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Determinants of Bond Market Development in Emerging and Developing Economies

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Approval of the Dissertation Committee

This dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Mohanad Alsadoun as fulfilling the scope and quality requirements for meriting the degree of Doctor of Philosophy in Economics.

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Abstract

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A study of local currency bond market development determinants in Emerging Market Economies (EMEs) is considered important when most EMEs and developing countries are shifting from issuing long-term debt securities in foreign currency denominations to their respective local currencies. This dissertation discusses key factors that influence the development of the local currency bond market (LCBM) in emerging developing economies. This study uses three different models to examine the importance of various factors. A total of 26 countries have been examined, and their data revealed several interesting results. The results show that larger economic size, larger banking systems, greater trade openness, larger stock market, lower inflation, fiscal deficit, and stable exchange rate promote LCBM development. The results of this study support most of the previous research findings on LCBM in EMEs.

Further, capital controls in general and specific controls on bonds have a negative impact on the development of LCBM. In addition, a continuous supply of government local currency bonds supports the development of private sector LCBM. However, government foreign currency bonds were found to have a negative impact on private-sector LCBM growth.

Dedication

I dedicate this achievements to my mother, and father for their care and support throughout my life. To my beloved wife Shaden Aljasser for her support, beliefs, and love. To my beautiful sons Bader and Sultan.

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Chapter 1: Introduction

1.1.Purpose and Contribution of this Study

Long-term financing of the government budget, in particular, mega capital projects in emerging market economies, is, to a great extent, undertaken by the issuance of long-term government securities. The most common government securities are bonds, which can be issued in local or foreign currency denominations, with the latter being more popular over past decades than the former in the financial markets. In recent years, local currency-denominated bond issuance has been a common phenomenon preferred by emerging markets economies and developing countries. This study investigates the factors that influence the currency local bond market (LCBM) development in emerging markets and developing economies (EMDEs). It strives to identify the determinants of the size of LCBM in emerging and developing countries by examining the relationships between the total amount of domestic government bonds and private sector debt securities as a share of GDP with some structural, institutional, macroeconomic, and financial factors.

The macroeconomic variables include inflation, interest rate, exchange rate, capital controls, and fiscal balance. The structural factors include, among others, economic size, trade openness, and institutional aspects such as investment profile, law and order, and GDP per capita. Also, it involves good governance and strong regulation of the financial sector, which includes corruption control and bureaucracy quality. Last is the impact of financial variables, including banking sector size, concentration, and stock market capitalization.

The results of this study are expected to shed light on the main determinants of the local currency bond market and share fundamental aspects to consider when designing a local currency bond in the emerging market economy. Further, using the empirics of the data examined, the study

will be able to provide statistical insights and evidence about the existing situation in the local currency bond market.

In addition, this dissertation contributes to the existing literature in three ways. First, in order to examine the effects of capital controls, this study applies more specific capital restrictions such as inflow, outflow, and seven targeted bond restrictions. However, some previous literature used only general capital control measurements or dummy variables. Second, following economic growth literature, five-year non-overlapping averages have been used to examine the long-term macroeconomic factors on LCBM. Third, examining the effects of foreign currency government bonds on LCBM development.

1.2. Organization of The Dissertation

This dissertation comprises five chapters, including the introduction, which provides an overview of local currency bond market development in EMDEs. It outlines recent trends in the LCBM and its rationale. Chapter two gives a synopsis of the theoretical literature review and a critical analysis of the empirical literature to document the knowledge from previous scholars interested in this topic. While the theoretical literature review discusses key theoretical aspects that may influence the development of local currency bond markets in general, the empirical part dwells a bit deeper into the critical analysis of a number of empirical works conducted by previous researchers, the main ones being Eichengreen and Luengnaruemitchai (2004), Burger and Warnock (2006) and Claessens *et al.* (2007). Chapter three presents the research design, mainly the research methodology, data sources, measurement and estimation techniques, variables description, and model equations. Chapter four presents the main research results. It also includes an analytical framework to interpret the findings, a set of regression results organized in tables for different types of methods used in this research, and an in-depth discussion of the results with

interpretations of key outcomes. The last chapter, number five, is the conclusion, which involves a summary discussion of the main findings, limitations, challenges encountered in carrying out this study, and suggestions on the potential areas of future research. Finally, an appendix with additional tables will be at the end of the bibliography chapter for further reference.

1.3. Importance of Local Currency Bond Market in Emerging Market and Developing Economies

Before discussing the importance of the local currency bond market, it is important to shed light on the issuance of bonds in foreign currency. There are several advantages in tapping the international bond market, for example, accessing non-resident investors, funding diversification, lower cost in some cases, and accessing hard currency. For clarity purposes, bonds can be location-based or currency-based. In the location-based approach, bonds are issued domestically or internationally regardless of the currency of issuance. Likewise, bonds can be issued based on currency denomination, in which we have two categories: local currency bonds and foreign currency bonds.

Now, there are some risks associated with issuing debt in foreign currency. The exchange rate risk on foreign currency debt is a concern for governments as well as firms since their revenues are usually linked to the value of the local currency. As a result, this mismatch might expose the economy to a financial crisis (see Krugman, 1999; Jeanne, 2000; Aghion *et al.*, 2001; Schneider and Tornell, 2004). To minimize these consequences, a well-developed LCBM is helpful. For example, when a country pays for most of its exports in foreign currency, such as the U.S. dollar, borrowing dollars can be a beneficial and cost-effective hedge.

In addition, a well-functioning LCBM aims to attract financial resources from domestic private investors to make the economy more resilient from external financing shocks. The development

of LCBM across the globe has common objectives, mainly to strengthen national and global financial stability by enhancing the resilience of the national financial systems. Further, as rightly put by the G20 Summit in 2021, the LCBM development strives to strengthen the ability of economies to manage capital flows volatility. The LCBM is considered a helpful tool to safeguard against the risk of exchange rate variability, thereby contributing to international monetary stability in general.

Moreover, the local currency bond market will facilitate financial stability by supporting monetary policy effectiveness. For example, central banks will have more effective tools to control and adjust the money supply in the economy. As a result, interest rates will be managed more efficiently, strengthening the domestic economy's and financial systems' resilience. With a well-functioning and liquid bond market, the government will have a reliable source of finance, and the overall risk of the country's debt portfolio will be improved.

In the same spirit, the economy may likely become more resilient to sudden movements in foreign capital flows if a well-developed local currency bond market is in place. This means that the local currency bond market can relieve the country from borrowing in the international bond market, where the risk of foreign currency fluctuations is high. Recently, most emerging market countries have been strategically trying to get rid of exchange-rate movements volatility exposure by using local currency bonds as a vital instrument. A well-developed LCBM is a more stable and less risky source of funding, which is probably an important considered factor for providing a debt sustainability environment as well as high mobilization of fewer risk funds within the economy.

In contrast to advanced economies, where the bond market is also quite advanced, and financial transactions are conducted in big volumes by large-scale corporations, small business enterprises are predominantly the main stake in the financial markets' operations in EMDEs. In this case,

financing start-up businesses and small-scale enterprises with foreign currency-denominated bonds might become challenging, risky, and costly due to persistent fluctuations in exchange rates and other external shocks. However, although not a 100 percent panacea, the local currency bond market plays an important role in financing economic activities in the EMDEs across the globe.

Issuing bonds in local currency will enable the country to depend less on foreign currency-denominated securities, thereby helping to hedge against large risk exposure of interest rates as well as exchange rates. In addition, a well-developed emerging bond market will yield some major additional benefits for several reasons. First, emerging markets and developing countries, in general, are more vulnerable to crises and financial instability; as a result, they will face liquidity crises and capital outflows leading to the collapse of stock markets and probably the bankruptcy of banks (Grandes and Peter, 2013). In short, the development of substantial, liquid corporate bond markets could reduce the exposure of developing economies to financial crises.

In the same spirit, finding another way to finance governments' fiscal expenditures will help sustain policy initiatives, reduce reliance on foreign currency borrowing and bank financing, and facilitate capital market financing of critical infrastructure projects (Levine, 2005). Developing countries need to finance the fiscal expenditure to ensure efficient use of scarce capital for productive investments to generate jobs and prosperity and attract foreign and domestic investment.

Another benefit of having a well-developed bond market is facilitating risk diversification on investments as there usually exists a negative relation between the stock markets and bond markets, although, in recent days, there have been experienced price falls of both stocks and bonds on the U.S. market. Therefore, investors can diversify their portfolios between stock and bond markets to minimize the risk (Smaoui *et al.,* 2017). However, for the local bond market to be well developed,

more examination is needed to be known about the determinants of the local bond markets for the government to properly govern the market operations in the right direction. By understanding and recognizing the contemporary economic changes that affect the local bond market, the government could probably provide helpful guidance to lead the existing, less well-functioning bond market to become efficient.

Although local currency bond market development is expected to deliver a good number of benefits, as discussed in brief herein, the LCBM faces a few challenges on the other hand, which can make it function less, especially in emerging market economies environment. These characteristics include, among others, the high transaction cost of issuing debt which puts the government under fiscal pressure in the end. Others are the sizeable bid-ask spreads somehow contributed by the little or no adequate market information agent players in the market, as well as the currency stability of the bond-issuing country. More stability in the local currency leads to more market participation due to increased investor confidence and expectations.

1.4.Overview of Local Currency Bond Markets in Emerging Markets

Financing economic development in any country requires a well-defined strategy involving medium- and long-term measures. Governments need to mobilize adequate financial resources to fund development projects as well as meet recurrent expenditures in any particular fiscal year. However, most countries face high challenges in funding their budgets through revenues generated from taxes because development capital projects, such as infrastructure projects, are costly and require long-term financing as opposed to recurrent expenses since its maturity falls within a short period, mainly a year or two. On this basis, governments need to have a well-structured financing plan to meet fiscal needs while maintaining reasonable balances in the country's balance of payments.

One of the common medium and long-term financing options that government has is issuing bonds to attract capital from domestic and foreign investors in the market. It is important to note that the issuance of bonds in the market necessitates the presence of a conducive market environment. This includes the availability of adequate regulatory policies, legal and operational framework, and strong financial institutions capable of playing an intermediary financial role in facilitating transactions in the market and necessary financial safety nets. In addition, the central bank and capital market, and securities authority are among the key institutions to coordinate and manage the bond issuance process.

In the recent decade, many emerging and developing economies have taken decisive measures to stimulate the growth of their bond markets, with a focus on developing and improving their local currency bond markets (LCBMs). This dissertation refers to the term local currency bond market as those bonds issued by residents of a specific country and denominated in the domestic currency of that country and issued in the domestic market. It is important to emphasize here that what makes a bond market to be local is the place of issuance and its currency of denomination. This automatically implies that; the credibility of the local currency bond will highly depend on the strength and stability of the currency of issuance.

According to the IMF and World Bank, many countries have improved their secondary market liquidity under benchmark-building programs by adopting new debt management strategies. For example, benchmark-building programs have recently been established in Albania, Georgia, Peru, and Ukraine. Other countries have promoted the diversification of debt instruments (e.g., the launch of the primary dealers' (PD) program for sovereign Sukuk in Saudi Arabia) and the commencement of Stock Exchange trading of Sukuk in Turkey. In addition, the use of Liability

"Tracking Global Demand for Emerging Market Sovereign Debt," Arslanalp and Tsuda (2014) – (IMF Working Paper, 2020).

In addition, some countries started to mitigate the risks associated with debt refinancing to safeguard the operations of financial markets. For instance, in the past few years, Albania, Georgia, Peru, and Ukraine developed benchmark-building programs. Other countries have implemented diversifying debt instruments, such as launching a primary dealers' program for sovereign Sukuk in Saudi Arabia and the commencement of Stock Exchange trading of Sukuk in Turkey. These actions lead to the fact that corporations are thus gradually decreasing their reliance on banking financing while increasing the number of fixed-income securities in domestic and foreign markets.

There has been a series of initiatives to develop LCBM for EMDEs and developing countries across the globe. Most notable strategies have been motivated by the World Bank (WB) and International Monetary Fund (IMF), two major global financial institutions supporting countries' local bond market development initiatives. According to the IMF/WB Staff Note for the G20 International Financial Architecture Working Group (IFAWG) - 2020, the G20 countries launched an action plan for local currency bond market development at the Cannes Summit back in 2011, with a view of monitoring and supporting LCBM activities. The G-20 IFAWG (2020) updates provided by the IMF, and World Bank (2020) indicate that there has been a significant increase in the issuance of local currency debt from US$ 2.2 trillion to 25.9 trillion in 2018, with the emerging market share of stocks standing at 85 percent, mostly dominated by Asia with increasing market growth in China. Through local currency bond markets, liquidity in many emerging markets has improved, reflecting progress in LCBM development and, in many cases, an expansion of the investor base. Further, the LCBM development initiatives, such as IMF-WB Debt Management

Facility and the World Bank Group Joint Capital Markets Development Program, have been broadened.

1.5.Recent Developments of Local Currency Bond Markets

The recent trends of local currency bond markets in EMDEs have demonstrated remarkable improvements. Countries with strong macroeconomic fundamentals like low and stable inflation, flexible exchange rates, high domestic savings, growing financial sector, and Prudential Financial sector oversight have experienced significant expansion of local currency government bond markets over the past decade, in particular, 2011 to 2018. Examples of such countries that recently expanded their local currency bond market include Indonesia, Mexico, Peru, and South Africa, which had earlier taken deliberate steps to create a conducive environment to facilitate the development of LCBM, such as a review of the overall context of the financial system including decentralization of economic structure.

Table 1: Emerging Market Debt Overview 2011–18 (USD trillion)

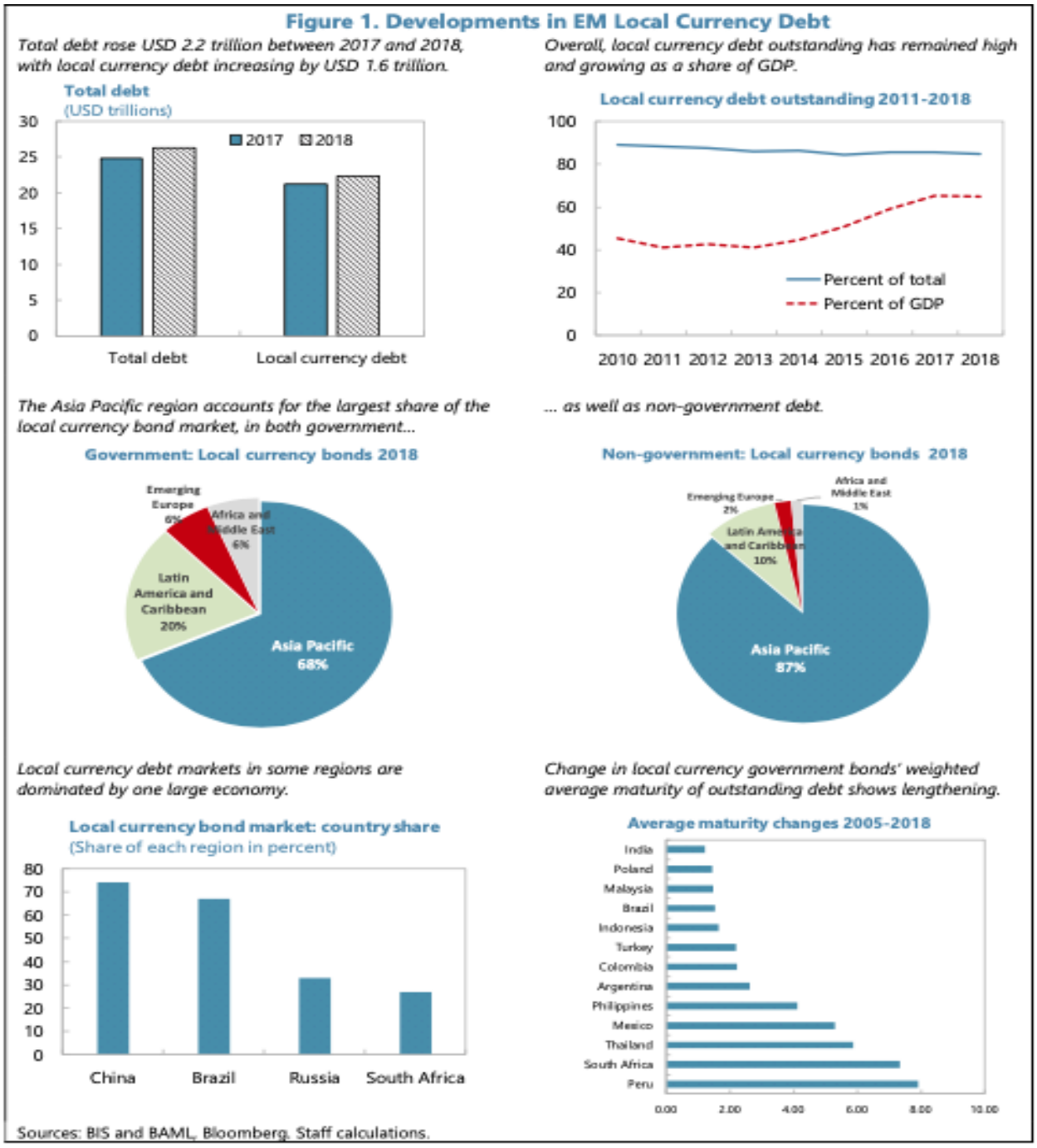
	2011	2012	2013	2014	2015	2016	2017	2018
Total Debt $	**12.7**	**14.0**	**14.5**	**16.2**	**18.2**	**20.6**	**23.7**	**25.9**
Local Currency Debt $	11.2	12.3	12.5	14.0	15.4	17.6	20.8	22.4
International Market $	1.5	1.8	2.0	2.2	2.8	3.0	2.9	3.5
Local Currency as Share of Total Debt (%)	*88.3*	*87.5*	*86.0*	*86.5*	*84.5*	*85.5*	*87.6*	*86.5*
Local Currency as Share of GDP (%)	*42.0*	*43.8*	*42.1*	*45.6*	*51.5*	*53.8*	*63.5*	*68.4*
General Government $	6.5	7.2	7.3	7.5	8.0	9.4	11.2	12.2
Non-government $	6.1	6.8	7.2	8.7	10.2	11.2	12.5	13.7
Government as Share of Total Debt (%)	*51.6*	*51.3*	*50.6*	*46.3*	*44.1*	*45.6*	*47.4*	*47.2*
Government as Share of GDP (%)	*24.6*	*25.7*	*24.7*	*24.4*	*26.9*	*28.7*	*34.3*	*37.3*
Non-government as Share of GDP (%)	*23.0*	*24.4*	*24.2*	*28.3*	*34.1*	*34.2*	*38.1*	*41.8*
Local Currency Debt by Type of Issuer	**11.2**	**12.3**	**12.5**	**14.0**	**15.4**	**17.6**	**20.8**	**22.4**
General government $	5.9	6.5	6.6	6.7	7.2	8.4	10.1	11.0
Non-government $	5.3	5.8	5.9	7.3	8.2	9.2	10.6	11.4
Government as Share of Total Debt (%)	*52.7*	*52.6*	*52.5*	*47.9*	*46.7*	*47.9*	*48.8*	*49.0*
International Debt by Type of Issuer	**1.5**	**1.8**	**2.0**	**2.2**	**2.8**	**3.0**	**2.9**	**3.5**
General Government $	0.6	0.7	0.8	0.8	0.8	1.0	1.1	1.2
Non-government $	0.8	1.0	1.2	1.4	2.0	2.0	1.8	2.3
Government as Share of Total Debt (%)	*43.7*	*41.8*	*38.8*	*35.8*	*30.0*	*32.1*	*37.5*	*35.5*

Sources: *Bank of America Merrill Lynch (BAML), Bank for International Settlements (BIS).*
Note: Domestic debt securities are used as a proxy for local currency debt securities. Domestic debt securities are according to the issuer's residence regardless of the currency denomination. As defined in the Handbook on Securities Statistics (2015), the

general government sector can be divided into central government, state government, local government, and social security funds. Non-government sector debt includes debt of financial corporations (including banks) and non-financial corporations.

Figure 1 presents the market share of emerging markets local currency bonds as reported by the IMF/World bank in 2020 from 2011 to 2018. Local currency government debt increased significantly in the Asia Pacific and Africa & Middle East regions, with the Asia Pacific dominating the government local bond market (68 percent) and non-government band (87 percent). The Latin America & Caribbean region accounts for 20 percent and 10 percent of government and non-government local bonds, respectively. The data also shows a consistent increasing pattern of both government and non-government bonds, which increase almost equally in volumes each year, possibly implying that investors in long-term debt securities try to balance the two types of instruments, to hedge against risk through diversification of their investment portfolio. It could also be possible that different groups are buying them but the size of each is growing at roughly at the same rate. The World Bank (2006) revealed that bond market financing, like other financial services, had fully grown in quantitative importance as an integral part of the general development of the financial sector.

Figure 1: Regional Market Share of Local Currency Bonds in Emerging Markets 2011–2018 (%)



According to the IMF/World Bank IFAWG (2020) Report, the local currency bond market continued to grow in 2018 both in nominal amounts and as a share of GDP and kept its majority share of total debt in Ems. Also, since 2011, the marketable debt in emerging markets has more

than doubled in nominal terms, with most of the debt issued in local currencies over the period where total debt increased from USD 12.7 trillion in 2011 to USD 25.9 trillion in 2018. From the risk perspective, the trend shows that a large portion of local currency debt was owned by non-resident investors across the EMDEs, which poses an increased risk of liquidity in the event of sudden capital outflows. Country-wise, the share of non-resident investors in local currency government bond markets was above 30 percent in Indonesia, Mexico, Peru, and South Africa.

Chapter 2: Literature Review

2.1. Theoretical Literature Review

This dissertation focuses on financial, institutional, and macroeconomic factors driving bond market development, which covers the economic size, exchange rate, inflation, fiscal balance, capital control, and the banking sector size as important factors in spearheading the local currency bond market development.

Nkwede (2020) summarized clearly that every bond market, regardless of its advanced level or the market category, is characterized by macroeconomic factors which influence the bond market directly or indirectly. This chapter presents a brief theoretical discussion of major variables related to local bond market developments. In this theoretical part, this dissertation reviews how a few key macroeconomic factors contribute to the development of local bond markets as analyzed by previous scholars. It is interesting that, while, in principle, the previous scholars agreed on most of the theoretical concepts, they also have different views on specific attributes of how some factors affect LCBM development.

2.1.1. Economic size:

On the economic size, Eichengreen and Luengnaruemitchai (2004) argue that the economies of scale effects reflect the fixed costs of establishing the necessary bond market infrastructure, such as clearing and settlement systems and a sustainable legal framework for issuing and trading bonds. Moreover, the economies of scale emanating from the size of the economy may also be an important phenomenon for the liquidity of secondary markets. This argument was later supported empirically by a few subsequent scholars, such as Adelegan and Radzewicz-Bak (2009). They found that country size measured by the level of GDP is positively related to bond market

development in Sub-Saharan Africa (SSA). Also, Claessens *et al*. (2007) suggested that countries with bigger economies have relatively larger local currency government bond markets, mainly because of the scale effects in the infrastructure development of local government bond markets. In areas such as fixed costs incurred in the establishing, clearing, and settlement systems, as well as developing the legal framework for bond issuance and trading. The author also argues the likelihood of scale effects in secondary bond markets' liquidity.

Bhattacharya (2013) approached the effect of economy size on the bond market development in association with financial transaction costs, which he argued are related to information and risks. The theoretical argument by Bhattacharyay (2013) is that most investors would like to minimize risks and maximize information exchange. Hence, a minimum efficient scale is necessary for developing a stable and large bond market. The author seconded the postulate by (Eichengreen and Luengnaruemitchai, 2004 and Eichengreen *et al.,* 2002) that small countries face obstacles in the limited size of their capital building well-capitalized, efficient, and deep bond markets to attract multinational corporations and other major potential foreign investors. Further characteristics can be found in a high degree of price volatility, thereby necessitating investors to diversify their holdings in investments to reduce risk.

Another possible explanation for a favorable association between country size and bond market development is that larger economies provide international investors with more diversification benefits. (Hausmann and Panizza, 2003 and Berensmann *et al*., 2015). For large economic entities to invest in an economy's bond market, the size or scale of an economy must reach a particular threshold. In the meantime, a high number of participants may improve the flow of information. Low capital volume may discourage investors from investing in the bond market, thus hindering its growth.

2.1.2. Exchange rate:

Regarding exchange rate behavior, Eichengreen and Luengnaruemitchai (2004) suggest that this factor appears to support expanding bond markets, presumably through minimizing currency risk and promoting foreign involvement. The author argued that the stability of exchange rates reduces the risk for investors, especially foreign investors, which promotes bond market development. This means that the higher the volatility of a country's exchange rate, the lower the growth of its bond market. He further argued that bond market development is positively correlated with lower exchange rate volatility. The reason may be that exchange rate stability can improve credibility and may reduce currency risk, which may, in turn, attract foreign participation and lead to greater local currency intermediation (Eichengreen and Luengnaruemitchai, 2004; Claessen *et al*., 2007). However, in contrast, Berensmann *et al*. (2015) argued that a positive relationship between exchange rate volatility and local currency bond market development also seems likely as stable exchange rates may increase the motivation to issue debt in foreign rather than domestic currency.

Bae (2012) states that higher exchange rate flexibility can positively and negatively impact local currency bond market development. He argued that while foreign investor participation is beneficial to the development of domestic capital markets, high foreign exchange risk may discourage their participation. In contrast, Goldstein (1998) suggested that fixed exchange rates encourage foreign lenders to underestimate the risks of lending to local banks and corporations hence slowing the development of the local financial intermediation market due to foreign competition. This suggests that greater exchange rate volatility may be beneficial to the growth of the local currency bond market, which is consistent with Mu *et al*. (2013), who suggested that it

may be relevant to participants in financial markets to consider exchange rate variability, as it may have several countervailing effects on bond market development.

