asian governments and various working groups, such as the ASEAN+3, and Executives' Meeting of East Asia-Pacific Central Banks (EMEAP),[3] have taken significant steps to promote the development of the local LCY bond markets. Substantial work on the demand and supply sides of the bond market development have been done. For instance, on the supply side, APEC and ASEAN+3 try to remove the barriers impeding the issuance of bonds in the bond markets. EMEAP focuses on the demand side through establishing Asian Bond Funds (ABFs). All the initiatives for East Asian bond markets have conveyed a strong message that the regional governments stand together to provide support for the regional financial market development and protect the regional financial market from volatile global capital flows and diverse external shocks. The following sub-sections provide a more detailed overview of the two most important regional initiatives.

2.1 Asian Bond Markets Initiative (ABMI)

Asian Bond Markets Initiative (ABMI) was introduced under the framework of ASEAN+3 to develop the bond markets in East Asia. It was thought as the milestone for the development of East Asian bond markets. The chairman of the ASEAN+3 Finance Ministers Meeting defined the mission of ABMI as: "*The Asian Bond Markets Initiative (ABMI) aims to develop efficient and liquid bond markets in Asia, which would enable better utilization of Asian savings for Asian investments. The ABMI would also contribute to the mitigation of currency and maturity mismatches in financing. It is a key step forward in ASEAN+3 finance cooperation.*"[4] The roadmap of ABMI was created in 2005 and later upgraded in 2008 with four task forces (TFs): (1) promotion of the issuance of local currency-denominated bonds (TF1), (2) stimulation of the demand for local currency-denominated bonds (TF2), (3) regulatory framework reforms (TF3), (4) improvement of the related infrastructure in the bond market (TF4).

Since then many follow-up measures are implemented time to time under the four task forces of ABMI, such as AsianBondsOnline (ABO), ASEAN+3 Bond Market Forum (ABMF), Credit Guarantee and Investment Facility (CGIF), Cross-border Settlement Infrastructure Forum (CSIF) and ASEAN+3 Multi-Currency Bond Issuance Framework (AMBIF). Table 1 summarizes the main achievements of Asian Bond Markets Initiative (ABMI) has obtained as so far.

2.2 Asian Bond Funds (ABFs)

To address the demand side of bond market development, Executives' Meeting of East Asia-Pacific Central Banks (EMEAP) established Asian Bond Fund (ABF) in June 2003, which is a big stride toward fostering regional bond markets between the East Asian central banks. The first stage of ABF

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[3] EMEAP consists of 11 central banks from the southeast and pacific regions of Asia, namely Australia, China, Hong Kong Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore and Thailand.

[4] Chairman's Press Release on the Asian Bond Markets Initiative on August 7st 2003. Available at: http://www.asean.org/communities/asean-economic-community/item/chairman-s-press-release-on-the-asian-bond-markets-initiative

Table 1. Achievement of Asian Bond Markets Initiative (ABMI)

August 2003	Asian Bond Markets Initiative (ABMI) was introduced under the framework of ASEAN+3
April 2004	AsianBondsOnline (ABO) was established by the Asian Development Bank (ADB), which provides a rich source of information of East Asian bond markets development
May 2008	The roadmap of ABMI was upgraded during the 11th ASEAN+3 Finance Ministers Meeting in respond to the 2008 world financial crisis
September 2010	ASEAN+3 Bond Market Forum (ABMF) was established under the framework of ABMI TF3 to harmonize the market regulations concerning cross-border transactions
November 2010	Credit Guarantee and Investment Facility (CGIF) was established under the framework of ABMI TF1 with initial funding of US$ 700 million. As of 2017, CGIF has guaranteed for 17 bonds issued by 13 companies in 8 ASEAN member countries.
May 2013	Cross-border Settlement Infrastructure Forum (CSIF) was set up under ABMI TF4 to address how to foster a settlement system facilitating regional cross-border bond transactions.
May 2015	ASEAN+3 Multi-Currency Bond Issuance Framework (AMBIF) was released under ABMF to help facilitate intra-regional transactions through standardized bond and note issuance and investment processes. Mizuho Bank became the first issuer under this issuance framework in 2005.

Sources: Yamaguchi (2014); Satoshi (2018)

(ABF1) has an initial capital of US$ 1 billion, which aims to invest in a range of US dollar denominated government bonds issued by local governments or organizations in eight EMEAP economies, namely, China, Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. The ABF1 is designed to channel the sizable foreign exchange reserves within the region by providing a useful tool for East Asian central banks to diversify their investments beyond traditional assets.

On a basis of the experience of ABF1, EMEAP launched the second stage of ABF (ABF2) in 2004. ABF2 is consisted of two components: Pan-Asian Bond Index Fund (PAIF) and Single-market Fund. PAIF is an index fund based on local currency denominated government bonds in eight EMEAP economies, which provides investors a convenient and low-cost instrument to invest in the eight regional bond markets simultaneously. Single-market Fund invests in local currency denominated government bonds in eight single bond markets. With the help of ABFs, East Asia has witnessed an easing of restrictions on cross-border bond transactions. For example, PAIF has been the first foreign investor allowed to access China's interbank bond market. Besides, since PAIF has been operated based on the international standards, it has introduced the international standards to individual East Asian bond market. ABF may further expand the scope of investment to the corporate bonds to promote the development of corporate bond markets.

3. East Asian Domestic Bond Market Development

In response to the afore-mentioned efforts by East Asian economies, East Asian bond markets have experienced substantial expansion since 2003. This section applies the bond market development indicators developed by World Bank to investigate the current state of East Asian LCY bond market through four dimensions: market size, access, efficiency and depth (World bank, 2006). Market size can be measured by the value of LCY bonds outstanding and bond financing as a percentage of GDP. Market access is measured by long-term and short-term bond yields and new bond issuance volume. Market liquidity is measured by bid-ask spread and turnover rate of bonds trading. Finally, bond market stability is measured by 10-year government bond yield volatility and bond maturity profile. The data are obtained from AsianBondsOnline and Thomas Reuter database.

3.1 Bond market size

The local currency (LCY) bond markets in East Asia have witnessed steady growth since the release of ABMI in 2003, expanding from merely US$ 883.91 billion in 2003 to nearly US$ 15.61 trillion at the end of 2018. The Figure 1 depicts the growth of East Asian government and corporate bond market capitalization, excluding Japan. Government bonds dominate most of the regional bond markets, except for Korea, Malaysia and Singapore, whose corporate bond markets are evenly developed. The ratio of government bonds peaked to 83.55% of total bonds outstanding in 2005. With the dramatic expansion of corporate bonds in recent years, the share has shown a downward trend, recording 61.75% at the end of 2018. Only China, Korea, and Japan have sizable corporate LCY bond markets, while the corporate bond markets in other East Asian economies remain under-developed in terms of bonds outstanding. The corporate bond markets hardly exist in some economies, such as Indonesia, Philippines and Vietnam.

The raw size of East Asian bond markets reveals a diverse set of circumstances. Japan's bond market dwarfed other East Asian domestic bond markets in terms of the absolute value of bonds outstanding. The total bonds outstanding in Japan's bond market is much larger than the aggregate value of bond outstanding in the other nine emerging East Asian bond markets.[5] China's bond market has seen a

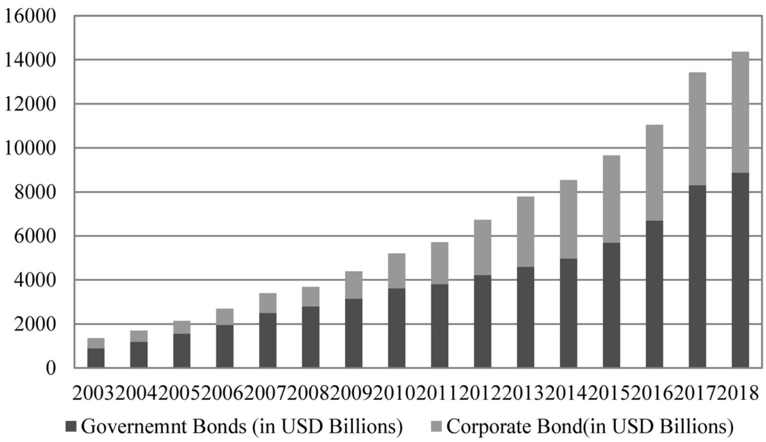

Figure 1. East Asian LCY Bond Market Capitalization (excluding Japan)

Note: End of period.
Sources: Bond market size data are extracted from AsianBondsOnline website

[5] See Asia Bond Monitor (June 2019). Emerging East Asia, defined in this paper, include the bond markets in China, Hong Kong, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.

rapid growth, making it the third largest bond market of the world after United States and Japan. But unlike United States, whose corporate bond market is bigger than the Government bond market, Japan and China have much bigger government bond segment with the government bond to corporate bond ratio at 13.7 and 1.85 respectively in 2018. China's bond market size stood at US$ 10.72 trillion at the end of 2018, followed by Korea at US$ 2.01 trillion and Singapore at US$ 384.96 billion. Despite the momentum growth of the East Asian LCY bond markets, the Philippines and Vietnam have not met the minimum size criteria of US$ 100–200 billion for a liquid bond market by McCauley and Remolona (2000). Achievement of scale economies in relatively small economies may require the financial cooperation at the regional level. Given the high gross savings and accumulation of foreign exchange reserve in East Asia, bond markets in the region still have plenty of room for further growth.