It is important to note that a key issue for exchange rate stability is what happens to the real equilibrium exchange rate. If there is underlying instability than a pegged rate, this can increase uncertainty, whereas if the equilibrium rate is stable, either fixed or flexible rates will work well. However, the main issue to take into consideration is whether there are a lot of destabilizing speculations that can be offset under a pegged rate. So far, studies conducted have come up with mixed evidence as they vary from one country to another. As a result, since we can't estimate equilibrium rates with great accuracy, there is no one best proxy, and probably none of the proxies used will be very good.

2.1.3. Inflation:

Inflation is another important aspect to consider when analyzing the factors contributing to local bond market development. If a country is facing high inflation, usually that country's central bank will increase the interest rate as a response. This action might hinder the development of LCBM because the cost of issuing bonds increases as a result of the increase in interest rate.

According to Eichengreen and Luengnaruemitchai (2004), higher interest rates are associated with smaller bond markets. This argument is complemented by Domowitz *et al.* (2000), they provided empirical evidence that countries with higher rates of inflation issue fewer domestic currency bonds. Consistent with Burger and Warnock (2006) findings, countries with better inflation performance, perhaps with more stable monetary and fiscal policies (inflation inclusive), have more reliance on local currency bond markets than foreign-currency bonds. On the other hand, countries with poorer inflation performance have smaller local currency bond markets.

In the situation that a country experiences persistent higher inflation, it might signal that its monetary and fiscal policies are poor. As a result, investors might not be incentivized to invest in bonds that carry substantial currency risk, which is the risk that higher inflation will reduce the real value of such bonds in local currency.

In terms of monetary policies, Claessens *et al*. (2007) found that lower inflation rates are associated with larger local currency government bond markets. This is related to the tendency of governments to inflate their outstanding debt, thereby making local currency debt less risky. Claessens *et al*. (2007) also posed that high inflation does not require governments to issue large amounts of debt, as the inflation tax is a major revenue source. While the main theoretical argument postulates that low and stable inflation supports local bond market development and vice versa, a contra argument was presented by the findings of Eichengreen *et al*. (2008), who noted inflation with a positive direction on local bond market development. His interpretation of the results was that countries with less liquid financial markets experience smaller changes in interest rates because trading is infrequent, so it would appear that volatility stimulates market development. The thrust of this frame is that On the supply side when bank lending rates are high, firms are more likely to use bond financing; on the demand side, when bank deposit rates are low, investors are more likely to be interested in buying bonds. Banking Sector Size

The banking sector size is one of the key factors for local currency bond market development. This statement is evidenced by the findings and suggestions of most scholars who researched this area (Eichengreen and Luengnaruemitchai, 2004; Burger and Warnock, 2006; Claessens *et al*., 2007; Adelegan and Radzewicz-Bak, 2009; Eichengreen *et al*., 2008; Mu *et al*. 2013; and Bea 2012). They argue that countries with large and well-functioning banking sectors are more prone to have a more robust local bond market than otherwise. The importance of the banking sector size

is enshrined by the fact that the banking sector is the key conduit to facilitate financial transactions in order to make the bond market operational. Further, the role of financial intermediation played by the banking sector in the economy makes this factor one of the leading determinants of local currency bond market development. We may look at the same factor in another dimension of a regulatory framework. Which we understand that the banking sector is one of the most-regulated sectors of the economy across the globe by central banks due to its sensitivity. This phenomenon adds credit to the banking sector to act as an important platform for developing the local currency bond market.

Eichengreen and Luengnaruemitchai (2004) suggest that countries with relatively large and well-developed banking systems are likely to enjoy better-developed bond markets because of the existence of complementary relationships arising from the intermediation between banks and bond markets as banks function as dealers and market makers rather than substitution to one another. This assertion was also complimented by(Levine 2002; Beck and Levine 2004; Burger and Warnock, 2006), that bond market development and banking system development share similar necessary conditions. The authors went further to argue that countries with people whose deposits in banks are low tend to have an underdeveloped local bond market. Claessens *et al*. (2007) suggested that countries with more developed financial systems have more developed bond markets arising from high demands on government bonds since there is a correlation between a more developed banking system and a larger institutional investor base.

This is justified by the fact that a well-developed banking sector facilitates an increase in the creation of demand for government securities among the public, which is also fueled by better distribution channels, the presence of a primary dealers' network, which ultimately promotes bonds among investors, and the availability of liquidity in the secondary markets.

On another front, Adelegan and Radzewicz-Bak (2009) argued that many countries are limited in their ability to expand domestic debt because of the small size of their financial sector. Those countries already holding high external debt are likely to face a scarcity of commercial bank credits if domestic debt expands further, hence limiting credit to the private sector. Eichengreen *et al.* (2008) suggest that for a country to have both a sound banking system and a developed local bond market, an effective corporate governance system and strong creditor rights are required so that small creditors can build confidence and assurance that the market operations are dealt with in fairly manner. The author also underscores the banking system's underwriting role in facilitating band market development and that countries with large banking sizes are likely to experience major issuers of domestic bonds due to the presence of sizeable institutional capacity in the distribution channel.

A positive correlation between banking sector size and local bond market development has been found in previous literature. Therefore, it has become widely appreciated and suggested by other scholars (Levine and Zervos, 1998; Harwood, 2000; Hawkins, 2002; Eichengreen and Luengnaruemitchai, 2004; Bea, 2012; Mu *et al*., 2013; Berensmann *et al*., 2015; and Essers *et al*., 2016).

2.1.4. Institutional Quality

Many empirical literature found that well-developed institutions greatly influence economic and financial developments as they facilitate investment in physical and human capital, shape the structure of economic incentives in society, and contribute to the efficient allocation of resources in the economy (Knack and Keefer, 1995; Mauro, 1995; Hall and Jones, 1999; Acemoglu *et al*., 2001; Easterly and Levine, 2003; Smaoui *et al.* (2017).

According to Eichengreen and Luengnaruemitchai (2004), investors will be reluctant to invest in a country with weak governance, insufficient regulation, and low bureaucracy quality. A sufficient regulatory framework includes the following elements: sanctions for insider trading and market manipulation, disclosure standards, and penalties for accountants and auditors providing false information. Further, clear and consistent implementation of regulations may also be important for the local currency bond market growth.

Corruption is a risk to investment because it affects the economic and financial environment and adds uncertainty to the political process. Corruption in the financial sector makes it difficult to conduct business effectively and may cause withdrawal or withhold investment, hindering law enforcement (Mu *et al.*, 2013).

2.1.5. Trade Openness

For several reasons, trade openness may be positively linked with financial development. One argument could be that trade openness indirectly promotes bond market growth by fostering an economic dynamic and institutional development in ways that other variables do not fully capture (Eichengreen et al., 2008). Another argument is that when an economy allows cross-border trade flows, preexisting industry interests may be less reluctant to financial development, despite such trade encouraging market entry and benefiting newcomers (Rajan and Zingales, 2003). However, a negative correlation is also possible because economies that are less integrated into global markets may have a greater interest in developing local debt markets to meet their financing needs (Adelegan and Radzewicz-Bak, 2009).

2.1.6. Fiscal Balance

Local currency bond market development can be affected by fiscal policy in different ways. First, a government running a fiscal deficit is more likely to issue more bonds to finance its budget. This implies that fiscal deficit might influence the expansion of government LCBM development, which might indirectly help to promote the private sector LCBM development. According to Harwood (2000), a well-developed government LCBM can "helps promote a class of dynamic, profitable fixed-income dealers." However, there could be a crowding-out effect on private sector LCBM caused by larger government local currency bond issuance (McCauley and Remolona 2000).

Second large fiscal deficits may raise concerns about macroeconomic stability and the government's ability to repay debt among potential investors, which can slow the development of the Local currency bond market (Berensmann *et al*. 2015). In light of these arguments, the relationship seems theoretically ambiguous.

2.1.7. Capital Controls

Local currency bond market development can be affected by fiscal policy in different ways. First, a government running a fiscal deficit is more likely to issue more bonds to finance its budget. This implies that fiscal deficit might influence the expansion of government LCBM development, which might indirectly help to promote the private sector LCBM development. According to Harwood (2000), a well-developed government LCBM can "helps promote a class of dynamic, profitable fixed-income dealers." However, there could be a crowding-out effect on private sector LCBM caused by larger government local currency bond issuance (McCauley and Remolona 2000).

Over time, capital controls have been one of the popular aspects considered in determining well-functioning local currency bond markets and foreign-denominated bond securities. In this dissertation, capital control is measured by the index on capital account control based on a scale from 0 to 100, where 100 means the capital account is fully closed. Its efficacy is in two ways depending on the policy settings. In the macroeconomic policy, capital controls are used as a safety net for capital reservation on foreign investments in the domestic market. However, relaxation of such controls may promote improved governance quality of local firms due to ease of access to domestic debt by foreign investors. A few previous scholars, Adelegan and Radzewicz-Bak, (2009), also share the same thoughts. In the same spirit, Claessens *et al*. (2007) argue that an open capital account also raises the interest of domestic investors in bonds by exposing countries to greater market discipline.

Nevertheless, Eichengreen et al. (2008) found that capital controls do not seem to increase the size of private bond markets in a significant way. However, they argue that the government may prefer deliberately to issue large volumes of debt and impose controls in an effort to create a captive investor base. They also state finding a larger correlation between capital controls and larger government bond market capitalization.

In addition, when analyzing the relevance of capital controls on the local currency bond market development, a focus should be put on its effect on foreign portfolio investment. Arguably, stickier restrictions result in fewer foreign investments in the form of capital inflows, while more capital openness is theoretically likely to offer more prospects for local currency bond market development in emerging markets (Bea 2012; Mu et al. 2013; Berensmann et al. 2015; Smaoui et al. 2017).

2.1.8. Valuable Natural Resources

There is some evidence that high reliance on valuable natural resources revenues might affect the development of the local currency bond market (Beck, 2011). The relationship is not clear; it can be positive or negative. One argument could be that high natural resource revenues might lower the incentive for the government to issue bonds as an option for financing. As a result, the growth of LCBM will slow down since a continuous supply of government bonds is an important element for LCBM development. Another argument is that high natural resource revenues might enhance the government's creditworthiness (Berensmann et al., 2015), which in turn may attract more foreign investors into the local currency bond market.

2.2. Empirical Literature Review

Eichengreen and Luengnaruemitchai (2004) investigated why Asia countries do not have large bond markets. They analyzed the determinants of LCBM development measured as outstanding debt securities issuance in local currency % of GDP. They used a sample of 41 developing and developed countries over the period 1990–2001, focusing on Asia. All equations by the authors are estimated using panel Generalized Least Squares (GLS) with corrections for heteroskedasticity and panel-specific autocorrelation.

Eichengreen and Luengnaruemitchai (2004) found that larger economic size, more openness to trade, having an English origin, more distance from the equator, better investment profile, and capital account openness have a positive and important impact on the development of sovereign bond markets. Conversely, higher banking sector concentration, better bureaucratic quality, higher interest rate spread, higher exchange rate volatility, and a strong fiscal balance (surplus) have a negative impact on the development of the sovereign bond market. Interestingly, they also found that GDP per capita negatively affects bond market development. The reason behind this result,

according to the authors, is that controlling for institutional quality (i.e., bureaucratic quality, corruption control, law and order, the investment profile) made the effect of per capita GDP wash out.

For corporate bonds, their results showed that larger economic size, more trade openness, more distance from the equator, lower corruption, better accounting standards, higher domestic credit, and better bureaucratic quality come out positive and significant while having an English legal origin, higher interest rate spread, and high exchange rate volatility come out negative and significant.

Eichengreen *et al.* (2008) extended the analysis of Eichengreen and Luengnaruemitchai (2004) by employing a panel data set on a sample of developing and developed countries over the period 1990–2004 and 14 more countries than their 2004 paper, with a focus on Latin America. Their empirical results confirmed earlier findings and were consistent with the ones obtained by Eichengreen and Luengnaruemitchai (2004).

Burger and Warnock (2006) studied the determinants of local currency sovereign and corporate bond markets' development using a sample of 49 selected developed and developing countries across all continents for only one period. However, they run a cross-section (OLS) regression using a sample for only the year 2001, which may be subjected to inadequate robustness and representation of results due to the recent evolution of bond markets in emerging economies since the mid-nineties. The authors also tried to improve the understanding of the importance of the local bond market by providing a more robust measure. They express it as the size of a nation's local currency-denominated bond market divided by GDP rather than just the local currency share of a country's bond market. This is an important and informative way to describe the rationale for developing the local currency bond market.

The authors presented various determinants of local currency bond market development in EMDEs, in particular in two broad measures, namely, the ratio of the size of the local bond market to GDP (Local Bond Market Development) and the share of a country's outstanding bonds that are denominated in the local currency (Local Currency Share). They examined the influence of the rule of law, creditor rights, fiscal balance as a percent of GDP, country size, GDP annual growth rate, creditor rights, and inflation variance to assess whether macroeconomic policies have been creditor-friendly or not.

Here is a summary of their findings: First, they found that countries with stable inflation and perhaps good strong monetary and fiscal policies have larger local bond markets, hence less reliance on foreign bonds. Inflation performance boosts both corporate and sovereign bond markets. Also, conceptually, the institutional and policy settings promote the ability of emerging markets to develop local currency bond markets. The results by the authors suggest that countries with stronger institutions, mainly motivated by the effective rule of law and credit rights, have broader local currency bond markets. This statement is in line with La Porta *et al*. (1996), who argued that legal regimes, such as company law or bankruptcy laws, do matter.

Further, another main result found by Burger and Warnock (2006) is that the relationship between the banking system and the domestic bond market is complementarity, which prompted them to conclude that conditions needed for bond markets to develop are relatively similar for all those countries that would foster banking system development.

Claessens *et al.* (2007) studied the determinants of domestic government bond market development and their currency composition for 35 emerging and developed countries from 1993 to 2000 using panel-feasible generalized least squared (FGLS) estimations. Using the FGLS allows for fixing the possible heteroskedastic error structures and differences in autocorrelation

coefficients within countries. They also used the first lag to deal with the endogeneity problem among variables while they deployed log transformation for the linearity of variables.

They found that one of the main factors of bond market development is the size of the economy, and they concluded that the larger the economy, the better for local market development. The authors also revealed that the degree of flexibility of the exchange rate regime is negatively associated with the size of foreign currency issuance. Further, better inflation performance, a higher score on the fiscal burden, and capital account openness matter positively for public bond market development. They also report a strong relationship between banking system development measured by (Log of total deposits/GDP) and bond market development, similar to the observations by Burger and Warnock (2006) and Eichengreen and Luengnaruemitchai (2004) it is 2008. Claessens *et al.*(2007) were the first to use stock market capitalization as a measurement for financial development, which has a positive and significant impact on the growth of the local bond market. The general level of development, as proxied by GDP per capita, is statistically significant and negatively related to the size of their domestic currency bond markets. The authors presented their justification for this conclusion by suggesting that these results may be attributed to the control of a number of country factors such as GDP, institutionalized democracy, inflation, and fiscal policy.

Contrary to the findings by Eichengreen (2004), the authors also found capital account openness has a negative and significant impact on the development of the local currency bonds market but has a positive effect on foreign currency bond markets. They explain that with an open capital account and no financial constraints, domestic investors are less restricted in their asset allocation, resulting in lower demand for domestic currency debt. In addition, the authors found that the size and share of foreign currency bonds are positively correlated with foreign investor

demand. In contrast, countries with deeper domestic financial systems (measured by bank deposits and stock market capitalization) have larger domestic currency bond markets and issue less foreign currency debt.

Adelegan and Radzewicz-Bak (2009) investigated the determinants of local domestic public government and corporate debt market capitalization development for 23 Sub-Saharan African (SSA) countries for the period of 19 years from 1990 to 2008. They adopted the same model as Eichengreen and Luengnaruemitchai (2004), using generalized least square (GLS) with correction for heteroscedasticity and panel-specific autocorrelation.

Their results indicated that, for sovereign bonds, exchange rate variability, investment profile, and absence of capital controls are all positive and significant towards the development of local bond markets. In contrast, bureaucratic quality, interest rate spread, and stronger fiscal balance (surplus) were found to be negative and significant. For the corporate debt, their results showed that domestic bank credit, exchange rate variability, and absence of capital controls are positive and significant, while interest rate variability, GDP per capita, and stronger fiscal balance come out negative and significant, same as for the case of government bonds.

As for the determinants of LCBM development, the authors reported that the savings constraint is a major barrier to domestic bond markets development, same as the financial market deepening, which is said to have lowered the level of financial intermediation by the banks in the economy. In general, their results indicate that a confluence of factors matters for developing domestic bond markets in SSA, including the structure of the economy, investment profile, law and order, size of the banking sector, the level of economic development, and various macroeconomic factors. I concur with another observation made by the authors that nonbank financial institutions are a critical factor in developing the bond market due to their long–term investment strategies. In my

view, most nonbank financial institutions, such as mutual and pension funds and insurance companies, suffer long-term investment options in the event of limited or underdeveloped domestic bond markets. This situation necessitates them to opt for short-term investment securities, the holdings which sometimes face the challenge of maturity mismatches in their investment portfolios.

Bae (2012) used the fixed effect model. Also, a mature and well-developed banking sector is critically important to the further development of the bond market, particularly the corporate bond market. Moreover, fiscal balance coupled with higher deficits foster government bond market development, while a well-developed government bond market and low-interest rates are essential to corporate bond market development. Interestingly, and contrary to most previous findings such as Eichengreen and Luengnaruemitchai (2004) and Burger and Warnock (2006), the author found the quality of the country's institutions to have no significant influence in the determination of local currency bond market development as these variables do not explain cross-country variations in bond market development. In addition, Bae's findings on the role of institutional quality sync with Adelegan and Radzewicz-Bak (2009), who got negative results for this variable on the development of local currency bond markets. However, the author state that there is evidence that foreign investors are attracted to domestic bond markets by a country's institutions

Bhattacharyay (2013) analyzed the determinants of the bond market in Asian economies using a sample of 10 Asian countries from 1998 to 2008. The author followed the model in Eichengreen and Luengnaruemitchai (2004) by applying the generalized least square (GLS) with correction for heteroscedasticity and panel-specific autocorrelation. Also, using OLS, fixed effect, and random effect for comparison.

He found that larger size of the economy, higher development stage of the economy, and larger domestic credit provided by the banking sector have a positive and significant on the development of the government bond market. On the other hand, higher interest rate spread and volatility in exchanger rate have a negative and significant impact on government bond development. For corporate bonds, he found that larger size of the economy, more exports, and higher GDP per capita are all positive and significant. However, larger domestic credit provided by the banking sector, higher interest rate spread, and more volatility in exchanger rate have a negative and significant impact on local bond market development.

Further, the author posed that one of the major reasons behind the Asian financial crisis in 1997 was the overwhelming reliance on commercial banks for domestic funding in Asian economies. For this reason, promoting domestic financing options like the development of local currency bond markets development becomes important in modern times.

The author outlined a list of quantitative factors that determine the development of local bond markets in EMDEs. Some new determinants are the lack of an internationally recognized financial reporting system, including accounting and disclosure standards; transparent and market-friendly regulatory and tax regime; the presence of a public market with high liquidity; property right protection; and the existence of a mechanism for efficient reorganization in the case of default. The author concluded that the major determinants of bond financing are the size of the economy for corporate and government bonds. The stage of economic development for total, government, and corporate bonds. Trade openness for total and corporate bonds. The size of the banking system total and government bonds; and variability in interest rate for total, government, and corporate bonds.

Mu *et al.* (2013) analyzed bond market determinants of a sample of 36 SSA countries from 1980–2010. Like the previously reviewed paper, Mu *et al.* (2013) followed the model by Eichengreen and Luengnaruemitchai (2004). They used pooled ordinary least squares (POLS), random effects (RE), fixed effects (FE) models, and GMM to solve endogeneity problems.

The authors concluded that it is helpful to examine the government bond and corporate bond markets separately. For government bond market determinants, they found that higher interest rate spread, stronger fiscal balance, better GDP per capita, higher exchange rate volatility, more trade, and capital openness have negative effects on government bond market development. On the other hand, larger economic size, English legal origin, lower composite risk, and better law system positively impact government bond market development.

For corporate bond market development, they found that larger economic size, better GDP per capita capital, capital openness, higher credit share in the economy, better law and order, and lower corruption are positively correlated to corporate bond market development. On the contrary, they found that more trade openness and higher interest rate spread negatively impact corporate bond market development.

From a technical point of view, the model specification was used to get robust results from regressions. The authors observed this when they controlled for the risk and obtained interesting results in which a positive effect of economic size was found contrary to the earlier negative result. Likewise, the authors found that GDP per capita is negative and significant after controlling for risk as opposed to the previous results when it was insignificant. The new outcomes by Mu *et al.* (2013) confirm that model specification reflects the direction of certain variables toward local bond market development.

Berensmann *et al*. (2015) investigated the role of local currency bond markets (LCBMs) in the long-term financing of the sustainable development of Sub-Saharan African (SSA) economies and empirical analysis of the factors which may deter or promote the development of such markets. They used a new dataset for 27 countries and found that the size of the economy, larger banking systems, greater trade openness, better regulatory structures and the rule of law positively influences LCBM development. They concluded that, among other variables, the most notable determinants of local bond market development include greater economic size, larger banking sectors, greater openness to trade, and better regulatory quality and the rule of law. The authors also suggest that the participation of foreign investors is a potential aspect of promoting LCBM as it broadens the investor base and increases the volatility of international capital flows. Further, .governance was reported by the authors as an integral factor in local currency bond market development and provided a strong regulatory framework that promotes financial deepening. This finding aligns with the one observed by Eichengreen and Luengnaruemitchai (2004).

Smaoui *et al.* (2017) conducted an empirical investigation on the structural, financial, developmental, institutional, and macroeconomic determinants of bond market development for 22 emerging market economies for 14 years (1990–2013). They followed Eichengreen and Luengnaruemitchai 2004 hypotheses and used the Prais-Winston technique to produce panel corrected standard error (PCSE) estimates for linear panel data models and system GMM techniques to try to solve the problems of endogeneity among the explanatory variables. The authors also divided the control variables into four categories, which are structural, developmental, governance and regulations, and Macroeconomic. This classification of main factors follows the pattern of following Eichengreen and Luengnaruemitchai (2004).

Their findings were similar to other previous scholars discussed here. They found that government bond development positively depends on the higher banking concentration and higher foreign exchange volatility with a high significance level. Their explanation for the positive impact of banking concentration is that banks with strong market power are able to spur bond market development through the promotion of liquidity, lower transaction costs, and economies of scale at the time of bond issuance, especially where bond markets are less developed domestically. The authors also justified the rationale of foreign exchange volatility by saying that stable exchange rates may lead foreign investors to underestimate the risk of lending to corporations and banks, ultimately resulting in foreign competition that may hinder the development of domestic intermediation.

2.2.1. Summary Results from Previous Literature

There are three tables summarizing previous literature findings. The first table shows the results from previous literature using total LCBM / GDP (government and private sector) as a dependent variable. The second table shows the results from previous literature using government LCBM / GDP as a dependent variable. Third table shows the results from previous literature using private sector LCBM / GDP as a dependent variable.

Table 2 Summary Results from Previous Literature for Total LCBM

	Eichengreen & Luengnaruemitchai 2004	Burger & Warnock 2006	Bhattacharyay 2013	Adelegan& Radzewicz-Bak (2009)	Smaoui 2017	Adelegan&Radzewicz-Bak (2009)
Variables				**Total**	**Total**	**Total**
Dependent V: Total local currency bonds outstanding for government and private sector bond /GDP						
Size of the economy	+ ***	+***	-	-	+***	-
Trade openness	+**		- ***	+	+***	+
Legal origin	-				+	
Distance from Equator	+***				+	
Investment Profile	+			-	+***	-
Law and Order	+**	+***		-**	-	-**
GDP per capita	-		+***	+**	+***	+**
Corruption	+***			-	-	-
Bureaucracy Quality	-			+*	+***	+*
Accounting Standards	+***					
Bank credit to GDP (in %)	+		+***	-	+***	-
Concentration in Banking Sector	- ***				+***	
Interest Rate Volatility	+**			-	-***	-
Interest Rate Spread	- ***		- **	-	+	-
Capital Controls	-***			+*	+	+*
Fiscal Balance	- ***	-***		- *	- *	- *
GDP Growth		-				
Creditor Rights		+***				
Inflation		-***				
Foreign exchange volatility	- ***		- *	- *	+**	- *

Table 3 Summary Results from Previous Literature For Government LCBM

	Eichengreen & Luengnaruemitchai 2004	**Burger & Warnock 2006**	**Claessens et al 2007**	**Adelegan &Radzewicz-Bak (2009)**	**Bae, K.H., 2012**	**Bhattacharyay 2013**	**Mu et al. (2013)**	**Berensmann *et al*. 2015**	**Smaoui et al. 2017**
Variables	GOV	GOV	GOV	GOV	GOV	GOV	GOV	GOV	GOV
Dependent V: Government local currency bonds outstanding /GDP									
Size of the economy	+ ***	+	+ ***	+		+ ***	+***	+***	+ ***
Trade openness	+ ***			-	-	+	-***	+**	+
Legal origin	+ ***		+ ***		-		+ ***	-***	+
Distance from Equator	+ ***								-
composite risk							+ ***		
Investment Profile	+			+ **			+		+ ***
Law and Order	+ *	+***		-			+***	+***	- ***
GDP per capita	-***		- ***	+	+ **	+	-***	-**	+
Corruption	+			+			+		+
Bureaucracy Quality	-*			-*			+**		+ ***
Accounting Standards	-								
Bank credit to GDP (in %)	+			-	+	+ ***	+ ***	+ ***	+
Concentration in Banking Sector	-***								+ ***
Lending rate					-**				
Interest Rate Volatility	+			-			+		- ***

	Eichengreen & Luengnaruemitchai 2004	**Burger & Warnock 2006**	**Claessens et al 2007**	**Adelegan &Radzewicz-Bak (2009)**	**Bae, K.H., 2012**	**Bhattacharyay 2013**	**Mu et al. (2013)**	**Berensmann *et al*. 2015**	**Smaoui et al. 2017**
Interest Rate Spread	-***			-***		-**	-		-
Capital Controls	- ***		+***	+ *	-		+***	-***	+ ***
Fiscal Balance	-***	-***		+ ***	-***		-***	-**	- **
GDP Growth		-							
Creditor Rights		+***							
stock market capitalization/GDP			+ ***		-				
International investor demand			+ ***						
Democracy								-	
Institutionalized democracy			+ ***						
Log of total deposits/GDP			+ ***						
Inflation		-***	- ***					-	
Fiscal burden			+ ***						
Foreign exchange volatility	-**			+ ***		-**	-***	-	+ ***
Exchange rate					-				
Official exchange rate regime			+ ***						
Foreign exchange reserves								-***	
Natural Resource rents								-	
Area Size??							-***		

Table 3 summarizes the results of the previous literature discussed above on the determinants of government LCBM development. First, the literature agreed that larger economic size is associated with larger government LCBM. Second, higher trade openness has mixed results; At the same time, two of the literature found a positive and significant correlation between trade openness and government LCBM, and Mu et al. (2013) found a negative and significant correlation. Third, Countries with British legal origin were found to have larger government LCBM; however, Berensmann *et al*. 2015 found the opposite.