Bond financing as a percentage of GDP measures the adequacy of bond market size in proportion to the economy size. Figure 2 presents the East Asian LCY bond market capitalization as a percentage of GDP. The relative size of East Asian bond markets displays different prospects. Japan's bond market ranks the top in East Asia, whose ratio of bond financing to GDP stood at 213% at the end of 2018. Hong Kong, Korea and Malaysia's bond markets are among the second highest group, standing at around 100%. As the second-largest economy in East Asia, China's bond market is among the lowest group in the region. The bond markets in Indonesia and Vietnam are smallest, recording around 20%. On average, the ratio of the bonds outstanding to GDP for East Asian economies remained 82%, lagging behind the advanced bond markets (200%). The difference between the scale of bond markets in advanced and developing economies signals considerable scope to the development of East Asian bond markets.

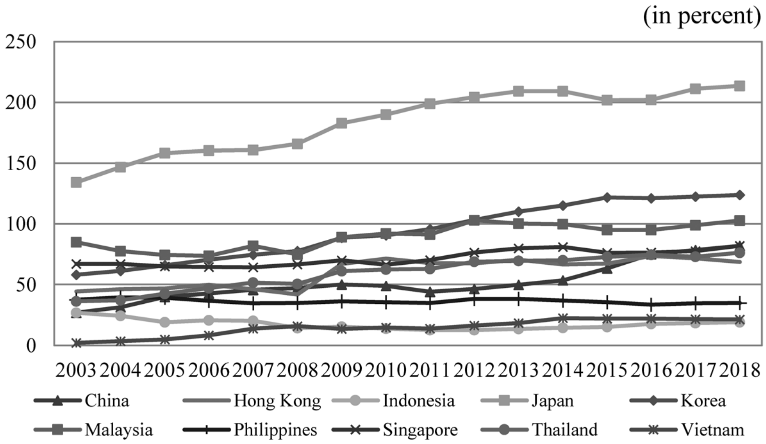

Figure 2. LCY Bond Market Capitalization as a Percentage of GDP

Note: End of period.
Sources: Data are extracted from AsianBondsOnline website

3.2 Bond market access

With variations across the region, East Asia LCY bond market access can be characterized as improving. Capital costs through East Asian bond markets have generally shown a downward trend since 2003, especially for long-term financing. Japan continues its ultra-low bond yields and the 1-year government bond yields have turned negative since the end of 2015. The Indonesia, Malaysia and Philippines's local bond markets are attractive to foreign investors with relatively high yields.

Both the long-term and short-term capital costs through East Asian emerging bond markets are still higher than that in advanced countries, such as United States and Japan. As emerging financial markets are becoming more globally integrated, East Asian bond markets are increasingly influenced by global shocks. As shown in Figure 3, 2008 global financial crisis has seen the largest volatility happened in East Asian bond market. Besides, with the expectation of region's positive economic outlook and expectations of rising inflation, bond yields in the emerging East Asian bond markets

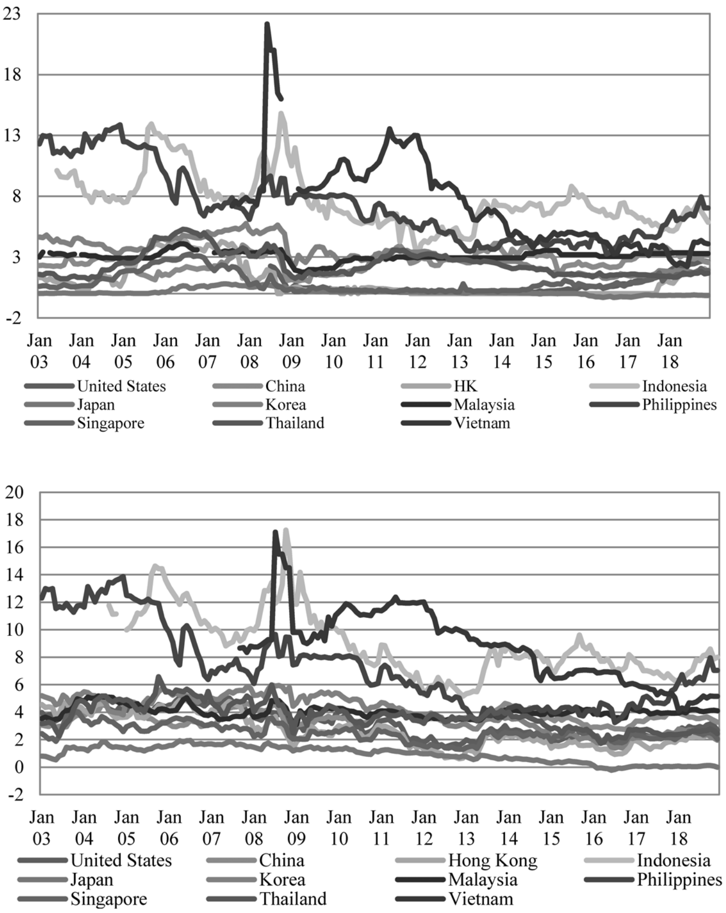

Figure 3. 1-year and 10-year government bond yield in East Asia, 2003–2018

Note: End of period
Source: Data is extracted from Thomson Reuters database.

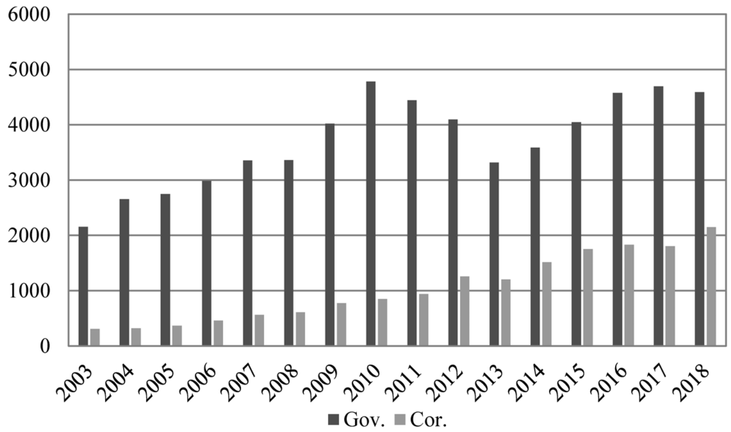

Figure 4. Bond issuance volume in East Asian bond markets

Source: Data is extracted from AsianBondsOnline website.

have climbed again since 2018.

There has been a steady rise of corporate bond issuance in East Asia even during and after the 2008 world financial crisis, which is thought to enhance the market liquidity (Chan, Chui, Packer, and Remolona, 2012). Major financial institutions and companies who suffered from the difficulties to raise money from domestic banks or overseas issued bonds in domestic bond markets. As a result, East Asian corporate bond markets started to play the role of spare tires to some extent. Government bond issues decreased for a while after the 2008 world financial crisis but recovered from 2014. East Asian governments still issue a vast majority of bonds, while the issuance of corporate bonds is still not efficient.

Corporate bond issuers are limited to certain large government-affiliated companies and represented by such industries as banking, infrastructure or real estate, which issue more than half of the corporate bonds (ADB, 2018). There are few issues by companies with low ratings. This phenomenon is common to most of the East Asian bond markets. In the Philippines and Vietnam, the top 30 companies account for more than 85% of total corporate bond issuance, while the shares are 55%–75% in Indonesia, Malaysia and Thailand. China and Singapore stood at around 45% (ADB, 2018). This is partly due to the strict market access policies, such as rigid requirements for corporate bond issuance. Under such circumstances, the overall cost of corporate bond issuance is much more expensive than the cost of bank financing for most firms. As a consequence, the firms have less incentive to finance themselves through bond markets, taking the risk of being attacked by market participants, particularly in times of crisis. Owing to the liberal investment environment, Hong Kong is the only exception where the top 27 companies only makes up 25.9% of the total local corporate bonds, as record in 2018.

3.3 Bond market liquidity

Market liquidity measures the ability of markets to execute transactions cheaply and rapidly without affecting the price. It has various dimensions, among which market depth and width are the two most important indicators. Market depth can be measured by the turnover rate, while the width can be gauged by bid-ask spread on the financial assets. In general, the improvement in bond market liquidity is not commensurate with the increase in the market size in East Asia. The bid-ask spreads have narrowed downed before 2010, but we cannot detect an explicit downward trend in the bid-ask spreads since then. There is still huge room for improvement, as the bid-ask spread in European countries is lower than 1 basis point on average. Besides, there seems to be a marked disparity in market width among East Asian bond markets. The bid-ask spread in government bonds ranges from 0.5 in Korea to more than 8.3 in Vietnam.