Fourth, better law and order was found to have positive and statistically effects on the development of government LCBM. Fifth, higher GDP per capita has mixed results; four literature found negative and significant results; likewise, four literature found positive results, but only two are statistically significant. Sixth, better bureaucracy quality yielded mixed results in four literature. Two papers found positive and significant results, and two found negative and significant results. Seventh, a larger banking sector was found to spur the development of government LCBM. Eighth, a higher interest rate spread (Inter-bank rate minus LIBOR) has negative and significant effects on government LCBM development. Ninth, the capital control variable yielded mixed results. Some literature found positive and significant effects, while others found negative and significant ones.

Tenth, most of the previous literature found that a higher fiscal deficit positively and significantly impacts government LCBM. Only Adelegan and Radzewicz-Bak (2009) found a negative correlation between fiscal deficit and government LCBM development. Finally, higher exchange rate volatility was found to mix effects on government LCBM. Three of the previous literature found negative and significant results, while two found positive and significant results.

Table 4 Summary Results from Previous Literature For Private Sector LCBM

	Eichengreen & Luengnaruemitchai 2004	Burger & Warnock 2006	Bae, K.H., 2012	Bhattacharyay 2013	Adelegan& Radzewicz-Bak (2009)	Mu et al. (2013)	Smaoui et al. 2017
Variables	**Private**	**Private**	**Private**	**Private**	**Private**	**Private**	**Private**
Dependent V: BMD							
Size of the economy	+ ***	+***		+***	+	+***	+***
Trade openness	+***		-	-	+	- ***	+***
Legal origin	- ***					- ***	+
Distance from Equator	+***						- **
composite risk						-	
Investment Profile	-				-	- ***	+
Law and Order	+	+***			-	+***	-
Dummy for common law			-				
GDP per capita	-		+***	+***	- *	+***	+***
Corruption	+***				+	+***	+
Bureaucracy Quality	+***				-	-	+*
Accounting Standards	+*						
Bank credit to GDP (%)	+***		+	- ***	+**	+***	+***
Concentration in Banking Sector	-						-
Lending rate			-				
Interest Rate Volatility	+				- **	+***	- **
Interest Rate Spread	- *			- ***	+	- *	+
Capital Controls	-		-		+**	-	+
Fiscal Balance	+	+	+		+**	-	-
GDP Growth		-					
Creditor Rights		+					
stock market capitalization/GDP			-				
Inflation Variance		- ***					
Foreign exchange volatility	- **		+	+	+**	-	-
Government bond			+				

Chapter 3: Data and Research Methodology

3.1.1. Sample and Variables

The sample contains 26 emerging and developing countries, namely: Argentina, Brazil, China, Colombia, Croatia, Cyprus, Czech Republic, Greece, Hungary, Indonesia, India, Lebanon, Lithuania, Malaysia, Mexico, Peru, Pakistan, Philippines, Poland, Russian Federation, Saudi Arabia, Slovakia, Slovenia, South Africa, South Korea, Turkey, and Thailand. These were selected according to data availability for the period ranging from 1990 to 2019.

There are two data sets used in this dissertation. The first data set is annual data following Eichengreen and Luengnaruemitchai (2004). The main reason for using annual data is due to the availability of data frequency since it is hard to find monthly or quarterly data for emerging and developing countries. In addition, most of the studies in this area have used annual data also. The second data set is fiver-year non-overlapping averages following economic growth literature (Acosta et al., 2008; Barajas et al., 2009, Aisen, A., & Veiga, F. J. 2013). There are two main objectives for applying fiver-year non-overlapping averages. One is to smooth out short-run fluctuations in the business cycle. The other is that bond market development may take time and respond more to developments in policies over time rather than just year-to-year changes.

3.1.2. Dependent Variables

This dissertation uses three dependent variables; the first dependent variable is the total securities outstanding in local currency and issued in the domestic market as a share of GDP, which covers all government and private sector bonds. The second dependent variable is government securities outstanding in local currency as a share of GDP, which covers short and long-term bonds issued by the government in the domestic market. Third is private sector

securities outstanding in local currency as a share of GDP, which covers short and long-term bonds issued by financial corporations, non-financial corporations, private banks, and other private financial institutions in the domestic market. All data for the size of each country's bond market are from the Bank for International Settlements (BIS)

3.1.3. Independent Variables:

As discussed in the theoretical literature review, most factors contributing to the development of LCBM are used in this dissertation. Table 5 shows all variables used with their measurement and sources. In addition, the measurement of institutional variables and capital controls will be discussed in more detail.

Table 5: Definition of variables

Variable	Measure	Source
Dependent Variable		
Total Bonds	Outstanding government and private debt securities issuance in local currency (% of GDP)	BIS
Govt Bonds	Outstanding government debt securities issuance in local currency (% of GDP)	BIS
Private Bonds	Outstanding private debt securities issuance in local currency (% of GDP)	BIS
Independent Variable		
Economic Size	GDP, PPP (current international $)	WDI
Trade Openness	Exports of goods and services (% of GDP)	WDI
GPD Per Capita	GDP per capita, (current international $)	WDI
Fiscal Balance	Three years moving average of fiscal balance (% of GDP)	IMF
Inflation	Three years moving inflation rate, average consumer prices	IMF
Valuable Natural Resources	Total natural resources rents (% of GDP)	WDI
Stock Market Capitalization	Log Stock market capitalization (% of GDP)	GFDD
Ex. Rate	Exchange Rates to U.S $ Period Average	IMF
Bank Size	Credit to private sector by commercial banks (% of GDP)	WDI
Bank Concentration	3-Bank asset concentration % of total commercial banking assets	GFDD
Capital Control	Capital control-aggregated index values for total, inflows, outflows, and bond's inflow & outflow	Fernández et al.(2016)
Institutional Quality Variables	Law & Order, Bureaucracy, Corruption, and Investment profile using ICRG index	PRS
Govt Foreign bonds	Outstanding government debt securities issuance in foreign currency (% of GDP)	BIS

BIS: Bank for International Settlements.
WDI: World Development Indicators, World Bank.
GFDD: Global Financial Development Database, World Bank.
PRS: Political Risk Services Group Data.
IMF: International Monetary Fund.
Fernández, Klein, Rebucci, Schindler and Uribe (2016) "Capital Control Measures: A New Dataset" IMF Economic Review, Vol. 64 (3): 548-574, 2016. The data is from 1995-2019.

Institutional Quality Variables:

Following previous literature, data for law & order, bureaucracy quality, corruption control, and investment profile are from the International Country Risk Guide (ICRG) index.

1. Law & Order: this variable contain two parts, first part is law which rates the strength and integrity of the legal system. The second part is order which rates the popular observance of the law. The score is from 0-6 points. A score of 6 points means a very high level of law and order, and a score of 0 points means very low level of law and order.
2. Bureaucracy Quality: evaluates the institutional strength and quality of the bureaucracy. The scores range from 0-4 points, where 4 points means very high level of bureaucracy quality.
3. Corruption Control: assesses the corruption within the political and financial system. The score is from 0-6 points. A score of 6 points means a very low level of corruption, and 0 points means very high level of corruption.
4. Investment Profile: this variable evaluates the quality of contract viability, expropriation, profits repatriation, and payment delays. The scores range from 0-12 points. a score of 12 means very low risk for investors.

Capital Controls Variables:

For capital control this study uses Fernández et al.(2016) updated and detailed capital restrictions data. The index is measuring controls from 0 -100. Where 0 means there is no capital restriction, and 100 mean the capital account fully closed. There are ten different general and specific restrictions for capital control:

1 Overall average inflow and outflow controls

2 Overall inflow controls

3 Overall outflow controls

4 The overall average inflow and outflow controls on bonds

5 Average inflow controls on bonds

6 Average outflow controls on bonds

7 Purchase of bonds inflow controls

8 Purchase of bonds outflow controls

9 Sale of bonds inflow controls

10 Sale of bonds outflow controls.

3.2. Models and Estimation Techniques

Descriptive Statistics

Table 6: Summary Statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Year	810	2,004	8.661	1,990	2,019
Total Bond	524	0.339	0.304	0.000674	1.163
Government	511	0.237	0.221	0.000674	1.109
Private	402	0.140	0.183	1.98e-05	0.693
Economic Size	792	1.100e+12	2.316e+12	7.722e+09	2.344e+13
Trade Openness	789	37.03	22.89	6.598	121.3
GDP Per Capita	794	8,366	7,222	301.2	35,397
Banks Size	711	56.52	41.93	0.186	255.2
Banks concentration	634	61.28	18.34	22.31	100
Stock market	747	45.46	50.71	0.0124	352.2
Law & Order	778	3.684	1.157	1	6
Bureaucracy	778	2.535	0.703	0	4
Corruption	778	2.727	0.932	1	5
Investment Profile	777	8.109	2.063	2	12
Capital control	600	0.569	0.292	0	1
Inflow	600	0.524	0.293	0	1
Outflow	600	0.615	0.321	0	1
Avg bond control	542	0.588	0.356	0	1
Bond inflow	542	0.483	0.412	0	1
Bond outflow	534	0.688	0.400	0	1
Purchase bonds locally inflow	534	0.373	0.484	0	1
Sale or issue bond abroad inflow	521	0.7.6	0.451	0	1
Sale or issue bond locally outflow	527	0.649	0.478	0	1
Purchase bond abroad outflow	538	0.582	0.494	0	1
Inflation	801	39.29	200.6	-1.400	2,655
Fiscal Balance	712	-3.231	4.275	-22.82	20.80
Exchange rate	803	499.8	1,783	2.96e-05	14,237
Natural Rent	798	4.087	7.712	0.000588	55.52
GOV FC Bond	628	0.0793	0.134	2.32e-05	0.954
Cyclically adjusted balance	535	-2.610	3.349	-15.00	7.763
id	810	14	7.794	1	27

Baseline Econometric Model

Following existing studies on the determinants of local currency bond market development such as Eichengreen and Luengnaruemitchai, (2004), Claessens *et al.*, (2007), Bhattacharyay, (2013). In order to test the hypotheses of this study, the following statistical model is used:

$$\boldsymbol{Y_{i,t} = \alpha + \sum_{k=1}^{K} \beta k\, X_{i,kt} + \varepsilon_{i,t}}$$

Here, α_i is country-specific fixed effects, i stands for a country ($i = 1, \dots, N$), t is a time period ($t = 1, \dots, T$); $Y_{i,t}$ is the dependent variable categorized to total outstanding local currency debt securities issued in a country as a share of GDP, government outstanding local currency debt securities as a share of GDP, and private outstanding local currency debt securities as a share of GDP; $X_{i,kt}$ is a set of independent variables. While the error term is $\epsilon_{i,t}$.

Diagnostic Results

1. Autocorrelation test: Using Wooldridge test for autocorrelation in panel data, the result shows that both data set have first-order autocorrelation
2. Multicollinearity test: To accomplish Multicollinearity assumption, the variance inflation factor (VIF) test was conducted. The mean VIF is less than five in all model specifications which means there are no multicollinearity in both data set. In addition correlation matrix is in the appendix table A1
3. Heteroscedasticity Test: Using Modified Wald test for groupwise heteroskedasticity in fixed effect regression model. The result shows that there are presence of heteroskedasticity in both data set.
4. Cross-Sectional Dependence: Using Pasaran CD test shows that both data set have cross-sectional dependence problem.

Therefore, the best method to use in order to account for these issues is feasible generalized least squares (FGLS) for annual data, since the number of countries is 26 which is less than the number of time period (Hoechle, D. 2007). For 5-year non-overlapping averages data using the panel corrected standard error (PCSE) is better, since the number of time period is 6, which is less

than the number of countries. However, the results of pooled OLS, fixed effect, and random effect will be presented in the appendix tables from A2 – A7.

Chapter 4: Results Analysis

4.1. Summary Results And Comparison With Previous Literature

There are three tables, one for each dependent variable, and each table has ten columns. The first six columns contain the results for the annual data using FGLS method, and the last six columns contain the results for 5-year non-overlapping averages data using PCSE method. I discussed each variable in the first table and compared the result with previous literature findings. However, I compared the results with previous literature findings in the second and third tables. All results, discussions, and analyses are in the following sub-sections in Chapter 4.

4.7.1 Summary Results For Total LCBM

Table 7: Summary Results For Total LCBM (government, and private sector bonds)

Variables	Total LCBM (1)	Total LCBM (2)	Total LCBM (3)	Total LCBM (4)	Total LCBM (5)	Total LCBM (6)	Total LCBM (7)	Total LCBM (8)	Total LCBM (9)	Total LCBM (10)
Dependent V: Total local currency bonds outstanding for government and private sector bond /GDP	Base line model annual data	First lag annual data	Capital control annual data	Government foreign currency bond annual data	Cyclically Adjusted Balance annual data	Base line model 5 years lag data	First lag 5 years lag data	Capital control 5 years lag data	Government foreign currency 5 years lag data	Cyclically Adjusted Balance 5 years lag data
Economic Size	+**	+***	+***	+***	+***	+	+***	+	+	+
Trade Openness	+***	+***	+***	+***	+***	+**	+***	+**	+**	+***
GDP Per Capita	-	-	-	-	+	-	+	-	+	+***
Banks Size	+	+**	+*	+**	+	+***	+***	+***	+**	+***
Banks Concentration	+	-	+	-	+	+	-	+	+	+
Stock Market Capitalization	+***	-	+***	+***	+***	+	+***	+*	+***	+***
Law & Order	-***	-***	-***	-***	-***	-***	-***	-***	-***	-***
Bureaucracy Quality	+	-	+	-	-	-***	-***	-	-**	-
Corruption control	-**	+	-**	-**	-	-*	-	-	-***	-
Investment Profile	+	-	-	-	-	-	-	+	-	-**
Inflation	-**	-	-	-***	-***	+**	+***	+*	+	+

Variables	Total LCBM (1)	Total LCBM (2)	Total LCBM (3)	Total LCBM (4)	Total LCBM (5)	Total LCBM (6)	Total LCBM (7)	Total LCBM (8)	Total LCBM (9)	Total LCBM (10)
Dependent V: Total local currency bonds outstanding for government and private sector bond /GDP	Base line model annual data	First lag annual data	Capital control annual data	Governme nt foreign currency bond annual data	Cyclically Adjusted Balance annual data	Base line model 5 years lag data	First lag 5 years lag data	Capital control 5 years lag data	Government foreign currency 5 years lag data	Cyclically Adjusted Balance 5 years lag data
Fiscal Balance	**-***	**-***	**-***	**-***		**-***	-***	**-***	**-***	
Exchange Rate	-	**-***	-	**-***	-	-	-***	-	-	-
Valuable Natural Resource	**-***	-	**-****	**-***	**-***	+	-*	+	-	**-****
Capital Control			-					-		
Government foreign currency bond				**+***					**+***	
Cyclically Adjusted Balance					-					+

Table 7 shows summary results across all specifications and methods in both annual and five years non-overlapping averages for total LCBM. First, larger economic size is positive and statistically significant at 1% level in all specifications and methods using the annual data, which is consistent with previous literature findings. However, when 5-year non-overlapping averages data is used, larger economic size is found to be positive and significant only in first lag method.

Second, the results show that higher trade openness has a positive statistically significant impact on the development of total LCBM. This result is consistent in both annual and five years non-overlapping averages data. In addition, this result is consistent with Eichengreen and Luengnaruemitchai (2004) and Smaoui *et al.* (2017) findings.

Third, the GDP per capita variable has mixed results, and in ten out of twelve specifications and methods, the results were statistically insignificant. However, in 5-year non-overlapping averages data, when the cyclically adjusted balance variable is controlled for, GDP per capita becomes positive and statistically significant for the former and negative and significant for the latter. This finding is inconsistent with previous literature findings, where the GDP per capita was positive and statistically significant regarding total LCBM development.

Fourth, the table shows that banking sector size is a positive and statistically significant determinant for the development of total LCBM. Moreover, this finding is consistent in most of the specifications in both annual and five years non-overlapping averages data, consistent with previous literature findings.

Fifth, larger banking sector concentration revealed mixed results in both data sets. Sixth, larger stock market capitalization as a share of GDP was found to be positive and statistically significant in both data sets. However, it is negative but insignificant only when the first lag method is used in annual data. Seventh, the table shows that the law and order variable has negative and statistically significant results in both data sets and across all specifications and methods. However, these results only support the findings of Adelegan and Radzewicz-Bak (2009) and contradict the findings of Eichengreen and Luengnaruemitchai (2004) and Burger and Warnock (2006).

Eighth, bureaucracy quality, corruption control, and investment profile results are negative and statistically significant toward total LCBM development. These results contradict the findings of previous literature. Ninth, the results show that the inflation variable revealed mixed results. When the annual data is used, inflation is a negative and statistically significant determinant for total LCBM. These results are consistent with Burger and Warnock (2006) findings. However, when 5-year non-overlapping averages data is used, inflation is positive and statistically significant, contradicting previous literature findings.

Tenth, the dissertation finds that a larger fiscal deficit is a positive and statistically significant factor for developing total LCBM in both data sets and across all specifications and methods. This result is in line with previous literature findings. Eleventh, the table shows that the depreciation of the local currency against the US dollar is negative and statistically significant in

both data sets and across all specifications and methods. This result is consistent with previous literature findings.

Twelfth, this dissertation finds that higher valuable natural resources variable is a negative and statistically significant factor for the development of total LCBM. Thirteenth, the results show that overall capital control is negative but statistically insignificant in both data sets. Fourteenth, this dissertation finds that issuing more government foreign currency bond help the growth of total LCBM. Fifteenth, the table shows that using a cyclically adjusted balance variable instead of a fiscal balance variable did not make much difference. The result of the cyclically adjusted balance variable is negative but statistically insignificant in both data sets.

4.7.2 Summary Results for Government LCBM

Table 8: Government LCBM Summary Results

Variables	GOV (1)	GOV (2)	GOV (3)	GOV (4)	GOV (5)	GOV (6)	GOV (7)	GOV (8)	GOV (9)	GOV (10)
Dependent V: government local currency bonds outstanding /GDP	Base line model annual data	First lag annual data	Capital control annual data	Government foreign currency bond annual data	Cyclically Adjusted Balance annual data	Base line model 5 years lag data	First lag 5 years lag data	Capital control 5 years lag data	Government foreign currency 5 years lag data	Cyclically Adjusted Balance 5 years lag data
Economic Size	+**	+**	+**	+	+**	-***	-	-***	-	+
Trade Openness	+	+	+**	+	+**	+*	+**	+*	+	+***
GDP Per Capita	-**	-	-***	-	-	-	+	-	-	+
Banks Size	-	+	-*	-	-**	+***	+**	+***	+	-
Banks Concentration	+	-	+	+	+	+	-	+	-	+
Stock Market Capitalization	+***	-	+***	+***	+***	+	+***	+**	+***	+***
Law & Order	-***	-***	-***	-***	-***	-***	-***	-***	-***	-***
Bureaucracy Quality	-	-***	-	-	+**	-**	-**	-	-	-
Corruption control	-**	-	-**	-**	-	-***	-	-***	-***	-
Investment Profile	-**	-**	-***	-	-	+	-	+	-*	-*
Inflation	-***	-	-***	-	-**	+	+***	+	+**	+
Fiscal Balance	-***	-***	-***	-***		-***	-***	-***	-***	
Exchange Rate	-***	-***	-***	-	-***	-**	-***	-*	-	-*
Valuable Natural Resource	-***	+	-**	-***	-***	+	+	+	-***	-***
Capital Control			-					-		
Government foreign currency bond				**+*** **					**+*** **	
Cyclically Adjusted Balance					-**					-

Table 8 shows summary results across all specifications and methods in both annual and five years non-overlapping averages for government LCBM. First, economic size is positive and statistically significant only in annual data. This result is consistent with previous literature findings. However, the result changes to be positive and statistically significant in 5-year non-

overlapping averages data. Second, trade openness is positive and statistically significant in both data sets. This result is in line with Eichengreen and Luengnaruemitchai (2004) and Berensmann *et al.,* 2015 findings.

Third, GDP per capita is negative and statistically significant only in annual data. This result is consistent with previous literature findings. Fourth, the banking sector size is negative and statistically significant in annual data contradicting previous literature findings. However, the result changes to be positive and statistically significant in 5-year non-overlapping averages data.

Fifth, banking sector concentration yields mixed signs in both data sets without significance. Sixth, stock market capitalization is positive and statistically significant in both data sets. This result is in line with Claessens *et al.,* 2007 findings. Seventh, the law and order variable is negative and statistically significant in both data sets. This result is the opposite of previous literature findings.

Eighth, Bureaucracy quality is negative and statistically significant in both data sets. However, it is positive and statistically significant when a cyclically adjusted balance variable is used in annual data. Similarly, previous literature findings were mixed; some found a positive correlation, and others found a negative correlation toward government LCBM development. Ninth, corruption control is negative and statistically significant in both data sets, contradicting the findings of Mu *et al*. (2013). The rest of the previous literature findings were positive but statistically insignificant.

Tenth, investment profile is negative and statistically significant in both data sets, contradicting previous literature findings. Eleventh, inflation is negative and statistically significant in annual data. This result is consistent with previous literature findings. However, when 5-year non-overlapping averages data is used, the results change to be positive and

statistically significant, contradicting earlier studies' findings to be positive and statistically significant.

Twelfth, fiscal deficit is positive and statistically significant in both data sets. This result is in line with previous literature findings. Thirteenth, the exchange rate is negative and statistically significant in both data sets. This result supports the finding from Eichengreen and Luengnaruemitchai (2004), Bhattacharyay (2013), and Mu *et al*. (2013).

Fourteenth, the valuable natural resources variable is negative and statistically significant in both data sets. Fifteenth, capital control is negative but statistically insignificant in both data sets. Sixteenth, the government foreign currency bond is positive and statistically significant in both data sets. Seventeenth, the cyclically adjusted balance variable is negative and statistically significant in annual data.

4.7.3 Summary Results For Private Sector LCBM

Table 9 Private Sector LCBM

Variables	PVT (1)	PVT (2)	PVT (3)	PVT (4)	PVT (5)	PVT (6)	PVT (7)	PVT (8)	PVT (9)	PVT (10)
Dependent V: private sector local currency bonds outstanding /GDP	Base line model annual data	First lag annual data	Capital control annual data	Government foreign currency bond annual data	Cyclically Adjusted Balance annual data	Base line model 5 years lag data	First lag 5 years lag data	Capital control 5 years lag data	Government foreign currency 5 years lag data	Cyclically Adjusted Balance 5 years lag data
Economic Size	+***	+***	+***	+***	+***	+*	+***	+	+	+**
Trade Openness	+	+**	+	+**	-	+	+***	+	+***	+
GDP Per Capita	-	-***	-	-	-	+	+	+	+	+
Banks Size	+	+***	+***	+***	+***	+***	+***	+***	+***	+***
Banks Concentration	-	+	+	-	+	+	+	-	+	-
Stock Market Capitalization	+***	-	+***	+*	+***	+*	+***	+	-	+**
Law & Order	-***	-***	-***	-**	-*	-***	-***	-***	-***	-
Bureaucracy Quality	+***	+**	+***	+*	+*	+**	+***	+***	+***	+*
Corruption control	-	+	-	+	-	-**	-***	-**	-*	-***
Investment Profile	-	+*	+	-	-	-	+*	+**	-	+
Inflation	-	+	+**	-	-	+	+	+***	+	+**
Fiscal Balance	-	-	+*	+		+**	+*	+***	+*	
Exchange Rate	-**	-**	-	-	-	-	-*	+	-	+**
Valuable Natural Resource	+	+***	+***	+*	+***	+	+	+***	+***	+
Government Local currency bond	+***	+**	+***	+***	+***	+***	+***	+**	+***	+***
Capital Control			-***					-		
Government foreign currency bond				-***					-***	
Cyclically Adjusted Balance					-*					+***

Table 9 shows summary results across all specifications and methods in both annual and five years non-overlapping averages for private sector LCBM. First, economic size is positive and statistically significant in both data sets. This result is in line with previous literature findings.

Second, trade openness is positive and statistically significant in both data sets. This result is consistent with previous literature findings. Third, GDP per capita is negative and statistically significant only when the first lag is used in annual data. This result supports the finding of Adelegan and Radzewicz-Bak, (2009).

Fourth, the banking sector size is positive and statistically significant in both data sets. This result confirms previous literature findings. Fifth, stock market capitalization is positive and statistically significant in both data sets. Sixth, law and order is negative and statistically significant in both data sets, contradicting previous literature findings.

Seventh, Bureaucracy quality is positive and statistically significant in both data sets. This result is in line with previous literature findings. Eighth, corruption control is negative and statistically significant in 5-year non-overlapping averages data. This result contradicts previous literature findings. Ninth, investment profile is positive and statistically significant in both data sets. This result contradicts the findings of Mu *et al*. (2013).