The limited bond market liquidity is also reflected by the low turnover rate in East Asian bond markets. Trading volumes in both government and corporate bonds rise over time. However, the growth in the magnitude of bonds outstanding has significantly outpaced the increase in trading volume, as a result, the turnover rates in East Asian bond markets have not improved significantly and remain very low. Hong Kong is the only exception, where the yearly bond turnover rate reached 137.7 in 2010 but decreased back to 2.82 in 2018. In the developed countries such as United States, the annual turnover ratio for Treasury debt securities has recorded more than 100. Besides, the liquidity in corporate bonds is even less favorable. The trading volume and turnover ratios are much lower than that of government bonds. The trading of corporate bonds only lasts for a few months right after the issuance and then the corporate bonds are always held until the maturity, not traded in the secondary markets.

The AsianBondsOnline conducts an annual LCY Bond Market Liquidity Survey to assess liquidity conditions in East Asian LCY bond markets. The market makers are asked to make qualitative judgments on the importance of eight factors to increase the liquidity in both the government and corporate bond markets: transparency, hedging mechanisms, settlement and custody, tax treatment, transac-

Table 2. Yearly turnover volume and turnover rate in LCY bond market

Economy	Trading Volume (US$ billion)						Turnover rate					
	2003		2010		2018		2003		2010		2018	
	Gov.	Cor.	Gov.	Cor.	Gov.	Cor.	Gov.	Cor.	Gov.	Cor.	Gov.	Cor.
China	3,144	17	48,123	19,601	73,270	3,458	0.99	0.19	3.17	5.31	1.66	0.30
Hong Kong	5,125	90	93,244	122	3,297	496	42.66	0.21	137.70	0.21	2.82	—
Indonesia	—	—	1,437,343	90,009	5,025,799	327,617	—	—	2.35	0.89	2.25	0.82
Japan	1,265,364	20,708	1,714,948	14,569	1,127,620	9,012	2.99	0.20	2.29	0.16	1.05	0.11
Korea	986,373	303,179	2,339,303	516,579	1,759,415	619,171	4.50	—	4.37	0.73	1.96	0.48
Malaysia	244	299	1,001	90	653	116	—	—	2.53	0.30	0.93	0.18
Singapore	—	—	—	—	231	—	—	—	3.23	—	0.99	—
Thailand	1,673	197	16,420	178	18,184	1,118	0.93	0.54	3.22	0.15	2.12	0.34

Source: Data are extracted from AsianBondOnline.

tion funding, foreign exchange regulations, market access and diversification of investor profiles. According to their feedbacks, greater diversify of the investor base is always chosen as the most appropriate policy to raise the bond market liquidity. "Buy-and-hold" investors, such as the commercial banks, have accounted for a large share of market participants in the regional bond markets, which undermine the effectiveness and efficiency of the East Asian bond markets. A more diversified and heterogeneous investor base with different investment strategies, such as, mutual funds, insurances and pensions, should be encouraged to participate in the East Asian bond markets.

After years' efforts of East Asian governments to broaden the investor base in the regional bond markets, the investor base in East Asia has become more diversified. The share of banks' holdings in East Asian bond markets has declined, replaced by the holdings of contractual savings institutions or other investors. This shift is most significant in Indonesia, Korea and Thailand. In Indonesia, the commercial banks' holding of government bonds has fell dramatically from 82.34% in 2003 to 68.82% in 2018, more bonds are held by contractual savings institutions or foreign investors. In Korea, the share of commercial banks' holding in government bonds fell from 31.82% in 2003 to 23.06% in 2018. In the meanwhile, the share of contractual savings institutions' holding has rose from 21.99% in 2003 to 25.09% in 2018. Commercial banks are by far the largest holders in the China's government bond market, recording 66.25% at the end of 2018. In summary, even though commercial banks are by far the largest holders in the East Asian government bond markets, its share is declining. The pension funds, insurance companies and foreign institutional investors are gaining presence in the East Asian bond markets.

3.4 Bond market volatility

Market stability measures the ability of market to handle a large volume of trades, without causing large volatility in the prices of assets. It can be measured by the bond yield volatility and maturity structure of bonds. On one hand, volatile bond market may discourage investors from participating in the bond market. On the other hand, volatile government bond yields hinder the development of benchmark yield curve and in turn hamper the development of corporate bond market. Figure 5 illustrates the daily yield volatility in the 10-year government bonds. In most of the East Asian bond markets, the 10-year government bond yields appear to be quite stable. The most volatile bond markets, measured by the yield volatility, are in Indonesia, Philippines and Vietnam. The bond markets in East Asia became most volatile during the 2008 world financial crisis, which suggests domestic bond yields may be more susceptible to global shocks.

Another indicator used to measure the bond market stability is maturity structure of bonds. Bond markets with more longer-term bonds are supposed to be more stable. A large portion of short-term bonds in the bond market is a sign for instability and risk. This is because the short-term bonds increase the vulnerability to sudden withdrawals of capital. The sequent surge of short-term interest rate pulls up the burden of bond obligations.

Table 3 presents the maturity profiles of LCY government bond in 2004 and 2018. In general, matu-

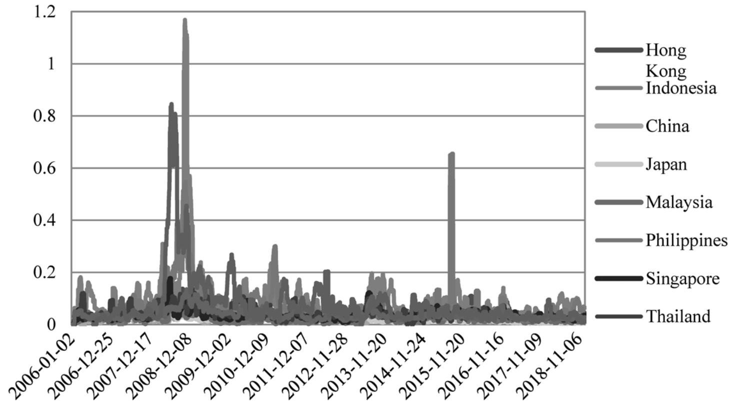

Figure 5. Daily 10-year LCY government bond yield volatility

Source: Data are obtained from AsianBondsOnline, only available from 2006

Table 3. LCY Government Bond Maturity Profile (2004 vs. 2018)

(in percent)

	2004				2018			
	1–3 year	3–5 year	5–10 year	>10 year	1–3 year	3–5 year	5–10 year	>10 year
China	22.74	27.83	31.75	17.68	26.73	29.18	35.46	8.63
Hong Kong	55.22	20.4	24.38	0	4.9	1.69	1.99	91.41
Indonesia	16.13	19.42	33.98	30.47	15.45	14.28	29.41	40.87
Japan	37.39	22.88	27.82	11.91	15.45	14.28	29.41	40.87
Korea	54.77	23.07	21.76	0.41	31.94	13.08	24.59	30.39
Malaysia	31.49	31.04	25.65	11.82	22.43	19.2	33.39	24.98
Philippines	43.85	30.69	20.26	5.2	17.57	21	23.97	37.47
Singapore	25.8	30.59	31.28	12.33	24.36	22.09	25.44	28.11
Thailand	34.69	17.7	34.19	13.43	32.24	16.47	19.01	32.28
Vietnam	10.58	38.27	6.25	44.91	36.57	11.02	21.77	30.64

Note: Due to the data limitation, the data in 2004 and 2017 are listed here for China, while the data in 2006 and 2018 are listed for Thailand.

Source: The data are extracted from AsianBondsOnline website.

rity profile has shifted towards long tenors during the past years, with an expansion of bonds with the maturity exceeding 10 years. Hong Kong stands out with a striking 91.41% of its total government bonds outstanding with maturities of more than 10 years at the end of 2018. Most of the East Asian bond markets have a much more balanced maturity structure of government bonds, with the largest share of bonds with tenor more than 10 years. With lengthening maturity profiles of LCY government bond, East Asian economies could build up their government yield curves systematically for the purpose of enhancing their bond markets. A risk-free benchmark yield curve plays a crucial role in developing corporate bond market, private sector lending and borrowing activities (Bae, 2012), because it provides a basis for the pricing of the financial assets.

Table 4 LCY Corporate Bond Maturity Profile (2004 vs. 2018)

(in percent)

	2004				2018			
	1–3 year	3–5 year	5–10 year	>10 year	1–3 year	3–5 year	5–10 year	>10 year
China	3.69	4.12	69	23.19	36.85	28.02	28.45	6.68
Hong Kong	0	0	84.47	15.53	45.86	19.35	25.23	9.57
Indonesia	36.22	28.81	31.26	3.71	48.28	29.17	19.86	2.7
Korea	55.76	24.59	15.74	3.91	50.17	22.59	14.61	12.63
Malaysia	21.64	18.76	30.77	28.82	15.71	18.94	32.48	32.87
Philippines	9.26	58.64	32.1	0	32.02	30.27	35.9	1.81
Singapore	22.2	38.27	23.9	15.64	26.55	21.18	24.6	27.66
Thailand	43.2	33.34	21.53	1.92	44.08	18.1	30.45	7.38
Vietnam	0	0	0	0	64.93	8.01	27.05	0

Note: Due to the data limitation, the data in 2004 and 2016 are listed here for China and Hong Kong, while the data in 2009 and 2018 are listed for Indonesia, Korea and Malaysia.
Source: The data are extracted from AsianBondsOnline website.