Tenth, inflation is positive and statistically significant in both data sets. This result contradicts previous literatures' findings. Eleventh, fiscal deficit is negative and statistically significant in both data sets. This result is in line with Adelegan and Radzewicz-Bak (2009) findings. Twelfth, exchange rate is negative and statistically significant in both data sets. This result is consistent with Eichengreen and Luengnaruemitchai (2004) findings. However, the results change to be positive and statistically significant when a cyclically adjusted balance variable is used in 5-year non-overlapping averages data. This result supports the findings of Adelegan and Radzewicz-Bak (2009).

Thirteenth, the valuable natural resources variable is positive and statistically significant in both data sets. Fourteenth, the local currency government bonds variable is positive and

statistically significant in both data sets. Fifteenth, the capital control variable is negative and statistically significant in annual data. This result contradicts the findings in Adelegan and Radzewicz-Bak (2009). Sixteenth, the foreign currency government bonds variable is negative and statistically significant in both data sets. Seventeenth, the cyclically adjusted balance is negative and statistically significant in annual data. However, the sign change to be positive and statistically significant when 5-year non-overlapping averages data is used.

4.2. Local Currency Bond Market

4.2.1. Total Local Currency Bond Analysis

Table 10: Total LCBM Yearly Data

VARIABLES	(1) PCSE	(2) PCSE-IQ	(3) FGLS	(4) FGLS-IQ
Economic Size	0***	0***	0***	0***
	(0)	(0)	(0)	(0)
Trade Openness	0.00120*	0.00134*	0.000415	0.00156***
	(0.000713)	(0.000771)	(0.000536)	(0.000554)
GDP Per Capita	-1.00e-06	1.69e-06	-2.65e-06**	-1.55e-06
	(2.10e-06)	(1.73e-06)	(1.18e-06)	(1.17e-06)
Banks Size	0.000977*	0.00124***	4.05e-05	9.44e-05
	(0.000559)	(0.000468)	(0.000304)	(0.000304)
Banks Concentration	0.000718	0.000946*	-5.65e-05	0.000223
	(0.000530)	(0.000542)	(0.000182)	(0.000223)
Stock Market Capitalization	0.00124***	0.00132***	0.000950***	0.00106***
	(0.000176)	(0.000158)	(9.72e-05)	(0.000103)
Law & Order		-0.0286***		-0.0261***
		(0.00774)		(0.00696)
Bureaucracy Quality		-0.0329*		0.00412
		(0.0180)		(0.0123)
Corruption control		-0.0240**		-0.0132**
		(0.0105)		(0.00587)
Investment Profile		0.00108		-0.00207
		(0.00396)		(0.00201)
Inflation	-0.00314**	-0.00317**	-0.00146	-0.00235**
	(0.00142)	(0.00123)	(0.000917)	(0.000999)
Fiscal Balance	-0.00926***	-0.0106***	-0.00468***	-0.00802***
	(0.00235)	(0.00216)	(0.00146)	(0.00166)
Exchange Rate	-3.53e-06	-3.40e-06	-2.27e-06	-3.33e-06
	(4.69e-06)	(3.14e-06)	(2.99e-06)	(2.22e-06)
Valuable Natural Resource	-0.00292*	-0.00300*	-0.00440***	-0.00395***
	(0.00158)	(0.00161)	(0.00122)	(0.00130)
Constant	0.129***	0.278***	0.208***	0.250***
	(0.0440)	(0.0660)	(0.0308)	(0.0493)
Observations	438	436	438	436
R-squared	0.289	0.308		
Number of Countries	26	26	26	26

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10 presents total local currency bond market development (government and private sector bonds) from 1990-2019 yearly observation for 26 emerging and developing countries. Column (1) shows the results of the regression equations estimated using panel corrected standard error (PCSE) without controlling for institutional quality variables (law & order, bureaucracy quality, corruption control, and investment profile). The result shows that economic size positively affects LCBM development and is significant at a 1% level. This implies that scale effects exist in the development of LCBM. These economies of scale may occur in the implementation of local bond market infrastructure, such as paying fixed costs for developing clearing and settlement systems and establishing the legal framework for issuing and trading.

Furthermore, scale effects are entirely plausible in the liquidity of secondary bond markets (Claessens *et al.*, 2007). This result is consistent with most studies on the determinants of LCBM development (Levine, 1997; Eichengreen and Luengnaruemitchai, 2004; Claessens *et al.,* 2007; Mu *et al.,* 2013).

Higher trade openness is correlated positively with the development of LCBM. This finding is consistent with the argument of Eichengreen *et al.*, (2008) that directly, it is more likely that a strong export industry will attract large investment projects. Indirectly, openness contributes to economic dynamism and institutional development in ways not fully captured by other variables.

In addition, the dissertation finds that a larger banking sector size is associated with a larger LCBM. This finding implies that bank and bond market intermediation complement each other rather than substituting. One possible reason, according to Claessens *et al.,* (2007) that there is a stronger correlation between a more developed banking system and a larger institutional investor base.

Moreover, a more developed banking system might increase investor demand for securities through improved distribution channels, including the presence of primary dealers, all of which could indirectly increase interest in investing in the LCBM. Stock market capitalization is another measurement besides banking size for the financial market development. The results show that a larger stock market is correlated with a larger bond market. These results suggest that the development of both the banking system and the stock market are related to LCBM development (Claessens *et al*., 2007; Bea, 2012).

In terms of monetary policies, the regression results show that higher inflation rates are associated with smaller LCBM. This finding supports the argument Burger and Warnock, (2006) made that the bond market in countries with better inflation performance, perhaps due to more stable monetary and fiscal policies, is larger and relies less on foreign bonds. A negative statistically significant correlation between fiscal balances and LCBM development. This result implies that governments that run deficits need to sell government bonds to raise funds more often than governments with surpluses. This finding is consistent with most studies on the determinants of LCBM development (Eichengreen and Luengnaruemitchai, 2004; Burger and Warnock, 2006; Adelegan and Radzewicz-Bak, 2009; Bae, 2012; Mu *et al*., 2013; Smaoui *et al*., 2017).

Finally, this dissertation control for valuable natural resource variable as a shar of GDP, such as oil, minerals, and gas. The results show a negative and significant association between valuable natural resources and LCBM development. This result might imply that a government that a high revenue from extracting natural resources might rely less on financing through issuing bonds.

Column (2) shows the results of the regression equations estimated using panel corrected standard error (PCSE) after controlling for institutional quality variables (law & order, bureaucracy

quality, corruption control, and investment profile). The table shows a positive and significant correlation between banking sector concentration and LCBM development. It may well be possible for banks with market share to stimulate bond market development by promoting liquidity and reducing transaction costs, particularly in less developed domestic bond markets (Smaoui *et al.*, 2017). However, the rest of the control variables remain unchanged compared to column (1) results.

Surprisingly and contrary to expectations, three out of four variables of institutional quality came out negative and significant. First, the result shows that law and order has negative and significant effects on the development of LCBM. This implies that if a country's legal system is robust and impartial and has reliable law enforcement, it will be less attractive to investors.

Second, the dissertation finds that bureaucracy quality is negative and statistically significant determinant of LCBM, suggesting that a country with better efficiency and reliability of regulation has a smaller bond market. Third, the results show that corruption control significantly and negatively affects total bond market development at a significance level of 5%. This means a high level of corruption can help in developing the LCBM. All three results contradict the argument of Burger and Warnock, (2006), suggesting that countries with stronger institutions have larger domestic bond markets. One possible explanation is that the within variation of institutional quality variables in almost every country in the sample is not high enough. In other words, the variable does not change over time as much as it should be to detect a significant effect. For example, a country such as China did not improve on controlling corruption and had the same score from 2000 until 2019, while its bond market capitalization increased almost yearly. Most countries in the sample have the same issue as China.

Column (3) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) without controlling for institutional quality variables (law & order, bureaucracy quality, corruption control, and investment profile).

The results show three differences in the control variables compared to column (1). First, trade openness and inflation are no longer statistically significant. Second GDP per capita is now negative and statistically significant at a 5% level. Berensmann *et al.* 2015 justified the negative sign by stating that governments in richer economies have a broader fiscal base, which makes them less dependent on LCBMs.

Column (4) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) after controlling for institutional quality variables (law & order, bureaucracy quality, corruption control, and investment profile). According to Hoechle, D. (2007), $N < T$ is a condition required for feasibility since the annual data has less number of countries than the number of years, FGLS is a more suitable estimation method. After controlling for institutional quality variables, trade openness and inflation become statistically significant at 1% and 5%, respectively.

Moreover, GDP per capita is still negative but has lost its significance. Comparing the results with PCSE in column (2), the banking sector size and concentration are still positive but not statistically significant anymore. Two institutional quality variables did not change law & order, and corruption control is still negative and statistically significant. However, bureaucracy quality becomes positive but not statistically significant.

Table 11: Total LCBM Using Five-Year Non-Overlapping Averages

VARIABLES	(1) Tot PCSE	(2) PCSE-IQ	(3) FGLS	(4) FGLS-IQ
Economic Size	0**	0	0**	0
	(0)	(0)	(0)	(0)
Trade Openness	0.00242**	0.00281**	0.00198***	0.00202**
	(0.000975)	(0.00128)	(0.000747)	(0.000864)
GDP Per Capita	-3.95e-06**	-1.85e-07	-7.49e-06***	-1.62e-06
	(1.84e-06)	(1.91e-06)	(1.88e-06)	(2.05e-06)
Banks Size	0.00154***	0.00238***	0.00134***	0.00182***
	(0.000326)	(0.000118)	(0.000441)	(0.000452)
Banks Concentration	0.000965	0.00146	2.77e-05	0.000180
	(0.00200)	(0.00196)	(0.000399)	(0.000406)
Stock Market Capitalization	0.00141*	0.00118	0.00108***	0.000949***
	(0.000827)	(0.000883)	(0.000333)	(0.000291)
Law & Order		-0.0604***		-0.0629***
		(0.0129)		(0.0111)
Bureaucracy Quality		-0.0607***		-0.0409
		(0.0213)		(0.0318)
Corruption control		-0.0732*		-0.0565***
		(0.0392)		(0.0138)
Investment Profile		-0.00356		0.00387
		(0.00579)		(0.00458)
Inflation	0.00303	0.00363**	0.00244*	0.00489***
	(0.00185)	(0.00178)	(0.00128)	(0.00164)
Fiscal Balance	-0.0110*	-0.0115*	-0.0133***	-0.0142***
	(0.00598)	(0.00634)	(0.00291)	(0.00335)
Exchange Rate	-1.39e-06	-4.38e-06	-1.47e-06	-5.97e-06**
	(6.13e-06)	(4.05e-06)	(3.64e-06)	(2.76e-06)
Valuable Natural Resource	0.000182	0.000928	-0.00245	-0.00156
	(0.00385)	(0.00346)	(0.00250)	(0.00259)
Constant	-0.00730	0.452***	0.0739	0.425***
	(0.0841)	(0.112)	(0.0460)	(0.0973)
Observations	101	101	101	101
R-squared	0.272	0.301		
Number of Countries	26	26	26	26

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11 presents total local currency bond market development (government and private sector bond) non-overlapping 5-year averages data from 1990-2019.

Column (1) shows the results of the regression equations estimated using panel corrected standard error (PCSE) without controlling for institutional quality variables (law & order, bureaucracy quality, corruption control, and investment profile). The dissertation finds that

economic size, trade openness, banking sector size, stock market capitalization, and fiscal balance remain unchanged compared to the annual data in table 10 column (1). However, the results show that GDP per capita is a negative determent for total bond market development and statistically significant at a 5% level. In addition, compared to the annual data, inflation and valuable natural resource become positive but not statistically significant.

Column (2) shows the results of the regression equations estimated using panel corrected standard error (PCSE) after controlling for institutional quality variables. The table shows that economic size and stock market capitalization are no longer statistically significant. Moreover, GDP per capita is not statistically significant after controlling for institutional quality variables, similar effect we saw in table 10 column (4). This might conform Eichengreen and Luengnaruemitchai (2004) argument that institutional quality variables and GDP per capita sometimes capture similar economic development characteristics. Nevertheless, the rest of the control variables remain unchanged compared to column (1) results.

Three out of four institutional quality variables (law & order, bureaucracy quality, and corruption control) are negative and statistically significant even when the dissertation uses non-overlapping 5-year averages.

Column (3) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) without controlling for institutional quality variables. GDP per capita is still negative but not statistically significant. Surprisingly, the results show that a high inflation level positively impacts the development of LCBM. This result supports Eichengreen et al. (2008) argument that when bank lending rates are high, firms are more likely to use bond financing. Nevertheless, the rest of the control variables have not changed compared to column (1) results.

Column (4) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) after controlling for institutional quality variables. Economics size is still positive but loses its significance after adding institutional quality variables. However, higher exchange rate is now negative and statistically significant at 5% level. This result implies that a depreciation in the local currency against the US dollar hinder the development of LCBM. Two out of four institutional quality variables (law & order and corruption control) are still negative and statistically significant. However, bureaucracy quality is not statistically significant.

The summary results of the annual and non-overlapping 5-year averages data show that more trade openness, a larger banking sector, a larger stock market, and a fiscal deficit matter positively and significantly to the development of total LCBM. On the other hand, a country relying more on revenue generated from valuable natural resource have a small size LCBM. In addition, inflation shows different effects on LCBM development; there is a negative effect when the annual data is used and a positive effect when the non-overlapping 5-year averages data is used. Moreover, the size of the economy matter positively and significantly only in the annual data, but it is no longer statistically significant in the non-overlapping 5-year averages data.

4.2.2. Government Local Currency Bond Market:

In this sub-section, the dissertation will examine the determinants of government LCBM development and compare the results with the total LCBM development. Government LCBM is measured as the value of government local currency bonds domestically issued as a share of GDP.

Table 12: Government LCBM Using Annual Data

	GOV(1)	(2)	(3)	(4)
VARIABLES	PCSE	PCSE-IQ	FGLS	FGLS-IQ
Economic Size	0	0	0	0**
	(0)	(0)	(0)	(0)

Trade Openness	-0.000385	0.000725	-0.000882***	0.000497
	(0.000411)	(0.000458)	(0.000333)	(0.000364)
GDP Per Capita	-2.82e-06***	-8.10e-07	-2.71e-06***	-2.23e-06**
	(8.72e-07)	(1.03e-06)	(8.95e-07)	(8.71e-07)
Banks Size	-0.000231	4.77e-06	-0.000292	-0.000327
	(0.000237)	(0.000185)	(0.000207)	(0.000200)
Banks Concentration	0.000422	0.000466*	0.000120	9.38e-05
	(0.000262)	(0.000264)	(0.000148)	(0.000154)
Stock Market Capitalization	0.000687***	0.000699***	0.000665***	0.000696***
	(0.000129)	(0.000107)	(6.94e-05)	(7.20e-05)
Law & Order		-0.0177***		-0.0274***
		(0.00653)		(0.00481)
Bureaucracy Quality		-0.0216*		-0.00512
		(0.0125)		(0.00906)
Corruption control		-0.0168**		-0.00986**
		(0.00819)		(0.00448)
Investment Profile		-0.00327		-0.00387**
		(0.00241)		(0.00153)
Inflation	-0.00383***	-0.00380***	-0.00163**	-0.00213***
	(0.00111)	(0.00105)	(0.000739)	(0.000670)
Fiscal Balance	-0.00834***	-0.00952***	-0.00468***	-0.00661***
	(0.00174)	(0.00167)	(0.00121)	(0.00125)
Exchange Rate	-5.36e-06*	-5.72e-06***	-2.96e-06	-5.80e-06***
	(2.85e-06)	(1.77e-06)	(2.29e-06)	(1.51e-06)
Valuable Natural Resource	-0.00118	-0.00225*	-0.00206**	-0.00277***
	(0.00126)	(0.00129)	(0.000973)	(0.00101)
Constant	0.241***	0.345***	0.241***	0.340***
	(0.0323)	(0.0415)	(0.0222)	(0.0346)
Observations	431	429	431	429
R-squared	0.334	0.572		
Number of Countries	26	26	26	26

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Similar to the previous sub-section, there will be two tables, one for the annual data results and the other for the non-overlapping 5-year averages data results.

Table 12 presents government local currency bond market development from 1990-2019 annually for 26 emerging and developing countries. Column (1) shows the results of the regression equations estimated using panel corrected standard error (PCSE) without controlling for institutional quality variables. The dissertation finds that higher stock market capitalization and more fiscal deficit positively and significantly affect government LCBM development. However,

higher GDP per capita, higher inflation, and higher exchange rate are negative and statistically significant toward government LCBM development.

Column (2) shows the results of the regression equations estimated using panel corrected standard error (PCSE) after controlling for institutional quality variables. The results show that GDP per capita is not statistically significant anymore after controlling for institutional quality variables. At the same time, the higher concentration in the banking sector is now positive and significant. However, the valuable natural resource revenues variable is now negative and statistically significant. This means governments will depend on the revenues from valuable natural resources to fund their deficit instead of issuing more bonds. Similar to the results of total LCBM, three out of four institutional quality variables (law & order, Bureaucracy quality, and corruption control) have negative and statistically significant effects on government LCBM development. In addition, stock market capitalization, inflation, fiscal balance, and exchange rate variable remain unchanged compared to column (1) results.

Column (3) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) without controlling for institutional quality variables. The table shows that more trade openness, higher GDP per capita, higher inflation, and higher valuable natural resource rent have negative and statistically significant effects on government LCBM development. On the other hand, better stock market capitalization and more fiscal deficit have positive and statistically significant effects on government LCBM development.

Column (4) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) after controlling for institutional quality variables. The dissertation finds that size of the economy matter positively to government LCBM development for the first time compared to the three previous columns. Trade openness is not statistically

significant anymore after controlling for institutional quality variables. However, the exchange rate variable gains significance, consistent with the findings of columns (1) & (2). In addition, valuable natural resource revenue is still negative toward government LCBM. The stock market size is positive and statistically significant at a 1% level across all columns. In contrast, inflation and fiscal balance are negative and statistically significant at a 1% level across all columns.

Law and order and corruption remain negative and statistically significant. However, the investment profile for the first time is negative and statistically significant. This result implies that a country with a risky investment environment tends to have a larger government bond market. Institutional quality variables still yield surprisingly and contrary to expectations outcome—similar GDP per capita negatively and statistically significant impact on government LCBM development.

Table 13 presents government local currency bond market development non-overlapping 5-year averages data from 1990-2019. Column (1) shows the results of the regression equations estimated using panel corrected standard error (PCSE) without controlling for institutional quality variables. The table shows that larger banking sector, larger stock market capitalization, and more fiscal deficit improve the government LCBM. On the other hand, higher GDP per capita is associated with smaller government LCBM.

Table 13: Government LCBM using 5 years non-overlapping averages

VARIABLES	(1) GOV PCSE	(2) PCSE-IQ	(3) FGLS	(4) FGLS-IQ
Economic Size	-0	-0***	-0	-0
	(0)	(0)	(0)	(0)
Trade Openness	0.000503	0.00124*	-0.000622	0.000400
	(0.000617)	(0.000727)	(0.000515)	(0.000492)
GDP Per Capita	-4.75e-06***	-2.91e-06	-5.57e-06***	-3.18e-06**
	(1.77e-06)	(2.82e-06)	(1.47e-06)	(1.55e-06)
Banks Size	0.000374*	0.00109***	0.000349	0.00102***

	(0.000193)	(0.000119)	(0.000299)	(0.000271)
Banks Concentration	0.000467	0.000660	-0.000444	-0.000705*
	(0.000687)	(0.000772)	(0.000377)	(0.000386)
Stock Market Capitalization	0.000566***	0.000355	0.000753***	0.000586***
	(0.000186)	(0.000299)	(0.000157)	(0.000204)
Law & Order		-0.0278***		-0.0419***
		(0.00814)		(0.00971)
Bureaucracy Quality		-0.0459**		-0.0214
		(0.0211)		(0.0268)
Corruption control		-0.0550***		-0.0417***
		(0.0178)		(0.0120)
Investment Profile		0.000916		-0.00234
		(0.00423)		(0.00437)
Inflation	0.00168	0.00228	0.000130	0.00196
	(0.00213)	(0.00195)	(0.00104)	(0.00128)
Fiscal Balance	-0.0132***	-0.0135***	-0.0120***	-0.0115***
	(0.00378)	(0.00378)	(0.00256)	(0.00259)
Exchange Rate	-1.90e-07	-4.58e-06**	-3.44e-07	-8.12e-06***
	(4.15e-06)	(1.82e-06)	(4.56e-06)	(2.92e-06)
Valuable Natural Resource	0.00380	0.00276	0.000246	0.000813
	(0.00286)	(0.00268)	(0.00268)	(0.00232)
Constant	0.117**	0.387***	0.215***	0.479***
	(0.0489)	(0.0584)	(0.0400)	(0.0764)
Observations	100	100	100	100
R-squared	0.338	0.347		
Number of Countries	26	26	26	26

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Column (2) after controlling for institutional quality variables, the dissertation finds that for the first time, economic size has a negative effect on the government LCBM. This implies that a country with a large economy tends to have a smaller government LCBM. One possible justification is that government funding options are greater with larger economies. Therefore, governments rely less on issuing bonds for financing (Mu *et al.*, 2013).

Trade openness is still positive, but it has become statistically significant. Similar exchange rate is still negative, but now it is statistically significant. Stock market capitalization loses its significance but remains positive. Likewise, GDP per capita and stock market capitalization loses their significance. Law and order, bureaucracy quality, and corruption control are negative and

statistically significant. Higher exchange rate negatively affects government LCBM and becomes statistically significant at 5% level. The banking sector size and fiscal balance remain unchanged compared to column (1) results.

Column (3) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) without controlling for institutional quality variables. The table shows only three statistically significant variables. GDP per capita and fiscal balance have a negative effect on government LCBM. At the same time, stock market capitalization positively impacts the development of government LCBM. Compared to column (1), only the size of the banking sector loses its significance.

Column (4) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) after controlling for institutional quality variables. The results show for the first time that higher concentration in the banking sector is a negative determinant for government LCBM development. An explanation may be that in an oligopolistic, concentrated banking sector, the few existing banks may earn considerable returns, giving them little motivation to assist the government in funding itself through the capital market (Dafe *et al.* 2018). The size of the banking sector and exchange rate gain significance after controlling for institutional quality variables. The dissertation finds that economic size, trade openness, and bureaucracy quality are not statistically significant compared to the results in column (2).

Using the annual and non-overlapping 5-year averages data, the results show the following: The size of the economy has mixed results; the dissertation finds that it has a positive sign on the annual data. However, when non-overlapping 5-year averages data is used, the sign changes to negative. GDP per capita is negative in both data sets only when the FGLS method is applied. The banking sector size is important to the government LCBM positively only in non-overlapping 5-

year averages data set. Both inflation and valuable natural resource affect the government bond market negatively only in the annual data. Only the size of stock market capitalization supports government LCBM positively in both data sets. In comparison, institutional quality variables, fiscal balance, and exchange rate deter the development of government LCBM in both data sets.

Comparing the results from total LCBM and government LCBM development, the dissertation finds similarities in the direction of some determinants of LCBM development. First, Economics size positively affects total and government LCBM only in the annual data. Second, inflation and valuable natural resource have a negative impact only on the annual data for both total and government LCBM. Third, the banking sector size matters positively in the total and government bond market. However, for government LCBM, it is only significant when the non-overlapping 5-year averages data is used. Fourth, the results show that stock market capitalization positively affects the development of total and government LCBM development. Finally, law and order, bureaucracy quality, corruption control, and fiscal surplus are negative determinants for developing the total and government bond market.

4.2.3. Private Sector Local Currency Bond Market

In this sub-section, the dissertation will examine the determinants of private LCBM development and compare the results with government LCBM development. Private sector LCBM is measured as the value of financial and non-financial corporations local currency bonds issued domestically as a share of GDP.

Table 14: Private sector LCBM Using Annual Data

VARIABLES	(1) PVT PCSE	(2) PVT PCSE-IQ	(3) PVT FGLS	(4) PVT FGLS-IQ
Economic Size	0***	0***	0***	0***
	(0)	(0)	(0)	(0)
Trade Openness	3.54e-05	-0.000140	0.000207	8.61e-05
	(0.000543)	(0.000456)	(0.000249)	(0.000266)

GDP Per Capita	1.63e-06	1.78e-06	-4.57e-07	-9.81e-07
	(1.60e-06)	(1.60e-06)	(5.73e-07)	(7.23e-07)
Banks Size	0.00176***	0.00175***	0.000314*	0.000221
	(0.000478)	(0.000441)	(0.000177)	(0.000199)
Banks Concentration	0.000206	0.000187	-5.07e-05	-4.31e-05
	(0.000360)	(0.000330)	(0.000121)	(0.000149)
Stock Market Capitalization	0.000408***	0.000454***	0.000302***	0.000333***
	(8.42e-05)	(9.18e-05)	(5.93e-05)	(6.99e-05)
Law & Order		-0.0164**		-0.0143***
		(0.00651)		(0.00418)
Bureaucracy Quality		0.0412***		0.0166**
		(0.0118)		(0.00811)
Corruption control		-0.00492		-0.00107
		(0.00570)		(0.00377)
Investment Profile		-0.00456		0.000555
		(0.00413)		(0.00158)
Inflation	0.000914	-0.000115	-0.000310	-0.000349
	(0.000690)	(0.000735)	(0.000498)	(0.000547)
Fiscal Balance	0.00427	0.00464	-0.000723	-0.000947
	(0.00271)	(0.00291)	(0.000967)	(0.00115)
Exchange Rate	-1.40e-07	-2.98e-06*	-8.71e-07	-4.76e-06**
	(1.83e-06)	(1.81e-06)	(1.49e-06)	(2.33e-06)
Valuable Natural Resource	0.00142	0.00306**	-0.000817	0.000538
	(0.00129)	(0.00132)	(0.000790)	(0.000925)
Government Bond	0.296***	0.291***	0.113***	0.157***
	(0.0561)	(0.0533)	(0.0322)	(0.0335)
Constant	-0.101**	-0.0813	-0.0138	0.0109
	(0.0402)	(0.0592)	(0.0195)	(0.0327)
Observations	339	337	339	337
R-squared	0.395	0.428		
Number of Countries	22	22	22	22

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Following the similar analyses in the previous two sub-sections, table 14 presents private sector local currency bond market development using annual data from 1990-2019. Column (1) shows the results of the regression equations estimated using panel corrected standard error (PCSE) without controlling for institutional quality variables. The results show that the larger economy, banking sector, and stock market are positive determinants for developing private sector LCBM.