As for the corporate bonds, the maturity profile remains generally shorter than that of government bonds, only with the exception of Malaysia and Singapore. Table 4 compares corporate bond maturity profile between 2004 and 2018. There is not an apparent extension in the bond maturity. For corporate bonds, 1 to 3-year tenors prevail in most of the East Asian bond markets, such as Hong Kong, Indonesia, Korea, Thailand and Vietnam, with the share of 45.86%, 48.28%, 50.17%, 44.08% and 64.93% in 2018 respectively. Corporates in Hong Kong have issued an increasing number of bonds with the maturity of more than 1 year and less than 5 years. In 2004, there was not bond issuance with the maturity from 1 to 5 year. In contrast, in 2018, the corresponding share was 65.21%. The issuance of corporate bonds with the maturity of more than 5 years is expected to rise as the region's corporate bond markets have become more complete with a strong growth momentum in recent years. It seems still difficult for corporates in Indonesia, Philippines and Vietnam to get long-term funds through bond market, as the share of bonds with the maturity of more than 10 years remained under 5% in 2018, suggesting that the corporate bond market in Indonesia remains less developed and has a long way to go before becoming a significant funding source for corporates.

4. Conclusion

This paper provides an overview of the regional efforts to develop the East Asian LCY bond markets since the creation of ABMI in 2003 and investigates the current state of East Asian LCY bond market development from four dimensions: market size, access, efficiency and stability. The main findings of this chapter are concluded as follows.

Much progress has been made in the East Asian bond markets over the past decades, as shown by the following stylized facts. First, East Asia has witnessed significant growth in the magnitude of bond financing since the release of AMBI in 2003. The combined value of bonds outstanding has expanded from US$ 1,348.97 in 2003 to US$ 14,372.69 billion in 2018. Second, the long-term capital costs through bond financing in East Asia have generally shown a downward trend since 2003, as reflected by the decreasing 10-year government bond yields. Third, the East Asian bond markets stay illiquid. “Buy-and hold” investors, such as the commercial banks, still make up the largest portion in the East Asian bond markets. Investor base in East Asia still needs to be diversified to encourage more contractual savings institutions or mutual funds to participate in the East Asian bond markets. Fourth, the East Asian bond markets are quite stable as measured by the bond yield volatility. Furthermore, the maturity profile of the East Asian government bonds has been lengthened during the past years.

East Asian bond markets could be grouped into five levels based on their development. Japan stands at the first level, with the most developed bond market in the region. The bond markets in Hong Kong and Singapore are quite similar and more developed than the other emerging East Asian bond markets. These two international financial centers enjoy liberal investment environment, efficient market infrastructure and sound regulatory environment, diverse investor and issuer profiles. Additionally, their capital costs through bond financing are quite close to each other. Following Hong Kong and Singapore, bond markets in Korea and Malaysia remain at the third level. Korea’s bond market has the same relative size as Malaysia’s bond market. They have evenly developed corporate bond market. Their corporate bond markets are the most liquid in East Asia. China stays in the fourth layer, which embraces the second largest bond market in terms of absolute value. But relative to GDP, its bond market size is very small in the region, recording around 50% of GDP. The bond markets in Indonesia, the Philippines, Thailand and Vietnam are less developed, falling at the last level. The bond markets in Indonesia, the Philippines and Vietnam are quite similar, with the lowest relative sizes and the highest capital costs.

In sum, despite the recent encouraging development of East Asian bond markets, the bond markets still remain illiquid for both the government and corporate bonds. Besides, most of East Asia economies have uneven developed government and corporate bond markets. Government bonds dominate most of the East Asian domestic bond markets. Given that the corporate financing behavior is the main cause of the “double mismatch” problem instead of government fiscal financing, more government-led policies are needed to improve the regional corporate bond markets. The East Asian bond markets are still far from complete, more needs to be done.

Reference

Amyx, J. A. (2004). “A Regional Bond Market for East Asia? The Evolving Political Dynamics of Regional Financial Cooperation.” Pacific Economic Paper No. 342. Australia–Japan Research Center. https://crawford.anu.edu.au/pdf/pep/pep-342.pdf (July 10, 2019).

Anwar, S., and Cooray, A. (2012). “Financial development, political rights, civil liberties and economic growth: Evidence from South Asia.” *Economic Modelling*, Vol.29. No.3, pp.974–981.

Asian Development Bank (2018). “Asia Bond Monitor: November, 2019.” Asian Development Bank. https://www.adb.org/sites/default/files/publication/467066/abm-nov-2018.pdf (August 1, 2019).

Asian Development Bank (2019). “Asia Bond Monitor: March, 2019.” Asian Development Bank. https://www.adb.org/sites/default/files/publication/491531/abm-mar-2019.pdf (August 1, 2019).

Bae, K. (2012). “Determinants of Local Currency Bonds and Foreign Holdings: Implications for Bond Market Development in the People’s Republic of China.” ADB Working Paper Series on Regional Economic Integration No. 97. https://www.adb.org/sites/default/files/publication/29788/wp97-bae-determinants-local-currency-bonds.pdf (August 1, 2019).

Chan, E., Chui, M., Packer, F., Remolona, E. (2012). “Local currency bond markets and the Asian Bond Fund 2 initiative.” BIS papers No 63. https://www.bis.org/publ/othp15.pdf (August 1, 2019).

Chowdhury, A. (1999). “The Asian Currency Crisis-Origins, Lessons and Future Outlook.” Research Paper for Action 44. World Institute for Development Economics Research. https://epublications.marquette.edu/cgi/viewcontent.cgi?article=1024&context=econ_fac (August 1, 2019).

Greenspan, A. (1999). “Do Efficient Financial Markets Mitigate Financial Crises? Before the Financial Markets Conference of the Federal Reserve Bank of Atlanta.” Sea Island, Georgia. https://www.federalreserve.gov/boarddocs/speeches/1999/19991019.htm (August 3, 2019).

Hwang, S. (2016). “Corporate Bond Market in Asia and the Pacific and Its Role in Financing for Development.” Discussion Paper, ESCAP, March. https://www.unescap.org/sites/default/files/6.Corporate%20Bond%20Market_Seiwoon%20Hwang_0.pdf (August 1, 2019).

IMF (2004). “Monetary Policy Implementation at Different Stages of Market Development,” IMF Board Paper. https://www.imf.org/external/np/mfd/2004/eng/102604.htm (August 3, 2019).

Levine, R. (2005). Finance and growth: Theory and evidence. In P. Aghion, & S. Durlauf (Eds.), *Handbook of economic growth*. Amsterdam: Elsevier Science. pp.865–934.

McCauley, R. (2003). Capital Flows in East Asia since the 1997 Financial Crisis. BIS Quarterly Review, June 2003, pp.45–59. https://www.bis.org/publ/qtrpdf/r_qt0306e.pdf (August 3, 2019).

McCauley, R., Park C.-Y. (2006). “Developing the Bond Markets of East Asia: Global, Regional or National.” BIS Paper No. 30. https://www.bis.org/repofficepubl/arpresearch_dev_200611.02.pdf (August 3, 2019).

Pradhan, R. P., Zaki, D. B., Maradana, R. P., Dash, S., Jayakumar, M., & Chatterjee, D. (2015). “Bond market development and economic growth: The G-20 experience.” *Review of Applied Management Studies*, Vol.13. No.1. pp.51–65.

Ratna Sahay, Jerald Schiff, Cheng Hoon Lim, Chikahisa Sumi, and James P. Walsh. (2005*). The Future of Asian Finance*. Washington C.C., IMF.

Satoshi Shimizu (2018). “Development of Asian Bond Markets and Challenges: Keys to Market Expansion,” *Public Policy Review*, Policy Research Institute, Ministry of Finance Japan, vol. 14. No. 5, pp. 955–1000.

Turner P. (2002). Bond market in emerging market economies: An overview of policy issues, in *The development of bond markets in emerging economies*, BIS Papers No.11

World Bank (2006). “Bond market development indicators.” World Bank. http://siteresources.worldbank.org/INTTOPACCFINSER/Resources/Bndind.pdf (July 15, 2019)

Yamaguchi, A. (2014). *Progress of Bond Markets in East Asia.* Institute for International Monetary Affairs. http://www.iima.or.jp/Docs/newsletter/2014/NL2014No_20_e.pdf (July 15, 2019)

Yamaguchi, A. (2014). *Progress of Bond Markets in East Asia.* Institute for International Monetary Affairs. http://www.iima.or.jp/Docs/newsletter/2014/NL2014No_20_e.pdf (August 3, 2019).