In addition, the dissertation used government local currency bonds issuance (% GDP) as an independent variable to examine if there is a crowding-out effect on private sector LCBM development. The table shows that government bonds issuance, positively impact private sector

LCBM and statistically significant at 1% level. This result implies that there is no crowding-out effect on private bond issuance. According to this finding, the continuous supply of government bonds is critical to developing private bond markets and supports the establishment of a benchmark yield curve (Bae, 2012).

Column (2) shows the results of the regression equations estimated using panel corrected standard error (PCSE) after controlling for institutional quality variables. Now exchange rate variable is negative and statistically significant factor in private sector LCBM development. On the other hand, valuable natural resource is a positive factor in private sector LCBM development and become significant at a 5% level. Similar to previous findings, law and order still yield a negative coefficient. However, for the first time, bureaucracy quality improvement positively affects private sector LCBM. The remaining control variables remain unchanged compared to column (1).

Column (3) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) without controlling for institutional quality variables. The results are almost identical to column (1) results. The banking sector size is still positive but at a 10% significance level compared to 1% level in column (1).

Column (4) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) after controlling for institutional quality variables. The results in this column are similar to the finding in column (2), with only two differences. The size of the banking sector and valuable natural resources are no longer statistically significant, but they maintain their sign.

Table 15: Private Local Bond Using 5-Year Non-Overlapping Averages

VARIABLES	(1) PVT PCSE	(2) PVT PCSE-IQ	(3) PVT FGLS	(4) PVT FGLS-IQ

Economic Size	0**	0*	0***	0***
	(0)	(0)	(0)	(0)
Trade Openness	0.000234	0.000196	0.000522	0.000744**
	(0.000807)	(0.000499)	(0.000349)	(0.000371)
GDP Per Capita	3.07e-06	2.66e-06	2.01e-06***	2.39e-07
	(2.67e-06)	(2.94e-06)	(7.71e-07)	(1.24e-06)
Banks Size	0.00184***	0.00208***	0.00147***	0.00161***
	(0.000308)	(0.000329)	(0.000150)	(0.000366)
Banks Concentration	0.000604	0.000229	0.000788***	0.000586
	(0.00129)	(0.00122)	(0.000272)	(0.000407)
Stock Market Capitalization	0.000754*	0.000747*	0.000192	0.000899***
	(0.000385)	(0.000444)	(0.000310)	(0.000341)
Law & Order		-0.0323***		-0.0362***
		(0.0109)		(0.00813)
Bureaucracy Quality		0.0963***		0.0778***
		(0.0276)		(0.0200)
Corruption control		-0.0434**		-0.0137
		(0.0217)		(0.0144)
Investment Profile		-0.000687		0.000436
		(0.00238)		(0.00360)
Inflation	0.00389***	0.00224	0.00321***	0.00132
	(0.000810)	(0.00188)	(0.000976)	(0.00130)
Fiscal Balance	0.0110*	0.0137**	0.0103***	0.00552
	(0.00655)	(0.00571)	(0.00156)	(0.00350)
Exchange Rate	8.46e-08	-7.50e-07	-4.23e-07	-2.52e-06
	(2.63e-06)	(4.28e-06)	(2.50e-06)	(4.00e-06)
Valuable Natural Resource	0.00379	0.00661	0.00380***	0.00805***
	(0.00340)	(0.00421)	(0.00140)	(0.00207)
Government Bond	0.229***	0.192***	0.316***	0.217***
	(0.0343)	(0.0316)	(0.0209)	(0.0349)
Constant	-0.172***	-0.151	-0.155***	-0.202***
	(0.0515)	(0.102)	(0.0183)	(0.0648)
Observations	80	80	80	80
R-squared	0.485	0.583		
Number of Countries	22	22	22	22

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15 presents private sector LCBM development using non-overlapping 5-year averages data from 1990-2019. Column (1) shows the results of the regression equations estimated using panel corrected standard error (PCSE) without controlling for institutional quality variables. The results show that larger economic size, banking size, higher stock market capitalization, higher inflation, greater fiscal surplus, and higher government bond capitalization positively affect the development of private LCBM.

Column (2) shows the results of the regression equations estimated using panel corrected standard error (PCSE) after controlling for institutional quality variables. The dissertation finds that three out of four institutional quality variables are statistically significant. Law & order and

corruption control are negative and significant, while bureaucracy quality positively impacts private sector LCBM. Only the inflation variable loses its significance while the remaining variables maintain their sign and significance.

Column (3) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) without controlling for institutional quality variables. The table shows that economic size, banking sector size, inflation, fiscal surplus, and government bonds size positively affect the corporate bond market. Different from the results in column (1), GDP per capita, banking sector concentration, and valuable natural resources are now positive and statistically significant factors for private sector LCBM development. In addition, stock market capitalization is no longer statistically significant compared to the results in columns (1) & (2). Column (4) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) after controlling for institutional quality variables. The dissertation finds that economic size, banking sector size, stock market capitalization, law & order, bureaucracy quality, and government bonds size have similar sing to column (2) results, and they are all statistically significant. Trade openness is now positive and significant determinant for private sector LCBM development. Unlike the results in column (2), corruption, fiscal balance, and valuable natural resource are not statistically significant.

Comparing regressions' results on government LCBM and private sector LCBM development, several determinants of LCBM development are found to have similar directions in the dissertation. First, the banking sector size and stock market size are positive and statistically significant determinants for both government and private sector LCBM development. Second, law and order is found to be a negative factor for the development of government and private sector LCBM development. Third, economic size only matters positively for private sector LCBM, while

corruption, inflation, fiscal surplus, exchange rate, and valuable natural resources were found to negatively impact government LCBM. Finally, the dissertation finds that bureaucracy quality, valuable natural resources, and supply of government bonds are positive determinants for private sector LCBM development.

4.3. Capital control effects on the development of the local currency bond market:

According to Eichengreen and Luengnaruemitchai (2004), foreign participation in domestic bond markets is discouraged by capital controls, as well as the overall development of bond markets. On the other hand, Claessens *et al*., (2007) argue that capital account openness can be expected to influence domestic investors by allowing them to diversify their investment in the foreign market instead of the domestic market, which might deter the development of LCBM. It is important to point out that most of the earlier studies did not distinguish between different types of controls, and these types could have different effects. In addition, most literature used dummy variables to account for capital controls, which is not an ideal proxy for analyzing their impact on LCBM development.

Table 16: Total LCBM with Capital Controls Using Annual Data

VARIABLES	(1) Total LCBM	(2) Total LCBM	(3) Total LCBM	(4) Total LCBM	(5) Total LCBM	(6) Total LCBM	(7) Total LCBM	(8) Total LCBM
Economic Size	0***	0***	0***	0***	0***	0***	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.00218***	0.00198***	0.00171***	0.00213***	0.00115**	0.00196***	0.00144**	0.00163**
	(0.000613)	(0.000659)	(0.000600)	(0.000618)	(0.000511)	(0.000659)	(0.000671)	(0.000673)
GDP Per Capita	-1.86e-06	-5.09e-06***	-3.69e-06***	-2.54e-06*	-4.70e-06***	-4.23e-06***	-3.77e-06**	-2.67e-06
	(1.36e-06)	(1.63e-06)	(1.42e-06)	(1.36e-06)	(1.49e-06)	(1.61e-06)	(1.68e-06)	(1.63e-06)
Banks Size	0.000707*	0.000649	0.000815**	0.000950**	0.001000**	0.000852**	0.00107**	0.000840**
	(0.000397)	(0.000434)	(0.000407)	(0.000400)	(0.000421)	(0.000434)	(0.000444)	(0.000426)
Banks Concentration	7.00e-05	2.35e-05	4.46e-05	-9.42e-06	-2.08e-05	3.83e-05	-1.45e-05	-4.80e-05
	(0.000202)	(0.000198)	(0.000202)	(0.000200)	(0.000201)	(0.000198)	(0.000198)	(0.000201)
Stock Market Capitalization	0.00123***	0.00130***	0.00125***	0.00124***	0.00131***	0.00131***	0.00132***	0.00129***
	(0.000110)	(0.000112)	(0.000113)	(0.000109)	(0.000116)	(0.000112)	(0.000115)	(0.000112)
Law & Order	-0.0240***	-0.0522***	-0.0499***	-0.0293***	-0.0638***	-0.0460***	-0.0453***	-0.0436***
	(0.00776)	(0.00846)	(0.00855)	(0.00913)	(0.00784)	(0.00849)	(0.00885)	(0.00882)
Bureaucracy Quality	0.0185	0.0156	0.0208	0.0232	0.0105	0.0141	0.00456	0.00970
	(0.0146)	(0.0160)	(0.0149)	(0.0164)	(0.0150)	(0.0160)	(0.0192)	(0.0174)
Corruption control	-0.0135**	-0.0177***	-0.0127**	-0.0104	-0.00865	-0.0160**	-0.00939	-0.00722
	(0.00606)	(0.00654)	(0.00621)	(0.00673)	(0.00658)	(0.00656)	(0.00769)	(0.00755)
Investment Profile	-0.00213	-0.000808	-0.00264	9.38e-05	-0.00375	-0.000686	0.00266	0.000814
	(0.00210)	(0.00275)	(0.00232)	(0.00233)	(0.00262)	(0.00282)	(0.00302)	(0.00279)
Inflation	-0.00145	-0.00250*	-0.00326**	-0.00386***	-0.00282**	-0.00228*	-0.00232*	-0.00337**
	(0.00103)	(0.00135)	(0.00131)	(0.00126)	(0.00128)	(0.00131)	(0.00132)	(0.00134)
Fiscal Balance	-0.00867***	-0.00987***	-0.00983***	-0.00915***	-0.00962***	-0.00912***	-0.00865***	-0.00897***
	(0.00190)	(0.00211)	(0.00200)	(0.00186)	(0.00206)	(0.00204)	(0.00208)	(0.00200)
Exchange Rate	-2.54e-06	-4.28e-06**	-3.72e-06*	-4.10e-06*	-2.12e-06	-3.32e-06	-4.78e-06**	-5.35e-06**
	(2.10e-06)	(2.01e-06)	(2.10e-06)	(2.42e-06)	(2.23e-06)	(2.14e-06)	(2.16e-06)	(2.49e-06)
Valuable Natural Resource	-0.00301**	-0.00118	-0.00146	-0.00284**	-0.000440	-0.00156	-0.00158	-0.00246*
	(0.00137)	(0.00140)	(0.00137)	(0.00140)	(0.00138)	(0.00139)	(0.00146)	(0.00144)
Capital Control	-0.0324							
	(0.0226)							
Average bond restrictions		-0.0306*						
		(0.0184)						
Bond inflow restrictions			-0.0330**					
			(0.0154)					
Purchase - inflow restrictions				-0.00684				
				(0.00913)				
Sale - inflow restrictions					-0.0573***			
					(0.0144)			
Bond outflow restrictions						-0.0177		
						(0.0136)		
Purchase - outflow restrictions							-0.0285***	
							(0.0109)	
Sale - outflow restrictions								-0.00853
								(0.0102)
Constant	0.182***	0.285***	0.283***	0.167***	0.348***	0.242***	0.237***	0.224***
	(0.0588)	(0.0630)	(0.0589)	(0.0628)	(0.0589)	(0.0619)	(0.0685)	(0.0647)
Observations	379	368	368	360	368	367	361	357
Number of Countries	23	23	23	23	23	23	23	23

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In this sub-section, the dissertation will examine the effect of capital controls on total, government, and private sector LCBM development. There will be ten variables measuring the restrictions, and each variable has a value from 0-100, measuring the degree of restrictions. Where 0 means there are no restrictions and 100 means it is fully closed or restricted. However, by controlling for capital control specifications variables, the dissertation loses three countries from the sample (Croatia, Cyprus, and Slovenia) and misses five years of observations due to the unavailability of the data.

The first variable will represent capital control which is the average of overall inflow and outflow restrictions in the economy. The second variable will account for the average bond inflow and outflow restrictions. The third variable is the average bond inflow restrictions. The fourth variable will measure the restriction on the inflow of purchase bonds locally by nonresidents. The fifth is the restriction on residents' inflow of sale or issuing bonds abroad. The sixth variable is the average bond outflow restrictions. The seventh measurement is the restriction on residents' outflow of purchase bonds abroad. The eight variable is the restriction on nonresidents' outflow of sale or issuing bonds locally. In addition, a separate measurement for overall inflow controls and overall outflow control in the economy will be used, and their results tables will be in the appendix table A8, and A9

4.3.1. Capital control restrictions on total local currency bond market

Table 16 represents the total local currency bond market development (government and private sector bonds) from 1995-2019 using annual observation for 23 emerging and developing countries. Column (1) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) and controlling for capital control which is the average of overall inflow and outflow restrictions. The results show that the coefficient of the capital control variable

is negative but not statistically significant. By comparing the results with the regression results using FGLS and without controlling for capital control variable in table 10 column (4), the dissertation finds that the banking sector size is now statistically significant. At the same time, inflation is no longer statistically significant. Moreover, the remaining controlling variables remain unchanged compared to the results from table 10 column (4).

Column (2) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) and controlling for the average of overall bonds inflow and outflow restrictions. The table shows that the coefficient of the overall bond inflow and outflow restrictions variable is negative and statistically significant at the 10% level. This result implies that bond inflow and outflow restrictions discourage the development of total LCBM. By comparing the results from column (1), the dissertation finds that GDP per capita, inflation, and exchange rate are now negative and statistically significant. However, the banking sector's size and valuable natural resources are no longer statistically significant. The remaining explanatory variables remain unchanged compared to the results from column (1).

Column (3) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) and controlling for the average overall bond inflow restrictions. The dissertation finds that average bond inflow restrictions have a negative, and statistically significant impact on the total LCBM development. Different from the results in column (1) and similar to those in column (2), GDP per capita, inflation, and exchange rate are negative and statistically significant. Conversely, valuable natural resource is no longer statistically significant compared to column (1). In addition, The remaining explanatory variables remain similar to the results from column (1).

Column (4) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) and controlling for the restriction on the inflow of purchase bonds locally by nonresidents. This research finds that the restriction on the inflow of purchase bonds locally by nonresidents variable has a negative sign but is not statistically significant. Comparing the results with column (1) results, the dissertation finds that GDP per capita and inflation are negative and gain their significance, while the valuable natural resource variable loses its significance. The remaining explanatory variables remain unchanged compared to the results from column (1).

Column (5) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) and controlling for the restriction on the inflow of sale or issue bonds abroad by residents. The results show that the coefficient of the restriction on the inflow of sale or issue bonds abroad by residents is negative and statistically significant at a 1% level, implying that bond markets develop faster if there is no restriction. Comparing the results with column (1) results, the table shows that GDP per capita and inflation gain their significance. At the same time, corruption control and valuable natural resource are still negative but not statistically significant. In addition, The remaining explanatory variables remain unchanged.

Column (6) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) and controlling for the average bond outflow restrictions. The results show that the coefficient of the average bond outflow restrictions variable is negative but not statistically significant. GDP per capita and inflation are now statistically significant compared to results from column (1), whereas valuable natural resources is no longer significant. Moreover, The remaining explanatory variables remain unchanged.

Column (7) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) and controlling for the restriction on the outflow of purchase bonds abroad by residents. The table shows that the restriction on the outflow of purchase bonds abroad by residents is negative and statistically significant at a 1% level. This means countries that are not allowing their residents to purchase bonds abroad will have smaller LCBM. Similar to previous columns, GDP per capita and inflation are negative and significant compared to the results of column (1). On the other hand, corruption control, exchange rate, and valuable natural resource lose their significance. The remaining control variables remain unchanged.

Column (8) shows the results of the regression equations estimated using feasible generalized least squares (FGLS) and controlling for the restriction on the outflow of sale or issue bonds locally by nonresidents. The coefficient of this specific restriction is negative but not statistically significant. Compared to the results in column (1), inflation and exchange rate are now negative and significant, while valuable natural resource loses its significance. The remaining control variables remain unchanged compared to column (1) results.

To sum up, four out of eight capital control specifications have a negative and statistically significant impact on total LCBM development. The four capital control specifications are average bond inflow and outflow restrictions, average bond inflow restrictions, restriction on the inflow of sale or issue bond abroad by residents, and restriction on the outflow of purchase bond abroad by residents.

After controlling for the control specification, the dissertation finds some differences in results compared to the regression results without capital controls. First, the results show that GDP per capita was negative and significant in 6 specifications out of 8. Second, the banking sector

size was positive and statistically significant in 7 specifications. Finally, exchange rate variable was negative and significant in 5 specifications.

4.3.2. Capital control restrictions on Government local currency bond market

Table 17 represents the total local currency bond market development (government and private sector bonds) from 1995-2019 using five years non-overlapping averages data for 23 emerging and developing countries. All columns in this table show the results of the regression equations estimated using panel corrected standard error (PCSE).

Table 17: Total LCBM With Capital Controls Using 5 Years Non-Overlapping Averages

VARIABLES	(1) Total Bond	(2) Total Bond	(3) Total Bond	(4) Total Bond	(5) Total Bond	(6) Total Bond	(7) Total Bond	(8) Total Bond
Economic Size	0	0	0	0	0	-0	-0	-0
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.00248**	0.00254**	0.00296***	0.00275***	0.00302**	0.00244**	0.00243*	0.00263**
	(0.00114)	(0.00122)	(0.00114)	(0.00102)	(0.00127)	(0.00116)	(0.00124)	(0.00107)
GDP Per Capita	-9.00e-07	-2.66e-06	-2.83e-06	3.59e-07	-4.34e-06**	7.59e-08	3.35e-07	8.74e-07
	(2.73e-06)	(2.06e-06)	(2.17e-06)	(2.61e-06)	(2.14e-06)	(2.22e-06)	(2.34e-06)	(2.33e-06)
Banks Size	0.00387***	0.00443***	0.00422***	0.00389***	0.00428***	0.00401***	0.00395***	0.00383***
	(0.000935)	(0.00105)	(0.000960)	(0.00105)	(0.000851)	(0.000992)	(0.00109)	(0.000927)
Banks Concentration	0.00142	0.000508	0.000659	0.00133	0.000835	0.00124	0.00151	0.00147
	(0.00206)	(0.00172)	(0.00166)	(0.00213)	(0.00152)	(0.00183)	(0.00192)	(0.00213)
Stock Market Capitalization	0.000786*	0.000719**	0.000748*	0.000474	0.00109***	0.000783*	0.000877*	0.000668
	(0.000467)	(0.000332)	(0.000417)	(0.000459)	(0.000400)	(0.000409)	(0.000453)	(0.000421)
Law & Order	-0.0860***	-0.105***	-0.0936***	-0.0948***	-0.0929***	-0.0938***	-0.0926***	-0.0880***
	(0.0189)	(0.0153)	(0.0174)	(0.0237)	(0.0141)	(0.0166)	(0.0190)	(0.0197)
Bureaucracy Quality	-0.00152	0.0113	0.0118	-0.00696	0.0144	-0.00867	0.00632	-0.0231
	(0.0559)	(0.0614)	(0.0657)	(0.0653)	(0.0543)	(0.0556)	(0.0569)	(0.0546)
Corruption control	-0.0461	-0.0545	-0.0474	-0.0523	-0.0463*	-0.0565	-0.0629	-0.0563
	(0.0360)	(0.0363)	(0.0356)	(0.0522)	(0.0275)	(0.0356)	(0.0459)	(0.0424)
Investment Profile	0.00321	0.00452	0.00208	0.00590	-0.00122	4.17e-05	-0.00175	2.74e-05
	(0.00449)	(0.00494)	(0.00717)	(0.00668)	(0.00575)	(0.00572)	(0.00543)	(0.00486)
Inflation	0.00362*	0.00270**	0.00338***	0.00383**	0.00265**	0.00308	0.00321	0.00333
	(0.00210)	(0.00117)	(0.00107)	(0.00174)	(0.00127)	(0.00201)	(0.00201)	(0.00225)
Fiscal Balance	-0.0139*	-0.0162***	-0.0160***	-0.0155**	-0.0170***	-0.0143**	-0.0147**	-0.0140*
	(0.00726)	(0.00456)	(0.00408)	(0.00672)	(0.00428)	(0.00709)	(0.00701)	(0.00783)
Exchange Rate	-1.68e-06	2.55e-07	8.28e-06	5.47e-06	5.16e-06	-3.87e-06	3.32e-06	-6.32e-06
	(6.18e-06)	(4.62e-06)	(5.20e-06)	(7.67e-06)	(3.47e-06)	(6.69e-06)	(7.23e-06)	(1.05e-05)
Valuable Natural Resource	0.00438	0.00553***	0.00519***	0.00459*	0.00548***	0.00406	0.00371	0.00405
	(0.00308)	(0.00112)	(0.00161)	(0.00239)	(0.00145)	(0.00263)	(0.00256)	(0.00304)
Capital Control	-0.139							
	(0.0874)							
Average bond restrictions		-0.280***						
		(0.0674)						
Bond inflow restrictions			-0.275***					
			(0.0496)					
Purchase - inflow restrictions				-0.131***				
				(0.0470)				
Sale - inflow restrictions					-0.240***			
					(0.0403)			
Bond outflow restrictions						-0.128**		
						(0.0505)		
Purchase - outflow restrictions							-0.0920***	
							(0.0332)	
Sale - outflow restrictions								-0.0847
								(0.0700)
Constant	0.301	0.474***	0.374**	0.285	0.391**	0.413**	0.344**	0.393**
	(0.199)	(0.171)	(0.156)	(0.177)	(0.152)	(0.183)	(0.158)	(0.200)
Observations	88	86	86	85	86	86	85	85
R-squared	0.375	0.450	0.487	0.407	0.458	0.368	0.353	0.362
Number of Countries	23	23	23	23	23	23	23	23

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Column (1) shows the results after controlling for capital control which is the average of overall inflow and outflow restrictions. The table shows that the capital control variable is negative but not statistically significant. By comparing the results with the results of the regression without using PCSE and without controlling for capital control variable in table 11 column (2), the dissertation finds that stack market capitalization is positive and now is statistically significant toward total bond market development. On the other hand, bureaucracy quality and corruption lose their significance but still have negative signs. The remaining control variables have the same results as table 11 column (2) results.

In summary, the dissertation finds that six out of eight capital control specifications have a negative and statistically significant impact on total LCBM development. The six capital control specifications are average bond inflow and outflow restrictions, average bond inflow restrictions, restriction on the inflow of sale or issue bond abroad by residents, restriction on the inflow of purchase bond locally by nonresidents, average bond outflow restrictions, and restriction on the outflow purchase bond abroad by residents.

Table 18 represents the government local currency bond market development from 1995-2019 using annual observation for 23 emerging and developing countries. All columns in this table show the results of the regression equations estimated using feasible generalized least squares (FGLS).

Table 18: Government LCBM with Capital Controls Using Annual Data

VARIABLES	(1) GOV Bond	(2) GOV Bond	(3) GOV Bond	(4) GOV Bond	(5) GOV Bond	(6) GOV Bond	(7) GOV Bond	(8) GOV Bond
Economic Size	0**	0**	0	0**	0	0**	0**	0**
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.000812**	9.27e-05	-4.82e-05	0.000625	-0.000386	0.000307	0.000229	0.000159
	(0.000389)	(0.000353)	(0.000360)	(0.000410)	(0.000298)	(0.000381)	(0.000411)	(0.000378)
GDP Per Capita	-2.87e-06***	-3.27e-06***	-3.33e-06***	-2.28e-06**	-1.92e-06*	-3.07e-06***	-2.63e-06**	-2.50e-06**
	(9.83e-07)	(1.04e-06)	(1.04e-06)	(1.03e-06)	(1.06e-06)	(1.02e-06)	(1.11e-06)	(1.05e-06)
Banks Size	-0.000404*	-0.000292	-0.000180	-0.000410*	0.000203	-0.000471**	-0.000525**	-0.000473**
	(0.000243)	(0.000239)	(0.000247)	(0.000237)	(0.000258)	(0.000234)	(0.000240)	(0.000234)
Banks Concentration	5.45e-05	8.86e-05	0.000116	1.03e-05	0.000165	2.73e-05	4.14e-06	-2.19e-05
	(0.000157)	(0.000156)	(0.000166)	(0.000165)	(0.000154)	(0.000155)	(0.000159)	(0.000161)
Stock Market Capitalization	0.000748***	0.000781***	0.000789***	0.000763***	0.000772***	0.000754***	0.000762***	0.000732***
	(7.48e-05)	(7.67e-05)	(7.94e-05)	(7.67e-05)	(7.42e-05)	(7.54e-05)	(7.75e-05)	(7.62e-05)
Law & Order	-0.0276***	-0.0380***	-0.0310***	-0.0280***	-0.0380***	-0.0346***	-0.0351***	-0.0344***
	(0.00506)	(0.00532)	(0.00577)	(0.00558)	(0.00562)	(0.00512)	(0.00530)	(0.00523)
Bureaucracy Quality	-0.00673	-0.00887	-0.00637	-0.00942	-0.00866	-0.0104	-0.0255*	-0.0262**
	(0.0103)	(0.0120)	(0.0120)	(0.0121)	(0.0122)	(0.0111)	(0.0131)	(0.0124)
Corruption control	-0.0103**	-0.0119**	-0.0106**	-0.00739	-0.00419	-0.0102**	-0.00760	-0.00663
	(0.00474)	(0.00527)	(0.00532)	(0.00556)	(0.00535)	(0.00504)	(0.00580)	(0.00557)
Investment Profile	-0.00505***	-0.00474**	-0.00589***	-0.00420**	-0.00620***	-0.00469**	-0.00322	-0.00421**
	(0.00161)	(0.00190)	(0.00191)	(0.00190)	(0.00196)	(0.00185)	(0.00203)	(0.00188)
Inflation	-0.00212***	-0.00295***	-0.00239***	-0.00294***	-0.00285***	-0.00288***	-0.00319***	-0.00284***
	(0.000671)	(0.000703)	(0.000810)	(0.000855)	(0.000855)	(0.000758)	(0.000767)	(0.000896)
Fiscal Balance	-0.00788***	-0.00775***	-0.00744***	-0.00778***	-0.00830***	-0.00807***	-0.00812***	-0.00852***
	(0.00143)	(0.00157)	(0.00158)	(0.00146)	(0.00153)	(0.00148)	(0.00154)	(0.00149)
Exchange Rate	-6.41e-06***	-5.48e-06***	-4.15e-06**	-7.24e-06***	-1.95e-07	-6.30e-06***	-8.30e-06***	-6.46e-06***
	(1.50e-06)	(1.65e-06)	(1.90e-06)	(1.72e-06)	(2.38e-06)	(1.67e-06)	(1.67e-06)	(2.32e-06)
Valuable Natural Resource	-0.00264**	-0.00149	-0.00121	-0.00275**	-0.000637	-0.00204*	-0.00299***	-0.00265**
	(0.00106)	(0.00111)	(0.00113)	(0.00113)	(0.00111)	(0.00106)	(0.00114)	(0.00110)
Capital Control	-0.000189							
	(0.0158)							
Average bond restrictions		-0.0143						
		(0.0120)						
Bond inflow restrictions			-0.0232**					
			(0.0108)					
Purchase - inflow restrictions				-0.00413				
				(0.00630)				
Sale - inflow restrictions					-0.0244**			
					(0.0120)			
Bond outflow restrictions						0.000741		
						(0.00910)		
Purchase - outflow restrictions							-0.0108	
							(0.00806)	
Sale - outflow restrictions								0.00783
								(0.00735)
Constant	0.350***	0.401***	0.380***	0.356***	0.372***	0.391***	0.430***	0.421***
	(0.0393)	(0.0427)	(0.0429)	(0.0425)	(0.0430)	(0.0398)	(0.0436)	(0.0410)
Observations	372	361	361	353	361	360	354	350
Number of Countries	23	23	23	23	23	23	23	23

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Column (1) shows the results after controlling for capital control which is the average of overall inflow and outflow restrictions. This research finds that the capital control variable is negative but not statistically significant. By comparing the results with the regression results using FGLS on government LCBM and without controlling for capital control variable in table 12 column (4), the research finds that trade openness is positive and now statistically significant regarding government LCBM development. On the other hand, the size of the banking sector is negative and now statistically significant. This result implies that bond markets in countries with a more developed banking sector are less developed, and government bonds are issued less frequently. In this case, the government bond market and banks intermediation appear to be substitutes rather than complementary (Adelegan and Radzewicz-Bak, 2009). The rest of the explanatory variables are similar to the results in table 12, column (4).

The average bond inflow restrictions and the restriction on the inflow of sale or issue bonds abroad by residents were negative and statistically significant regarding government LCBM development. The rest of the capital controls specifications were negative but not statistically significant. Implying that restrictions on bond inflow affect government bonds more than restrictions on bond outflow.

Table 19 represents the government local currency bond market development from 1995-2019 using 5 years using non-overlapping averages data for 23 emerging and developing countries. All columns in this table show the results of the regression equations estimated using panel corrected standard error (PCSE).

Table 19: Government LCBM With Capital Controls Using 5 Years Non-Overlapping Averages

VARIABLES	(1) GOV Bond	(2) GOV Bond	(3) GOV Bond	(4) GOV Bond	(5) GOV Bond	(6) GOV Bond	(7) GOV Bond	(8) GOV Bond
Economic Size	-0***	-0***	-0	-0	-0***	-0***	-0***	-0***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.00132*	0.00137**	0.00134**	0.00140**	0.00142**	0.00139**	0.00132**	0.00146*
	(0.000702)	(0.000561)	(0.000568)	(0.000588)	(0.000630)	(0.000647)	(0.000629)	(0.000764)
GDP Per Capita	-3.29e-06	-4.07e-06*	-4.61e-06***	-2.16e-06	-5.24e-06***	-2.17e-06	-2.02e-06	-1.42e-06
	(2.08e-06)	(2.26e-06)	(1.51e-06)	(2.04e-06)	(1.64e-06)	(2.52e-06)	(2.43e-06)	(2.64e-06)
Banks Size	0.00115***	0.00142***	0.00126***	0.00103***	0.00147***	0.00119***	0.00119***	0.000959***
	(0.000307)	(0.000381)	(0.000319)	(0.000271)	(0.000319)	(0.000330)	(0.000410)	(0.000292)
Banks Concentration	0.000434	-8.70e-05	5.95e-05	0.000436	0.000132	0.000419	0.000539	0.000985
	(0.000867)	(0.000806)	(0.000692)	(0.000940)	(0.000655)	(0.000877)	(0.000876)	(0.00110)
Stock Market Capitalization	0.000351**	0.000320***	0.000291***	0.000151	0.000557***	0.000303*	0.000392***	0.000298*
	(0.000175)	(0.000110)	(7.86e-05)	(0.000138)	(0.000109)	(0.000165)	(0.000130)	(0.000169)
Law & Order	-0.0290***	-0.0473***	-0.0424***	-0.0370***	-0.0416***	-0.0371***	-0.0416***	-0.0276***
	(0.00884)	(0.00593)	(0.00553)	(0.0104)	(0.00642)	(0.00700)	(0.00620)	(0.0105)
Bureaucracy Quality	-0.0311	-0.0244	-0.0138	-0.0269	-0.00826	-0.0385	-0.0194	-0.0379
	(0.0349)	(0.0395)	(0.0415)	(0.0418)	(0.0380)	(0.0388)	(0.0446)	(0.0376)
Corruption control	-0.0486***	-0.0539***	-0.0498***	-0.0560**	-0.0476***	-0.0503***	-0.0646***	-0.0565***
	(0.0143)	(0.0158)	(0.0155)	(0.0258)	(0.0130)	(0.0154)	(0.0217)	(0.0195)
Investment Profile	0.00367	-0.00282	-0.00387	-0.00193	-0.00204	0.00237	-0.00312	-0.000377
	(0.00245)	(0.00376)	(0.00408)	(0.00570)	(0.00248)	(0.00178)	(0.00300)	(0.00372)
Inflation	0.00220	0.00107	0.00105	0.00196	0.00106	0.00196	0.00154	0.00219
	(0.00212)	(0.00138)	(0.000759)	(0.00157)	(0.000938)	(0.00209)	(0.00205)	(0.00210)
Fiscal Balance	-0.0151***	-0.0167***	-0.0171***	-0.0157***	-0.0176***	-0.0156***	-0.0161***	-0.0154***
	(0.00375)	(0.00288)	(0.00256)	(0.00279)	(0.00277)	(0.00416)	(0.00388)	(0.00452)
Exchange Rate	-4.02e-06*	-7.68e-07	5.09e-06**	4.42e-06	2.72e-06***	-4.18e-06*	1.76e-06	1.77e-06
	(2.38e-06)	(1.31e-06)	(2.24e-06)	(4.21e-06)	(1.02e-06)	(2.53e-06)	(3.94e-06)	(6.24e-06)
Valuable Natural Resource	0.00355	0.00502***	0.00545***	0.00425***	0.00541***	0.00355	0.00374*	0.00312
	(0.00255)	(0.000922)	(0.000647)	(0.00161)	(0.000608)	(0.00233)	(0.00193)	(0.00259)
Capital Control	-0.0805*							
	(0.0461)							
Average bond restrictions		-0.190***						
		(0.0397)						
Bond inflow restrictions			-0.210***					
			(0.0227)					
Purchase - inflow restrictions				-0.108***				
				(0.00885)				
Sale - inflow restrictions					-0.168***			
					(0.0296)			
Bond outflow restrictions						-0.0584		
						(0.0421)		
Purchase - outflow restrictions							-0.0713***	
							(0.0146)	
Sale - outflow restrictions								0.00321
								(0.0560)
Constant	0.367***	0.563***	0.505***	0.425***	0.445***	0.410***	0.452***	0.336**
	(0.121)	(0.0982)	(0.0918)	(0.103)	(0.106)	(0.131)	(0.109)	(0.134)
Observations	87	85	85	84	85	85	84	84
R-squared	0.390	0.430	0.489	0.443	0.453	0.380	0.409	0.387
Number of Countries	23	23	23	23	23	23	23	23

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Column (1) shows the results after controlling for overall capital control. The table shows that the capital control variable is negative but not statistically significant. There are some differences in the results compared to those from the same regression without controlling for capital restrictions variables in table 13 column (2). Stock market capitalization has a positive and now statistically significant impact on government LCBM. Similar, valuable natural resource is positive and becomes statistically significant. On the other hand, GDP per capita is negative and significant only in three capital control specifications. At the same time, bureaucracy quality is no longer statistically significant.

Different from the annual data results, five out of eight capital control specifications have a negative impact on government LCBM and are statistically significant at a 1% level. Overall average bond restrictions, average bond inflow restrictions, restrictions on the inflow of purchase bond locally by nonresidents, restrictions on the inflow of sale or issue bond abroad by resident, average bond's inflow restrictions, and restrictions on the outflow of purchase bond abroad by residents. These results imply the restrictions on bond's inflow have more effect on government LCBM than bond's outflow restrictions

4.3.3. Capital Control Restrictions on Private Sector Local Currency Bond Market

Table 20 represents the private sector local currency bond market development from 1995-2019 using annual observation for 19 emerging and developing countries. All columns in this table show the results of the regression equations estimated using feasible generalized least squares (FGLS).

Table 20: Private Sector LCBM With Capital Controls Using Annual Data

VARIABLES	(1) PVT Bond	(2) PVT Bond	(3) PVT Bond	(4) PVT Bond	(5) PVT Bond	(6) PVT Bond	(7) PVT Bond	(8) PVT Bond
Economic Size	0***	0***	0***	0***	0***	0***	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.000208	-0.000121	0.000212	0.000674*	0.000153	0.000406	0.000488	0.000358
	(0.000336)	(0.000295)	(0.000313)	(0.000354)	(0.000284)	(0.000344)	(0.000370)	(0.000340)
GDP Per Capita	-8.36e-07	-1.01e-06	-6.77e-07	-1.12e-06	-9.68e-07	-1.61e-06	-2.40e-06**	-1.90e-06*
	(1.02e-06)	(1.03e-06)	(1.05e-06)	(1.10e-06)	(1.04e-06)	(9.87e-07)	(1.06e-06)	(1.07e-06)
Banks Size	0.00220***	0.00225***	0.00211***	0.00215***	0.00227***	0.00221***	0.00229***	0.00222***
	(0.000263)	(0.000263)	(0.000251)	(0.000269)	(0.000243)	(0.000268)	(0.000273)	(0.000266)
Banks Concentration	0.000116	4.86e-05	0.000128	-3.51e-05	-0.000126	8.76e-05	6.80e-05	4.99e-05
	(0.000172)	(0.000175)	(0.000161)	(0.000168)	(0.000176)	(0.000177)	(0.000183)	(0.000180)
Stock Market Capitalization	0.000265***	0.000241**	0.000246**	0.000296***	0.000321***	0.000297***	0.000270***	0.000229**
	(0.000103)	(0.000103)	(9.65e-05)	(9.33e-05)	(9.61e-05)	(0.000100)	(9.90e-05)	(0.000103)
Law & Order	-0.0185***	-0.0143**	-0.00673	-0.00840	-0.00749	-0.0125**	-0.0139**	-0.0152***
	(0.00568)	(0.00580)	(0.00633)	(0.00606)	(0.00622)	(0.00554)	(0.00571)	(0.00577)
Bureaucracy Quality	0.0588***	0.0610***	0.0533***	0.0661***	0.0685***	0.0539***	0.0684***	0.0671***
	(0.0107)	(0.0104)	(0.0101)	(0.0119)	(0.0111)	(0.0114)	(0.0125)	(0.0128)
Corruption control	-0.00257	-0.00211	-0.00385	-0.0106*	-0.00166	-0.00285	-0.0111*	-0.0108*
	(0.00567)	(0.00564)	(0.00531)	(0.00562)	(0.00576)	(0.00542)	(0.00610)	(0.00607)
Investment Profile	0.00188	0.00168	0.00257	0.00181	0.00151	0.00173	0.000970	0.00120
	(0.00237)	(0.00240)	(0.00233)	(0.00243)	(0.00228)	(0.00248)	(0.00257)	(0.00254)
Inflation	0.00104**	0.00113**	0.00102**	0.000456	0.00157**	-0.000370	0.000153	0.000101
	(0.000521)	(0.000531)	(0.000468)	(0.000707)	(0.000609)	(0.000809)	(0.000751)	(0.000765)
Fiscal Balance	0.00317*	0.00271	0.00217	0.00179	0.00311	0.00209	0.00208	0.00269
	(0.00172)	(0.00179)	(0.00167)	(0.00161)	(0.00191)	(0.00164)	(0.00170)	(0.00175)
Exchange Rate	-1.10e-06	-3.46e-07	-4.51e-07	5.05e-07	3.08e-07	-5.55e-07	9.67e-07	-9.04e-07
	(1.82e-06)	(1.38e-06)	(1.51e-06)	(2.05e-06)	(1.48e-06)	(1.38e-06)	(1.70e-06)	(1.89e-06)
Valuable Natural Resource	0.00532***	0.00619***	0.00471***	0.00479***	0.00696***	0.00551***	0.00637***	0.00632***
	(0.00121)	(0.00122)	(0.00117)	(0.00122)	(0.00118)	(0.00115)	(0.00127)	(0.00124)
Government Bond	0.225***	0.260***	0.227***	0.185***	0.260***	0.218***	0.211***	0.263***
	(0.0413)	(0.0423)	(0.0386)	(0.0404)	(0.0396)	(0.0411)	(0.0406)	(0.0436)
Capital Control	-0.0371***							
	(0.0135)							
Average bond restrictions		-0.0309***						
		(0.00992)						
Bond inflow restrictions			-0.0175**					
			(0.00813)					
Purchase - inflow restrictions				3.16e-05				
				(0.00672)				
Sale - inflow restrictions					-0.0440***			
					(0.00833)			
Bond outflow restrictions						-0.0342***		
						(0.00839)		
Purchase - outflow restrictions							-0.0174***	
							(0.00666)	
Sale - outflow restrictions								-0.0165**
								(0.00678)
Constant	-0.166***	-0.183***	-0.191***	-0.207***	-0.219***	-0.168***	-0.184***	-0.173***
	(0.0402)	(0.0405)	(0.0407)	(0.0437)	(0.0403)	(0.0396)	(0.0424)	(0.0424)
Observations	280	278	278	272	278	278	272	269
Number of Countries	19	19	19	19	19	19	19	19

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0

Column (1) shows the results after controlling for overall capital control. The research finds for the first time that the capital control variable is negative and statistically significant. This result implies that a country with a closed capital account has a smaller private sector LCBM relative to a country with an open capital account. Compared to the regression without capital control specifications in table 14 column (4), the results differ in some respects. Larger banking sector size and more valuable natural resource revenue are positive and now statistically significant.

Surprisingly, higher inflation is positive and statistically significant in three out of eight capital control. This result is consistent with Eichengreen *et al.,* (2008) findings.

Additionally, they argued that bank lending rates would increase due to higher inflation, which might encourage firms to issue bonds as a source of financing. Higher exchange rate against the US dollar is negative, but now it is not statistically significant. Nevertheless, the rest of the control variables remain unchanged compared to the results in table 14, column (4).

Seven out of eight capital control specifications have a negative and statistically significant effect on developing private sector LCBM. Only the restriction on the inflow of purchase bonds locally by nonresidents was negative but not significant. This implies that restrictions on inflow and outflow generally and specifically on bonds deter and slow the development of the private sector bond market more than the government bond market.

Table 21 represents the government local currency bond market development from 1995-2019 using 5 years using non-overlapping averages data for 19 emerging and developing countries. All columns in this table show the regression equations' results estimated using panel corrected standard error (PCSE).

Table 21: Private Sector LCBM With Capital Control Using 5 Years Non-Overlapping Averages

VARIABLES	(1) PVT Bond	(2) PVT Bond	(3) PVT Bond	(4) PVT Bond	(5) PVT Bond	(6) PVT Bond	(7) PVT Bond	(8) PVT Bond
Economic Size	0	0	-0	-0	0	-0	-0	-0
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	2.80e-05	0.000349**	0.000346	6.51e-05	0.000562**	0.000152	9.75e-06	0.000160
	(0.000176)	(0.000156)	(0.000222)	(0.000189)	(0.000248)	(0.000125)	(6.56e-05)	(0.000232)
GDP Per Capita	1.96e-06	-7.91e-07	1.97e-07	2.71e-06	-5.84e-07	1.77e-06	2.38e-06	2.58e-06
	(2.00e-06)	(1.57e-06)	(1.89e-06)	(1.93e-06)	(2.16e-06)	(1.80e-06)	(1.71e-06)	(1.79e-06)
Banks Size	0.00463***	0.00475***	0.00486***	0.00452***	0.00476***	0.00450***	0.00442***	0.00437***
	(0.000439)	(0.000403)	(0.000429)	(0.000504)	(0.000478)	(0.000354)	(0.000417)	(0.000411)
Banks Concentration	-0.000352	-0.00121*	-0.000982	-0.000455	-0.000980	-0.000843	-0.000759	-0.000493
	(0.000950)	(0.000627)	(0.000723)	(0.000708)	(0.000696)	(0.000703)	(0.000614)	(0.000855)
Stock Market Capitalization	0.000136	0.000236	0.000166	0.000117	0.000322***	0.000251*	0.000334**	0.000207
	(0.000201)	(0.000150)	(0.000186)	(0.000212)	(8.98e-05)	(0.000152)	(0.000143)	(0.000185)
Law & Order	-0.0650***	-0.0646***	-0.0616***	-0.0615***	-0.0595***	-0.0603***	-0.0572***	-0.0591***
	(0.0149)	(0.0159)	(0.0133)	(0.0159)	(0.0169)	(0.0179)	(0.0189)	(0.0175)
Bureaucracy Quality	0.151***	0.163***	0.144***	0.156***	0.150***	0.164***	0.183***	0.156***
	(0.0103)	(0.00386)	(0.00470)	(0.00929)	(0.00671)	(0.00585)	(0.0136)	(0.00874)
Corruption control	-0.0140**	-0.0190*	-0.0180*	-0.0324**	-0.00194	-0.0179	-0.0375	-0.0220
	(0.00653)	(0.0108)	(0.0101)	(0.0150)	(0.0109)	(0.0114)	(0.0246)	(0.0209)
Investment Profile	0.00928**	0.00298	0.00721**	0.00405	0.00476	0.00447	-0.000327	0.00253
	(0.00430)	(0.00347)	(0.00358)	(0.00678)	(0.00585)	(0.00506)	(0.00710)	(0.00770)
Inflation	0.00294***	0.00366***	0.00438***	0.00475***	0.00383***	0.00432***	0.00460***	0.00444***
	(0.00103)	(0.000482)	(0.000893)	(0.00152)	(0.000923)	(0.000801)	(0.00133)	(0.00124)
Fiscal Balance	0.0202***	0.0196***	0.0192***	0.0214***	0.0168***	0.0199***	0.0209***	0.0203***
	(0.00407)	(0.00366)	(0.00397)	(0.00432)	(0.00441)	(0.00407)	(0.00382)	(0.00448)
Exchange Rate	1.90e-06	8.48e-07	5.07e-06	4.97e-06	3.59e-06	-1.40e-06	4.03e-06	2.02e-07
	(4.00e-06)	(3.09e-06)	(4.12e-06)	(4.39e-06)	(3.07e-06)	(3.77e-06)	(5.41e-06)	(4.70e-06)
Valuable Natural Resource	0.0136***	0.0132***	0.0136***	0.0127***	0.0160***	0.0129***	0.0132***	0.0130***
	(0.00107)	(0.000737)	(0.000944)	(0.00158)	(0.000924)	(0.000778)	(0.00120)	(0.000750)
Government Bond	0.245***	0.206***	0.202***	0.234***	0.195***	0.240***	0.241***	0.248***
	(0.0516)	(0.0669)	(0.0532)	(0.0442)	(0.0591)	(0.0597)	(0.0462)	(0.0567)
Capital Control	-0.0651							
	(0.0457)							
Average bond restrictions		-0.141***						
		(0.0257)						
Bond inflow restrictions			-0.102***					
			(0.0229)					
Purchase - inflow restrictions				-0.0343				
				(0.0285)				
Sale - inflow restrictions					-0.101***			
					(0.00950)			
Bond outflow restrictions						-0.0591***		
						(0.0214)		
Purchase - outflow restrictions							-0.0494***	
							(0.0183)	
Sale - outflow restrictions								-0.0299
								(0.0208)
Constant	-0.363***	-0.214***	-0.292***	-0.315***	-0.331***	-0.324***	-0.308***	-0.325***
	(0.0392)	(0.0522)	(0.0525)	(0.0391)	(0.0314)	(0.0259)	(0.0474)	(0.0484)
Observations	67	66	66	65	66	66	65	65
R-squared	0.860	0.886	0.877	0.873	0.874	0.874	0.878	0.865
Number of Countries	19	19	19	19	19	19	19	19

Standard errors in parentheses

Column (1) shows the results after controlling for overall capital control. The table shows that the capital control variable is negative but not statistically significant. In comparison with the regression without capital control specifications in table 15, column (2), there are some differences between the results. First, economic size is no longer statistically significant. Second, trade openness and investment profile are positive and significant only in two capital control specifications. At the same time, stock market capitalization is positive and significant in three capital control specifications. Finally, Inflation and valuable natural resource are positive and statistically significant in all eight capital control specifications.

Lastly, five out of eight capital control specifications were negative and statistically significant toward private sector LCBM development. The average of overall inflow and outflow restrictions in the economy, restrictions on the inflow of purchase bonds locally by nonresidents, and restrictions on the outflow sale or issue bonds locally by nonresidents were negative but not statistically significant.

Using bond's inflow and outflow restrictions specifications explains their effect on total, government, and private LCBM more than using the general capital control variable. This implies that the bond market is sensitive and develops slower in a country with more restrictions on bond inflow and outflow.

4.4. Government's foreign currency bond effects on Local currency bond market.

In this sub-section, the research will examine the impact of the government's foreign currency bond issuance on total, government, and private sector LCBM. The impact of a country's foreign currency bond on the development of local bond markets is ambiguous. On the one hand, offshore markets can complement domestic market development. Which can help improve domestic infrastructure, diversify the local currency market, create a minor currency asset class,

and help resolve currency and maturity mismatches in an alternative way. On the other hand, the offshore market may substitute the domestic market and draw liquidity away from it (Black and Munro, 2010).

Table 22: Government Foreign Currency Bond Effects Using Annual Data

VARIABLES	(1) Total	(2) GOV	(3) PVT
Economic Size	0***	0	0***
	(0)	(0)	(0)
Trade Openness	0.00209***	0.000194	0.000838**
	(0.000729)	(0.000475)	(0.000358)
GDP Per Capita	-6.42e-07	-2.60e-07	-1.31e-07
	(1.61e-06)	(1.19e-06)	(8.51e-07)
Banks Size	0.000853**	-5.74e-05	0.00154***
	(0.000415)	(0.000239)	(0.000231)
Banks Concentration	-5.78e-06	5.01e-05	-0.000122
	(0.000214)	(0.000160)	(0.000148)
Stock Market Capitalization	0.00116***	0.000781***	0.000144*
	(0.000130)	(8.77e-05)	(7.69e-05)
Law & Order	-0.0290***	-0.0268***	-0.0113**
	(0.00919)	(0.00616)	(0.00527)
Bureaucracy Quality	-0.00178	-0.00482	0.0157*
	(0.0167)	(0.0120)	(0.00944)
Corruption Control	-0.0165**	-0.0130**	0.00138
	(0.00783)	(0.00590)	(0.00465)
Investment Profile	-0.00136	-0.00282	-0.000572
	(0.00241)	(0.00195)	(0.00187)
Inflation	-0.00425***	-0.000111	-0.00120
	(0.00128)	(0.000950)	(0.000734)
Fiscal Balance	-0.0131***	-0.00937***	0.000164
	(0.00209)	(0.00165)	(0.00155)
Exchange Rate	-5.87e-06*	-2.87e-06	-1.90e-06
	(3.27e-06)	(2.65e-06)	(2.11e-06)
Valuable Natural Resource	-0.00725***	-0.00372***	0.00174*
	(0.00196)	(0.00141)	(0.00105)
Government Bond Local currency			0.331***
			(0.0317)
Government Foreign Currency Bond	0.126*	0.644***	-0.334***
	(0.0723)	(0.0794)	(0.0611)
Constant	0.316***	0.280***	-0.0661*
	(0.0693)	(0.0458)	(0.0379)
Observations	338	331	288
Number of Countries	24	24	21

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 22 represents the effects of the government's outstanding foreign currency bonds as a share of GDP on local currency bond market development from 1990-2019 using annual observation for 26 emerging and developing countries. All columns in this table show the results of the regression equations estimated using feasible generalized least squares (FGLS).

Column (1) shows the effects of the government's foreign currency bonds on total LCBM. The dissertation finds a positive and significant correlation between the development of total LCBM and sovereign foreign currency bonds, which implies that the relationship between foreign currency government bonds and total LCBM appears to be complementarities rather than substitutes.

There are two differences in the results compared to table 10, column (4). First, larger banking sector size is positive and now statistically significant at 5% level, where before was not significant. Second, higher exchange rate against the US dollar is negative and now statistically significant at 10% level, where it was previously insignificant.

Column (2) shows the effects of foreign currency government bonds on government LCBM. The table shows that the coefficient is positively correlated to government LCBM development and statistically significant at 1% level. Similar to total LCBM, the findings imply that the supply of continuous foreign currency government bonds can support the development of government LCBM.

Comparing these results with the results from table 13, column (4), the dissertation finds that economic size, GDP per capita, investment profile, inflation, and exchange rate variable are no longer statistically significant, but they still have the same sign.

Column (3) shows the effects of foreign currency government bonds on private sector LCBM. Unlike total and government LCBM, the coefficient is negatively correlated to private

sector LCBM development, and it is statistically significant at 1%. The findings imply that the relationship between foreign currency government bonds and private sector LCBM appear to be substitutes rather than complementarities. One possible justification is that when governments issue more foreign currency bonds might make it easier for corporates to issue bonds offshore, especially if it becomes cheaper to issue offshore than onshore. In contrast, government bonds denominated in local currency are still positive and statistically significant at 1% level. After controlling for foreign currency government bonds, the dissertation finds some differences in results compared to the results in table 14 column (4). First, trade openness, banking sector size, and valuable natural resource are positive, but now they all are statistically significant. However, exchange rate variable is negative but no longer statistically significant.

Table 23 represents the effects of the government's outstanding foreign currency bonds as a share of GDP on local currency bond market development from 1990-2019 using 5 years non-overlapping averages for 26 emerging and developing countries. All columns in this table show the results of the regression equations estimated using feasible generalized least squares (FGLS). It is important to mention that for 5 years non-overlapping data, the appropriate method is panel corrected standard error (PCSE) since the number of countries is larger than the time period. However, including the foreign currency government bonds variable made the panel data highly unbalanced, and STATA could not run the regression due to the small sample. Therefore, the dissertation applied the FGLS method.

Table 23 Government Foreign Currency Bond Effects Using 5 Years Non-Overlapping Averages

VARIABLES	(1) Total	(2) GOV	(3) PVT
Economic Size	0	-0	0
	(0)	(0)	(0)
Trade Openness	0.00193**	0.000453	0.000801***
	(0.000889)	(0.000361)	(0.000285)
GDP Per Capita	3.68e-07	-1.05e-07	9.94e-07
	(2.27e-06)	(1.33e-06)	(1.31e-06)
Banks Size	0.00161***	0.000310	0.00270***
	(0.000624)	(0.000296)	(0.000374)
Banks Concentration	0.000425	-0.000183	0.000375
	(0.000541)	(0.000203)	(0.000413)
Stock Market Capitalization	0.00118***	0.00118***	-1.14e-05
	(0.000343)	(0.000229)	(0.000215)
Law & Order	-0.0648***	-0.0447***	-0.0341***
	(0.0121)	(0.00945)	(0.00970)
Bureaucracy Quality	-0.0970**	-0.0149	0.0964***
	(0.0401)	(0.0226)	(0.0148)
Corruption Control	-0.0815***	-0.0335***	-0.0246*
	(0.0145)	(0.0119)	(0.0127)
Investment Profile	-0.00146	-0.00727*	-0.00173
	(0.00596)	(0.00428)	(0.00384)
Inflation	0.00118	0.00363**	0.00125
	(0.00194)	(0.00149)	(0.000890)
Fiscal Balance	-0.0185***	-0.0193***	0.00508*
	(0.00361)	(0.00185)	(0.00300)
Exchange Rate	-4.63e-06	-3.04e-06	-1.65e-06
	(3.63e-06)	(3.08e-06)	(5.08e-06)
Valuable Natural Resource	-0.00494	-0.00782***	0.0121***
	(0.00427)	(0.00227)	(0.00228)
Government Bond Local currency			0.404***
			(0.0429)
Government Foreign Currency Bond	0.472***	0.761***	-0.505***
	(0.0994)	(0.0677)	(0.0813)
Constant	0.655***	0.392***	-0.230***
	(0.115)	(0.0630)	(0.0673)
Observations	82	81	72
Number of Countries	22	22	20

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Column (1) shows the effects of foreign currency government bonds on total LCBM. The results show a positive and significant impact, similar to the results obtained in the annual data. After controlling for foreign currency government bonds variables, the research finds some differences compared to the results in table 11 column (4). Inflation and exchange rate are still

negative but statistically insignificant. However, Bureaucracy quality is negative toward total LCBM development and is now significant at 5% level.

Column (2) shows the effects of the government‘s foreign currency bonds on government LCBM. The table shows that the coefficient is positively correlated to government LCBM, similar to the results found in the annual data. This column shows more differences in the results than the results without controlling for the government‘s foreign currency bonds in table 13 column (4). First, GDP per capita, banking sector concentration, and exchange rate are negative but no longer statistically significant. In addition, the banking sector size is positive but now is insignificant. Conversely, investment profile and valuable natural resources are negative toward government LCBM and are now statistically significant. At the same time, inflation still has a positive impact, but now it is also significant at 5% level.

Column (3) shows the effects of foreign currency government bonds on private sector LCBM. Different from total and government LCBM, but similar to the annual data results, the government’s foreign currency bond issuance is negatively correlated to private sector LCBM development and statistically significant at 1% level.

Comparing the results with those without adding government foreign currency bonds in table 15 column (4) shows four differences. First, economic size is still positive toward private sector LCBM development but now is statistically significant. Second, stock market capitalization has the opposite effect, and now it has a negative impact but is not statistically significant. Third, corruption control still has a negative coefficient, but now it is significant at 10% level. Finally, higher fiscal surplus is appositive and now is significant regarding developing private sector LCBM.

4.5. Endogeneity

It is possible to argue that many variables suggested by the literature are endogenous. However, previous literature on the relevant topic does not generally address endogeneity sufficiently. The absence of data for good instruments may be one of the reasons, especially if the sample is for emerging and developing countries.

The assumption that explanatory variables are exogenous to bond market development may be incorrect, making identifying determinants difficult. For example, the fiscal balance drives debt stocks, but the fiscal balance can also be driven by the interest on an existing debt stock, particularly if it is substantial. As a result, the fiscal balance may be endogenous in the model. Similarly, in a model explaining the debt stock, the research expects the inflation rate to be endogenous (Mu *et al.,* 2013). Moreover, Smaoui *et al.,* 2017 assumed that economic size, trade openness, GDP per Capita, banking sector size, interest rate volatility, spreads, and fiscal balance are all endogenous. Existing research is helpful, but more investigation into the impact of accounting for possible endogeneity of some major explanatory variables is necessary.

Table 24 shows the results of using the first lag to try to reduce the problem of endogeneity in the determinants of local currency bond market development from 1990-2019 using annual observation for 26 emerging and developing countries. All columns in this table show the results of the regression equations estimated using feasible generalized least squares (FGLS).

Table 24: First Lag Using Annual Data

VARIABLES	(1) FL-Total LCBM	(2) FL-GOV LCBM	(3) FL-PVT LCBM
L.Economic Size	0***	0**	0***
	(0)	(0)	(0)
L.Trade Openness	0.00235***	0.000606	0.000726**
	(0.000619)	(0.000392)	(0.000336)
L.GDP Per Capita	-1.65e-06	-1.35e-06	-2.78e-06***
	(1.37e-06)	(9.72e-07)	(9.28e-07)
L.Banks Size	0.000808**	0.000109	0.000795***
	(0.000326)	(0.000215)	(0.000217)
L.Banks Concentration	-4.84e-05	-0.000114	6.09e-05
	(0.000261)	(0.000173)	(0.000164)
L.Stock Market Capitalization	-0.000168	-8.10e-05	-1.07e-05
	(0.000132)	(8.23e-05)	(7.69e-05)
L.Law & Order	-0.0338***	-0.0236***	-0.0248***
	(0.00777)	(0.00528)	(0.00477)
L.Bureaucracy Quality	-0.0248	-0.0456***	0.0183**
	(0.0159)	(0.0118)	(0.00896)
L.Corruption Control	1.42e-05	-0.00437	0.00314
	(0.00677)	(0.00476)	(0.00434)
L.Investment Profile	-0.00252	-0.00401**	0.00302*
	(0.00250)	(0.00167)	(0.00176)
LInflation	-0.00156	-0.000956	0.000181
	(0.00106)	(0.000750)	(0.000698)
LFiscal Balance	-0.00868***	-0.00701***	-0.00137
	(0.00198)	(0.00141)	(0.00141)
L.Exchange Rate	-8.51e-06***	-9.46e-06***	-5.07e-06**
	(2.56e-06)	(2.08e-06)	(2.18e-06)
L.Valuable Natural Resource	-0.00113	0.000962	0.00367***
	(0.00152)	(0.00115)	(0.00101)
L.Government Bond			0.0800**
			(0.0378)
Constant	0.347***	0.428***	-0.00583
	(0.0594)	(0.0418)	(0.0353)
Observations	431	424	324
Number of Countries	26	26	22

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Column (1) examines the determinants of total LCBM development. Comparing the results with table 10, column 4, the research finds differences between the results. First, after using the first lag, larger banking sector size positively impacts total LCBM, and now it is statistically significant at 5% level. Second, the stock market size was positive and significant, but now it is negative and insignificant. Third, inflation and valuable natural resource are still negative but no

longer statistically significant. Fourth, exchange rate is negative and is now significant at 1%. Finally, corruption control was negative and significant, but after using the first lag, it become positive but insignificant.

Column (2) examines the determinants of government LCBM development. After using the first lag, GDP per capita, corruption, inflation, and valuable natural resource have negative signs but loses their significance. However, bureaucracy quality is still negative, but now it is statistically significant at 1% level.

Column (3) examines the determinants of private sector LCBM development. The results show using the first lag increases the number of significant variables. Trade openness, banking sector size, and valuable natural resource are still positive, but now they have become statistically significant. Similarly, GDP per capita is still negative, but it is now statistically significant at 1% level. Stock market capitalization is no longer significant and has a negative sign compared to a positive and significant sign in table 14 column (4).

The main takeaway from using the first lag is that banking sector size is a positive determinant for total and private sector LCBM development. At the same time, inflation and stock market capitalization are no longer statistically significant determinants for total, government, and private sector LCBM development.

Table 25 shows the results of using the first lag to solve for endogeneity in the determinants of local currency bond market development from 1990-2019 using 5 years non-overlapping averages for 26 emerging and developing countries.

Table 25: First Lag Using 5 Years Non-Overlapping Averages

VARIABLES	(1) FL-Total LCBM	(2) FL-GOV LCBM	(3) FL-PVT LCBM
L.Economic Size	0***	-0	0***
	(0)	(0)	(0)
L.Trade Openness	0.00227***	0.000811**	0.000962***
	(0.000687)	(0.000408)	(0.000320)
L.GDP Per Capita	1.53e-06	4.46e-07	4.08e-07
	(2.34e-06)	(2.80e-06)	(8.30e-07)
L.Banks Size	0.00269***	0.00143**	0.00141***
	(0.000745)	(0.000570)	(0.000216)
L.Banks Concentration	-0.000160	-0.000617	0.000208
	(0.00116)	(0.000970)	(0.000369)
L.Stock Market Capitalization	0.00187***	0.000765***	0.00123***
	(0.000381)	(0.000204)	(0.000170)
L.Law & Order	-0.0883***	-0.0643***	-0.0271***
	(0.0137)	(0.0114)	(0.00959)
L.Bureaucracy Quality	-0.0939***	-0.0601**	0.0562***
	(0.0281)	(0.0279)	(0.0108)
L.Corruption Control	-0.0118	-0.0158	-0.0515***
	(0.0198)	(0.0134)	(0.00751)
L.Investment Profile	-0.00167	-0.00141	0.0106*
	(0.0134)	(0.00915)	(0.00607)
LInflation	0.00662***	0.00637***	0.00217
	(0.00103)	(0.000721)	(0.00187)
LFiscal Balance	-0.0183***	-0.0236***	0.00682*
	(0.00493)	(0.00776)	(0.00385)
L.Exchange Rate	-1.40e-05***	-9.90e-06***	-4.54e-06*
	(2.47e-06)	(2.95e-06)	(2.47e-06)
L.Valuable Natural Resource	-0.00360*	0.00266	0.000337
	(0.00188)	(0.00227)	(0.00212)
L.Government Bond			0.128***
			(0.0333)
Constant	0.531***	0.446***	-0.114
	(0.117)	(0.0910)	(0.0766)
Observations	87	86	63
R-squared	0.614	0.570	0.519
Number of Countries	26	26	22

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

All columns in this table show the results of the regression equations estimated using panel corrected standard error (PCSE).

Column (1) examines the determinants of total LCBM development. Comparing the results with table 11, column 2, the research finds differences between the results. After using the first lag, the results show that the size of the economy and stock market capitalization positively and

significantly impact the development of total LCBM. On the other hand, exchange rate and valuable natural resource are negative, and now they are statistically significant. In addition, corruption control has a negative sign but is no longer statistically significant.

Column (2) examines the determinants of government LCBM development. After using the first lag, economic size and corruption control still negatively impact government LCBM development but are statistically insignificant. However, stock market capitalization and inflation are positive determinants for government LCBM development, with 1% significant level.

Column (3) examines the determinants of private sector LCBM development. The results show using the first lag increases the number of significant variables. Trade openness and investment profile are positive and statistically significant, while the exchange rate is negative and is now statistically significant. The rest of the control variables remain unchanged compared to the results in table 15, column 2.

In summary, using the first lag in the 5 years non-overlapping averages data shows that stock market capitalization and inflation have a positive and significant impact on the development of total, government, and private sector LCBM development. This finding contradicts the results of the annual data in table 24. On the other hand, a depreciation in currency has a negative and significant effect on all types of LCBM development.

4.6. Cyclically Adjusted Balance

In this sub-section, the dissertation will apply a different measurement for fiscal balance. In all previous models, the fiscal balance was measured as three years moving average of the past budget (the difference between revenue and total expenditure). However, according to Smaoui *et al.,* (2017), using the cyclically adjusted structural balance from IMF is a better measurement. Since, The effect of temporary financial sector and asset price movements, as well as one-off temporary revenues or expenditures items, are all eliminate out by these cyclical adjustments. Therefore, cyclically adjusted structural balance will be used and compared with three years moving average of past budget balances to test if the effect of fiscal balance as a determinant will change or not and to note the changes over the rest of the explanatory variables.

Nevertheless, it is crucial to note that the data for cyclically adjusted structural balance was unavailable for all countries in the sample, and there are missing data randomly across all countries in different years.

Table 26 represents the effects of using cyclically adjusted structural balance compared to using three years moving average of past budget on the local currency bond market development from 1990-2019 using annual observation for 26 emerging and developing countries. All columns in this table show the results of the regression equations estimated using feasible generalized least squares (FGLS). Column (1,3,5) uses a three years moving average of past year's budget as a measurement for the fiscal balance variable. Column (2,4,6) uses cyclically adjusted structural balance as a measurement for the fiscal balance variable.

Table 26 Using Cyclically Adjusted Balance in Annual Data

VARIABLES	(1) Total FB	(2) Total Cyclically	(3) GOV FB	(4) GOV Cyclically	(5) PVT FB	(6) PVT Cyclically
Economic Size	0***	0***	0**	0**	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.00156***	0.00198***	0.000497	0.000971**	8.61e-05	-1.96e-05
	(0.000554)	(0.000645)	(0.000364)	(0.000378)	(0.000266)	(0.000285)
GDP Per Capita	-1.55e-06	1.56e-07	-2.23e-06**	-1.27e-06	-9.81e-07	-1.35e-07
	(1.17e-06)	(1.36e-06)	(8.71e-07)	(7.91e-07)	(7.23e-07)	(7.56e-07)
Banks Size	9.44e-05	0.000263	-0.000327	-0.000407**	0.000221	0.000766***
	(0.000304)	(0.000324)	(0.000200)	(0.000167)	(0.000199)	(0.000206)
Banks Concentration	0.000223	0.000278	9.38e-05	3.20e-05	-4.31e-05	0.000134
	(0.000223)	(0.000246)	(0.000154)	(0.000156)	(0.000149)	(0.000166)
Stock Market Capitalization	0.00106***	0.000970***	0.000696***	0.000574***	0.000333***	0.000265***
	(0.000103)	(0.000118)	(7.20e-05)	(7.42e-05)	(6.99e-05)	(7.31e-05)
Law & Order	-0.0261***	-0.0292***	-0.0274***	-0.0205***	-0.0143***	-0.0121**
	(0.00696)	(0.00750)	(0.00481)	(0.00491)	(0.00418)	(0.00480)
Bureaucracy Quality	0.00412	-0.00169	-0.00512	0.0199**	0.0166**	0.0188*
	(0.0123)	(0.0165)	(0.00906)	(0.00947)	(0.00811)	(0.0103)
Corruption Control	-0.0132**	-0.00791	-0.00986**	-0.00414	-0.00107	-0.00161
	(0.00587)	(0.00656)	(0.00448)	(0.00391)	(0.00377)	(0.00458)
Investment Profile	-0.00207	-0.000119	-0.00387**	-0.000934	0.000555	-0.000346
	(0.00201)	(0.00232)	(0.00153)	(0.00147)	(0.00158)	(0.00180)
Inflation	-0.00235**	-0.00351***	-0.00213***	-0.00164**	-0.000349	-0.000514
	(0.000999)	(0.00134)	(0.000670)	(0.000804)	(0.000547)	(0.000651)
Exchange Rate	-3.33e-06	-3.10e-06	-5.80e-06***	-5.11e-06***	-4.76e-06**	-1.94e-06
	(2.22e-06)	(2.52e-06)	(1.51e-06)	(1.24e-06)	(2.33e-06)	(1.35e-06)
Valuable Natural Resource	-0.00395***	-0.00760***	-0.00277***	-0.00526***	0.000538	0.00260**
	(0.00130)	(0.00167)	(0.00101)	(0.00111)	(0.000925)	(0.00108)
Fiscal Balance	-0.00802***		-0.00661***		-0.000947	
	(0.00166)		(0.00125)		(0.00115)	
Cyclically Adjusted Balance		-0.00130		-0.00201**		-0.00173*
		(0.00131)		(0.000817)		(0.000989)
Government Bond					0.157***	0.290***
					(0.0335)	(0.0317)
Constant	0.250***	0.249***	0.340***	0.218***	0.0109	-0.0503
	(0.0493)	(0.0616)	(0.0346)	(0.0377)	(0.0327)	(0.0395)
Observations	436	372	429	365	337	310
Number of Countries	26	23	26	23	22	21

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results in column (1) are identical to the results in table 10 column (4). However, in column (2), the dissertation uses the cyclically adjusted structural balance as a control variable and total LCBM as a dependent variable. First, the results show that cyclically adjusted structural balance is negative but not statistically significant. On the other hand, the fiscal balance variable in column (1) is negative and statistically significant toward the development of total LCBM. Second, GDP per capita is negative but insignificant in column (1); however, in column (2) is positive but also statistically insignificant. Similar change but in a different direction, bureaucracy quality has a positive effect but is not statistically significant in column (1) and negative and insignificant in column (2). Third, corruption control loses its significance in column (2) compared to column (1). Finally, the rest of the control variables remain unchanged compared to column (1).

Column (4) controls for cyclically adjusted structural balance, and the dependent variable is government LCBM development. The table shows that the cyclically adjusted structural balance is negative and significant at 5%, while the fiscal balance variable is significant at 1% in column (3). GDP per capita, corruption control, and bureaucracy quality are negative but insignificant compared to column (3). The remaining explanatory variables remain unchanged compared to column (3) results.

Column (6) uses the cyclically adjusted structural balance, and the dependent variable is private sector LCBM development. The results show that the coefficient of cyclically adjusted structural balance is similar to the fiscal balance's result in column (5), where the sign was negative and statistically insignificant. The banking sector size and valuable natural resources are positive, but in column (6), they are statistically significant at 1% level. On the other hand, exchange rate variable is still negative but loses its significance compared to column (5). Trade openness and investment profile are positive but insignificant in column (5); however, in column (6), they are

negative but also statistically insignificant. Similar change but in a different direction, Banking sector concentration has a negative effect but is not statistically significant in column (5); however, in column (6), it has a positive impact, but it is insignificant. Finally, the rest of the control variables remain unaffected compared to column (5) results.

Table 27 represents the effects of using cyclically adjusted structural balance compared to using a past year budget on the local currency bond market development from 1990-2019 using 5 years non-overlapping averages data for 26 emerging and developing countries. All columns in this table show the results of the regression equations estimated using panel corrected standard error (PCSE). Column (1,3,5) uses the past year's budget as a measurement for the fiscal balance variable. Column (2,4,6) uses cyclically adjusted structural balance as a measurement for the fiscal balance variable.

In column (2), the dissertation uses the cyclically adjusted structural balance as a control variable and total LCBM as a dependent variable. The results show that the cyclically adjusted structural balance is positive but insignificant, while the past year's budget is negative and statistically significant in column (1). GDP per capita is now positive and statistically significant at 1% level, which was negative but insignificant in column (1). On the contrary, valuable natural resource is positive and insignificant in column (1); however, it is now negative and statistically significant in column (2). Corruption control is negative and becomes statistically significant in column (2). All other control variables are the same in both columns (1) &(2).

Column (4) controls for cyclically adjusted structural balance variable, and the dependent variable is government LCBM development. The coefficient of cyclically adjusted structural balance is negative but insignificant, while the fiscal balance in column (3) is negative and

Table 27: Using Cyclically Adjusted Balance in 5 Years Non-Overlapping Averages Data

VARIABLES	(1) Total FB	(2) Total Cyclically	(3) GOV FB	(4) GOV Cyclically	(5) PVT FB	(6) PVT Cyclically
Economic Size	0	0	-0***	0	0*	0**
	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.00281**	0.00275***	0.00124*	0.00179***	0.000196	0.000333
	(0.00128)	(0.000803)	(0.000727)	(0.000338)	(0.000499)	(0.000345)
GDP Per Capita	-1.85e-07	5.54e-06***	-2.91e-06	1.69e-06	2.66e-06	2.67e-06
	(1.91e-06)	(2.04e-06)	(2.82e-06)	(1.59e-06)	(2.94e-06)	(2.14e-06)
Banks Size	0.00238***	0.00142***	0.00109***	-3.53e-05	0.00208***	0.00187***
	(0.000118)	(0.000368)	(0.000119)	(0.000298)	(0.000329)	(0.000272)
Banks Concentration	0.00146	0.00163	0.000660	0.000935	0.000229	-8.99e-05
	(0.00196)	(0.00184)	(0.000772)	(0.000668)	(0.00122)	(0.000956)
Stock Market Capitalization	0.00118	0.00186***	0.000355	0.000980**	0.000747*	0.000788**
	(0.000883)	(0.000704)	(0.000299)	(0.000423)	(0.000444)	(0.000322)
Law & Order	-0.0604***	-0.0772***	-0.0278***	-0.0514***	-0.0323***	-0.00393
	(0.0129)	(0.0238)	(0.00814)	(0.0112)	(0.0109)	(0.00527)
Bureaucracy Quality	-0.0607***	-0.0357	-0.0459**	-0.0270	0.0963***	0.0730*
	(0.0213)	(0.0386)	(0.0211)	(0.0370)	(0.0276)	(0.0410)
Corruption Control	-0.0732*	-0.0403	-0.0550***	-0.00838	-0.0434**	-0.0827***
	(0.0392)	(0.0493)	(0.0178)	(0.0141)	(0.0217)	(0.0244)
Investment Profile	-0.00356	-0.0177**	0.000916	-0.0127*	-0.000687	0.00207
	(0.00579)	(0.00768)	(0.00423)	(0.00692)	(0.00238)	(0.00672)
Inflation	0.00363**	0.00276	0.00228	0.000938	0.00224	0.00422**
	(0.00178)	(0.00290)	(0.00195)	(0.00236)	(0.00188)	(0.00167)
Exchange Rate	-4.38e-06	-1.68e-06	-4.58e-06**	-4.05e-06*	-7.50e-07	6.10e-06**
	(4.05e-06)	(5.91e-06)	(1.82e-06)	(2.07e-06)	(4.28e-06)	(2.86e-06)
Valuable Natural Resource	0.000928	-0.00868**	0.00276	-0.0107***	0.00661	0.00371
	(0.00346)	(0.00345)	(0.00268)	(0.00303)	(0.00421)	(0.00475)
Fiscal Balance	-0.0115*		-0.0135***		0.0137**	
	(0.00634)		(0.00378)		(0.00571)	
Cyclically Adjusted Balance		0.00456		-0.00254		0.0156***
		(0.00609)		(0.00329)		(0.00300)
Government Bond					0.192***	0.405***
					(0.0316)	(0.0599)
Constant	0.452***	0.496***	0.387***	0.418***	-0.151	-0.125
	(0.112)	(0.0893)	(0.0584)	(0.120)	(0.102)	(0.131)
Observations	101	86	100	85	80	73
R-squared	0.301	0.406	0.347	0.299	0.583	0.693
Number of Countries	26	23	26	23	22	21

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

significant at 1% level. Comparing the results in column (4) to the results in column (3), the research finds that the economic size was negative and significant in column (3), except in column (4), it become positive but not statistically significant. In column (3), banking size is positive and statistically significant at 1% level; however, after controlling for the cyclically adjusted structural balance variable, it becomes negative but statistically insignificant. Investment profile and valuable natural resources have positive signs but are insignificant in column (3); nevertheless, in column (4), their signs changed to be negative and statistically significant for both variables. The stock market capitalization variable is positive and, in column (4), becomes statistically significant at 1% level. On the other hand, bureaucracy quality and corruption control are negative but lose their significance in column (4).

Column (6) uses the cyclically adjusted structural balance, and the dependent variable is private sector LCBM development. Both measurements of fiscal balance in columns (5) & (6) are positive and statistically significant determinants for developing private sector LCBM. Exchange rate is negative and insignificant in column (5). Surprisingly, in column (6), exchange rate variable turn to be positive and statistically significant at 5% level. Inflation is positive and gains its significance in column (6). However, law and order is negative but loses its significance in column (6). The remaining control variables remain similar between the two columns.

To sum up, using cyclically adjusted structural balance as a measurement for fiscal balance variable shows in both data set a negative and significant impact on the development of government LCBM. On the contrary, both measurements positively and significantly affect the private sector LCBM development. In addition, the changes in the other explanatory variables were not influential in the annual data; the research did not find any significant changes in signs. The main changes were the significance level or some variables gaining or losing significance.

However, in the 5 years non-overlapping averages data, the results show that some explanatory variables have their sign and become statistically significant.

Chapter 5: Conclusion

Conducting a study on the determinants of local currency bond market development enabled a good amount of knowledge in addition to the existing literature on the subject matter. Before discussing the useful contributions this study has managed to add, it is important to provide a brief of limitations encountered, which in a way, compromised the desired outcomes of this dissertation. As expected for emerging market and developing economies, data completeness and availability was a challenge. As a result, using a better proxy for inflation, such as interest rate volatility and spread, was not possible. In addition, addressing potential non-stationarity, reverse causality, and endogeneity was not applicable due to the nature of the data.

Regarding the results, this research demonstrated consistency with most previous scholars in terms of agreement on key determinants of LCBM development. The results could be interpreted as a recommendation for policymakers. From that point of view, we can distinguish the determinants of LCBM development into two groups. The first group includes factors that take a longer time to change in order to impact the LCBM. For example, larger economic size, greater trade openness, and deeper domestic financial systems, mainly a larger banking sector and stock market found to be important for LCBM growth. The second group includes factors that influence LCBM in the short term and could be implemented in short time. For instance, low inflation, stable exchange rate, moderate fiscal deficit, and capital account openness found to foster the development of LCBM.

In addition, the study examine crowding-out effect of government bonds issuance. First, the results shows the a continues supply of government local currency bonds help the development of private sector LCBM and supports the establishment of a benchmark yield curve. On the other hand, a continues supply of government foreign currency bonds found to have the opposite effect on private sector LCBM.

It is important to declare that the results of this study are not conclusive, as there are a number of potential areas for future research. It is recommended that other future scholars look at some grey areas, such as the examination of the secondary domestic bond market in emerging economies. Examining the impact of currency crises or banking crisis effects on LCBM development. Studying the non-linearities in some variables, such as fiscal balance. Further, on the methodological approach, it might be useful to apply two or three years non-overlapping averages. In addition, applying different measurements for the exchange rate, such as exchange-rate pass-through and overall undervaluation, can bring good addition to where this dissertation ends.

Appendices

Table A1 Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) Total Bond	1.000																		
(2) Government Bond	0.778	1.000																	
(3) Private Bond	0.729	0.138	1.000																
(4) Economic Size	0.044	-0.142	0.224	1.000															
(5) Trade Openness	0.259	0.030	0.375	-0.226	1.000														
(6) GDP Per Capita	0.147	-0.072	0.311	-0.118	0.158	1.000													
(7) Banks Size	0.588	0.178	0.734	0.411	0.253	0.278	1.000												
(8) Bank Concentration	0.220	0.092	0.246	-0.130	0.222	0.178	0.200	1.000											
(9) Stock Market Capitalization	0.332	0.136	0.376	-0.050	0.131	-0.108	0.281	0.367	1.000										
(10) Law & Order	0.103	-0.055	0.223	0.039	0.353	0.518	0.488	0.107	-0.150	1.000									
(11) Bureaucracy Quality	0.229	0.034	0.325	-0.238	0.423	0.546	0.143	0.401	-0.071	0.322	1.000								
(12) Corruption Control	-0.012	-0.148	0.143	-0.116	0.120	0.240	-0.042	0.294	0.158	0.128	0.303	1.000							
(13) Investment Profile	0.025	-0.052	0.095	-0.254	0.273	0.353	-0.013	0.178	0.171	0.254	0.306	0.182	1.000						
(14) Overall Capital Control	0.161	0.164	0.075	0.361	-0.064	-0.547	0.209	-0.205	0.180	-0.282	-0.250	-0.300	-0.321	1.000					
(15) Inflation	-0.323	-0.177	-0.316	-0.078	-0.312	-0.135	-0.466	-0.154	-0.121	-0.318	-0.106	-0.040	-0.275	0.117	1.000				
(16) Fiscal Balance	-0.283	-0.576	0.182	0.119	0.164	-0.091	-0.028	-0.069	0.103	0.003	-0.184	0.227	0.028	-0.023	0.010	1.000			
(17) Exchange Rate	-0.254	-0.132	-0.256	-0.029	-0.166	-0.350	-0.317	-0.280	-0.143	-0.213	-0.133	0.097	-0.170	0.134	0.117	0.063	1.000		
(18) Natural Resource	-0.252	-0.328	-0.041	0.031	0.017	-0.361	-0.251	-0.143	0.201	-0.203	-0.455	-0.097	0.022	0.126	0.148	0.430	0.132	1.000	
(19) Government FC Bond	0.260	0.675	-0.325	-0.203	-0.065	-0.136	-0.020	-0.164	-0.207	0.130	-0.103	-0.331	-0.035	0.087	-0.067	-0.570	-0.002	-0.279	1.000

Table A2 Total LCBM (OLS,FE,RE) Using Annual Data

VARIABLES	(1) OLS	(2) OLS-IQ	(3) FE	(4) FE-IQ	(5) RE	(6) RE-IQ
Economic Size	0	-0	0***	0***	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.000169	0.00152	0.00353**	0.00191*	0.00333**	0.00210**
	(0.00259)	(0.00243)	(0.00160)	(0.00106)	(0.00138)	(0.000921)
GDP Per Capita	-3.69e-06	3.79e-06	-3.44e-06	-4.30e-06	-3.56e-06	-4.07e-06
	(6.96e-06)	(7.70e-06)	(8.95e-06)	(8.46e-06)	(8.58e-06)	(8.16e-06)
Banks Size	0.00247*	0.00268**	-3.59e-05	8.57e-06	0.000122	0.000216
	(0.00142)	(0.00115)	(0.00104)	(0.000865)	(0.00102)	(0.000829)
Banks Concentration	0.00135	0.00188	0.000482	0.000271	0.000579	0.000399
	(0.00170)	(0.00130)	(0.000819)	(0.000765)	(0.000775)	(0.000725)
Stock Market Capitalization	0.00159*	0.00127	0.00116	0.00121***	0.00123*	0.00126***
	(0.000916)	(0.00102)	(0.000683)	(0.000433)	(0.000669)	(0.000425)
Law & Order		-0.0693		-0.0721		-0.0687
		(0.0538)		(0.0604)		(0.0580)
Bureaucracy Quality		-0.0430		0.0379		0.0347
		(0.0680)		(0.0404)		(0.0361)
Corruption control		-0.0966		-0.0397		-0.0397
		(0.0610)		(0.0346)		(0.0337)
Investment Profile		-0.0162*		-0.0118*		-0.0114*
		(0.00926)		(0.00662)		(0.00658)
Inflation	-0.00629	-0.00885*	-0.00606	-0.00602	-0.00619	-0.00625
	(0.00558)	(0.00494)	(0.00543)	(0.00497)	(0.00543)	(0.00501)
Fiscal Balance	-0.0183	-0.0183	-0.00663*	-0.00589**	-0.00723**	-0.00644**
	(0.0116)	(0.0112)	(0.00324)	(0.00281)	(0.00295)	(0.00258)
Exchange Rate	1.80e-06	-8.62e-07	-2.28e-05***	-1.10e-05	-1.85e-05***	-1.11e-05
	(7.61e-06)	(9.45e-06)	(8.15e-06)	(8.99e-06)	(6.86e-06)	(7.82e-06)
Valuable Natural Resource	0.00413	0.00342	-0.00860***	-0.00545**	-0.00740***	-0.00504**
	(0.00370)	(0.00534)	(0.00304)	(0.00256)	(0.00282)	(0.00248)
Constant	0.0243	0.630**	0.187	0.622**	0.168	0.577**
	(0.163)	(0.235)	(0.146)	(0.301)	(0.143)	(0.255)
Observations	438	436	438	436	438	436
R-squared	0.303	0.431	0.252	0.331		
Number of Countries			26	26	26	26

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3 Total LCBM (OLS,FE,RE) Using 5-year Non-Overlapping averages Data

VARIABLES	(1) OLS	(2) OLS-IQ	(3) FE	(4) FE-IQ	(5) RE	(6) RE-IQ
Economic Size	0	-0	0***	0***	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.000302	0.00189	0.00512**	0.00326**	0.00405***	0.00365***
	(0.00262)	(0.00259)	(0.00220)	(0.00150)	(0.00154)	(0.00125)
GDP Per Capita	-4.96e-06	3.41e-06	-1.79e-06	-3.91e-06	-3.15e-06	-3.41e-06
	(7.11e-06)	(7.88e-06)	(7.86e-06)	(8.01e-06)	(6.56e-06)	(6.77e-06)
Banks Size	0.00315*	0.00346**	0.000633	0.00137	0.00141	0.00212*
	(0.00159)	(0.00128)	(0.00159)	(0.00137)	(0.00139)	(0.00110)
Banks Concentration	0.00131	0.00196	-0.000490	-0.000974	-2.75e-05	-0.000207
	(0.00173)	(0.00145)	(0.00116)	(0.00114)	(0.00105)	(0.00102)
Stock Market Capitalization	0.00149	0.00111	0.000510	0.000832	0.00109	0.00101
	(0.000995)	(0.00112)	(0.00105)	(0.000864)	(0.000907)	(0.000696)
Law & Order		-0.0703		-0.0820		-0.0754
		(0.0599)		(0.0847)		(0.0666)
Bureaucracy Quality		-0.0521		-0.0289		-0.0311
		(0.0804)		(0.125)		(0.0739)
Corruption control		-0.134		-0.0647		-0.0645
		(0.0798)		(0.0432)		(0.0403)
Investment Profile		-0.00135		-0.00465		-0.000818
		(0.0163)		(0.0169)		(0.0155)
Inflation	0.00395	0.00529*	0.00606***	0.00597***	0.00610***	0.00600***
	(0.00284)	(0.00277)	(0.000765)	(0.00122)	(0.000973)	(0.00111)
Fiscal Balance	-0.0158	-0.0165	-0.00341	-0.00241	-0.00401	-0.00354
	(0.0149)	(0.0139)	(0.00456)	(0.00372)	(0.00457)	(0.00404)
Exchange Rate	2.13e-06	9.88e-07	-7.10e-06	-7.39e-06	-3.30e-06	-6.08e-06
	(8.51e-06)	(1.17e-05)	(7.22e-06)	(1.22e-05)	(4.37e-06)	(8.78e-06)
Valuable Natural Resource	0.00243	0.000247	-0.00405	-0.00234	-0.00271	-0.00300
	(0.00497)	(0.00691)	(0.00458)	(0.00311)	(0.00363)	(0.00390)
Constant	-0.0388	0.517*	0.0617	0.704	0.0210	0.546**
	(0.149)	(0.275)	(0.148)	(0.492)	(0.0760)	(0.246)
Observations	101	101	101	101	101	101
R-squared	0.318	0.474	0.328	0.429		
Number of Countries			26	26	26	26

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A4 Government LCBM (OLS,FE,RE) Using Annual Data

VARIABLES	(1) OLS	(2) OLS-IQ	(3) FE	(4) FE-IQ	(5) RE	(6) RE-IQ
Economic Size	-0	-0	0*	0*	0**	0*
	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	-0.00101	-0.000128	0.00200	0.00129	0.00169	0.00110
	(0.00163)	(0.00168)	(0.00156)	(0.00142)	(0.00134)	(0.00121)
GDP Per Capita	-5.71e-06	-7.13e-07	-6.06e-06	-6.27e-06	-6.03e-06	-6.07e-06
	(4.77e-06)	(5.11e-06)	(8.29e-06)	(7.95e-06)	(7.74e-06)	(7.43e-06)
Banks Size	0.000991	0.00108	-0.000263	-0.000295	-0.000246	-0.000257
	(0.000895)	(0.000755)	(0.000410)	(0.000434)	(0.000394)	(0.000416)
Banks Concentration	0.000711	0.00110	0.000278	9.17e-05	0.000305	0.000160
	(0.00135)	(0.00116)	(0.000601)	(0.000561)	(0.000576)	(0.000542)
Stock Market Capitalization	0.000490	0.000312	0.000614*	0.000719***	0.000631**	0.000735***
	(0.000428)	(0.000432)	(0.000298)	(0.000223)	(0.000292)	(0.000216)
Law & Order		-0.0382		-0.00703		-0.00878
		(0.0325)		(0.0260)		(0.0236)
Bureaucracy Quality		-0.0375		0.0596*		0.0441
		(0.0611)		(0.0348)		(0.0327)
Corruption control		-0.0640		-0.0438*		-0.0440*
		(0.0493)		(0.0256)		(0.0244)
Investment Profile		-0.0116		-0.00722		-0.00798*
		(0.00892)		(0.00430)		(0.00415)
Inflation	-0.00756*	-0.00892**	-0.00785	-0.00715	-0.00788	-0.00727*
	(0.00416)	(0.00366)	(0.00488)	(0.00429)	(0.00494)	(0.00440)
Fiscal Balance	-0.0223**	-0.0219**	-0.00335	-0.00257	-0.00423	-0.00326
	(0.00981)	(0.00830)	(0.00311)	(0.00263)	(0.00280)	(0.00236)
Exchange Rate	-6.05e-07	-2.20e-06	-2.01e-05**	-8.96e-06	-1.52e-05**	-6.91e-06
	(6.89e-06)	(7.58e-06)	(7.79e-06)	(6.74e-06)	(6.40e-06)	(4.99e-06)
Valuable Natural Resource	0.00659***	0.00563*	-0.00846***	-0.00769***	-0.00673***	-0.00631***
	(0.00229)	(0.00276)	(0.00278)	(0.00247)	(0.00254)	(0.00235)
Constant	0.165	0.571***	0.255*	0.327	0.250*	0.368**
	(0.121)	(0.188)	(0.133)	(0.204)	(0.138)	(0.170)
Observations	431	429	431	429	431	429
R-squared	0.262	0.367	0.212	0.259		
Number of Countries			26	26	26	26

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A5 Government LCBM (OLS,FE,RE) Using 5-year Non-Overlapping averages Data

VARIABLES	(1) OLS	(2) OLS-IQ	(3) FE	(4) FE-IQ	(5) RE	(6) RE-IQ
Economic Size	-0	-0	0*	0*	0	0
	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	-0.000509	0.000591	0.00377*	0.00280	0.00240**	0.00203*
	(0.00162)	(0.00172)	(0.00194)	(0.00182)	(0.00121)	(0.00115)
GDP Per Capita	-6.26e-06	-7.14e-07	-5.24e-06	-6.26e-06	-4.89e-06	-4.61e-06
	(5.06e-06)	(5.46e-06)	(7.18e-06)	(7.32e-06)	(5.40e-06)	(5.49e-06)
Banks Size	0.00150	0.00172*	0.000411	0.000649	0.000523	0.000856
	(0.00107)	(0.000889)	(0.000823)	(0.000939)	(0.000748)	(0.000827)
Banks Concentration	0.000380	0.000817	-0.000572	-0.000879	-0.000571	-0.000559
	(0.00151)	(0.00142)	(0.000854)	(0.000821)	(0.000791)	(0.000787)
Stock Market Capitalization	0.000392	0.000132	0.000311	0.000543	0.000516	0.000567
	(0.000541)	(0.000523)	(0.000548)	(0.000630)	(0.000473)	(0.000510)
Law & Order		-0.0449		-0.00549		-0.0164
		(0.0349)		(0.0394)		(0.0291)
Bureaucracy Quality		-0.0473		0.0631		-0.0135
		(0.0700)		(0.0818)		(0.0598)
Corruption control		-0.0850		-0.0655**		-0.0625**
		(0.0613)		(0.0308)		(0.0272)
Investment Profile		0.00187		0.00445		0.00285
		(0.0136)		(0.0129)		(0.0115)
Inflation	0.00225	0.00328	0.00464***	0.00440***	0.00471***	0.00462***
	(0.00222)	(0.00212)	(0.000755)	(0.000857)	(0.00104)	(0.00106)
Fiscal Balance	-0.0229*	-0.0235**	-0.000326	0.000669	-0.00364	-0.00253
	(0.0117)	(0.00909)	(0.00399)	(0.00370)	(0.00312)	(0.00300)
Exchange Rate	-2.71e-07	-9.73e-07	-4.95e-06	-2.06e-06	-2.95e-06	-1.46e-06
	(8.10e-06)	(9.53e-06)	(6.62e-06)	(5.40e-06)	(5.40e-06)	(5.06e-06)
Valuable Natural Resource	0.00604*	0.00420	-0.00707	-0.00857**	-0.00240	-0.00415
	(0.00321)	(0.00341)	(0.00419)	(0.00322)	(0.00324)	(0.00394)
Constant	0.0995	0.459*	0.127	0.161	0.138	0.363**
	(0.124)	(0.229)	(0.123)	(0.279)	(0.0854)	(0.161)
Observations	100	100	100	100	100	100
R-squared	0.275	0.409	0.287	0.354		
Number of Countries			26	26	26	26

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A6 Private Sector LCBM (OLS,FE,RE) Using Annual Data

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS-IQ	FE	FE-IQ	RE	RE-IQ
Economic Size	0**	0**	0***	0***	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.00137	0.00108	0.00135	0.00139	0.00138*	0.00134*
	(0.00128)	(0.00117)	(0.000822)	(0.000923)	(0.000775)	(0.000814)
GDP Per Capita	3.66e-06	4.71e-06	-2.05e-06	-1.32e-06	-1.91e-06	-1.30e-06
	(4.25e-06)	(3.84e-06)	(3.88e-06)	(3.56e-06)	(3.52e-06)	(3.07e-06)
Banks Size	0.00133	0.00135	0.00125	0.00113	0.00132	0.00126
	(0.000836)	(0.000824)	(0.000996)	(0.000931)	(0.000952)	(0.000867)
Banks Concentration	0.000162	-5.49e-05	9.38e-05	0.000182	0.000127	0.000192
	(0.000929)	(0.000687)	(0.000382)	(0.000395)	(0.000366)	(0.000365)
Stock Market Capitalization	0.000903	0.000995	0.000217	0.000274	0.000275	0.000382*
	(0.000605)	(0.000610)	(0.000239)	(0.000203)	(0.000248)	(0.000230)
Law & Order		-0.0224		0.0203		0.0147
		(0.0270)		(0.0152)		(0.0134)
Bureaucracy Quality		0.0726*		-0.00398		0.00545
		(0.0403)		(0.0143)		(0.0184)
Corruption control		-0.0509		-0.00271		-0.00290
		(0.0344)		(0.0102)		(0.00971)
Investment Profile		-0.00813		-0.00753		-0.00680
		(0.00958)		(0.00640)		(0.00679)
Inflation	0.00132	-0.00105	-0.000666	-0.000431	-0.000661	-0.000513
	(0.00311)	(0.00274)	(0.00138)	(0.00143)	(0.00133)	(0.00144)
Fiscal Balance	0.0141	0.0167	-0.00440*	-0.00491*	-0.00408*	-0.00426*
	(0.0115)	(0.0123)	(0.00229)	(0.00256)	(0.00224)	(0.00248)
Exchange Rate	-8.77e-07	-4.37e-07	-2.29e-06	4.54e-07	-3.11e-06	-8.94e-07
	(4.35e-06)	(4.55e-06)	(3.16e-06)	(4.71e-06)	(2.74e-06)	(3.56e-06)
Valuable Natural Resource	0.00391	0.00554	0.00507**	0.00455*	0.00488**	0.00487*
	(0.00739)	(0.00765)	(0.00213)	(0.00225)	(0.00224)	(0.00253)
Government Bond	0.278*	0.257	0.112	0.0863	0.111	0.0950
	(0.148)	(0.155)	(0.0733)	(0.0633)	(0.0701)	(0.0666)
Constant	-0.164	-0.0469	-0.0658	-0.0643	-0.0740	-0.0845
	(0.104)	(0.202)	(0.0816)	(0.101)	(0.0635)	(0.0806)
Observations	339	337	339	337	339	337
R-squared	0.549	0.588	0.382	0.402		
Number of Countries			22	22	22	22

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A7 Private Sector LCBM (OLS,FE,RE) Using 5-year Non-Overlapping averages Data

VARIABLES	(1) OLS	(2) OLS-IQ	(3) FE	(4) FE-IQ	(5) RE	(6) RE-IQ
Economic Size	0**	0**	0***	0***	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.00128	0.000970	0.00103	0.000239	0.00120	0.000838
	(0.00140)	(0.00128)	(0.000809)	(0.00131)	(0.000855)	(0.000935)
GDP Per Capita	3.58e-06	4.20e-06	-2.53e-06	-1.84e-06	-1.27e-06	-1.53e-06
	(3.51e-06)	(3.67e-06)	(2.92e-06)	(2.80e-06)	(1.87e-06)	(1.95e-06)
Banks Size	0.00146	0.00146	0.00177	0.00165	0.00182**	0.00184**
	(0.000875)	(0.000857)	(0.00108)	(0.00104)	(0.000815)	(0.000742)
Banks Concentration	0.000329	0.000325	5.88e-06	-0.000478	0.000322	-9.88e-05
	(0.00107)	(0.000934)	(0.000582)	(0.000719)	(0.000664)	(0.000651)
Stock Market Capitalization	0.00100	0.00113	0.000201	0.000421	0.000550	0.000761
	(0.000676)	(0.000691)	(0.000623)	(0.000441)	(0.000545)	(0.000489)
Law & Order		-0.0144		-0.0306		-0.0211
		(0.0291)		(0.0595)		(0.0354)
Bureaucracy Quality		0.0837*		0.0144		0.0800*
		(0.0482)		(0.0586)		(0.0456)
Corruption control		-0.0802		-0.0249		-0.0280
		(0.0487)		(0.0281)		(0.0248)
Investment Profile		-0.00250		-0.0110		-0.00726
		(0.0136)		(0.0116)		(0.0122)
Inflation	0.00563**	0.00418	0.000792	0.00191	0.00130	0.00158
	(0.00270)	(0.00299)	(0.00162)	(0.00184)	(0.00143)	(0.00144)
Fiscal Balance	0.0182	0.0223	-0.00154	0.000267	0.000869	0.00241
	(0.0119)	(0.0131)	(0.00328)	(0.00410)	(0.00391)	(0.00459)
Exchange Rate	-1.59e-06	1.00e-06	4.87e-06	9.44e-06	1.14e-06	2.89e-06
	(4.34e-06)	(5.40e-06)	(7.64e-06)	(1.31e-05)	(3.35e-06)	(5.69e-06)
Valuable Natural Resource	0.00158	0.00205	0.00908**	0.0130*	0.00544	0.00721
	(0.00726)	(0.00847)	(0.00432)	(0.00693)	(0.00457)	(0.00460)
Government Bond	0.291*	0.269	0.167	0.131	0.131	0.0939
	(0.143)	(0.166)	(0.146)	(0.158)	(0.118)	(0.109)
Constant	-0.191	-0.111	-0.113	0.164	-0.140**	-0.0963
	(0.119)	(0.234)	(0.114)	(0.219)	(0.0699)	(0.159)
Observations	80	80	80	80	80	80
R-squared	0.594	0.642	0.434	0.485		
Number of Countries			22	22	22	22

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A8 Inflow and Outflow Control Using Annual Data

VARIABLES	(1) Total LCBM	(2) Total LCBM	(3) GOV LCBM	(4) GOV LCBM	(5) PVT LCBM	(6) PVT LCBM
Economic Size	0***	0***	0***	0***	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.00182***	0.00183***	0.00182***	0.00183***	0.000231	0.000350
	(0.000649)	(0.000677)	(0.000649)	(0.000677)	(0.000351)	(0.000332)
GDP Per Capita	-8.06e-07	-9.07e-07	-8.06e-07	-9.07e-07	-1.92e-06**	-2.12e-06**
	(1.29e-06)	(1.37e-06)	(1.29e-06)	(1.37e-06)	(8.94e-07)	(8.43e-07)
Banks Size	-0.000225	-0.000132	-0.000225	-0.000132	0.000345	0.000345
	(0.000315)	(0.000319)	(0.000315)	(0.000319)	(0.000218)	(0.000212)
Banks Concentration	2.76e-05	6.00e-05	2.76e-05	6.00e-05	2.82e-05	4.64e-05
	(0.000227)	(0.000216)	(0.000227)	(0.000216)	(0.000168)	(0.000159)
Stock Market Capitalization	0.00115***	0.00118***	0.00115***	0.00118***	0.000399***	0.000422***
	(0.000111)	(0.000114)	(0.000111)	(0.000114)	(7.87e-05)	(7.64e-05)
Law & Order	-0.0277***	-0.0298***	-0.0277***	-0.0298***	-0.0158***	-0.0150***
	(0.00780)	(0.00803)	(0.00780)	(0.00803)	(0.00482)	(0.00456)
Bureaucracy Quality	0.00292	0.00293	0.00292	0.00293	0.0229**	0.0263***
	(0.0138)	(0.0138)	(0.0138)	(0.0138)	(0.00927)	(0.00898)
Corruption control	-0.0136**	-0.0138**	-0.0136**	-0.0138**	-0.00357	-0.00381
	(0.00661)	(0.00683)	(0.00661)	(0.00683)	(0.00456)	(0.00437)
Investment Profile	-0.00152	0.000646	-0.00152	0.000646	0.000842	0.000859
	(0.00218)	(0.00235)	(0.00218)	(0.00235)	(0.00193)	(0.00187)
Inflation	-0.00226**	-0.00209**	-0.00226**	-0.00209**	-0.000559	-0.000481
	(0.00104)	(0.00103)	(0.00104)	(0.00103)	(0.000637)	(0.000586)
Fiscal Balance	-0.00898***	-0.00840***	-0.00898***	-0.00840***	-0.000854	-0.000927
	(0.00182)	(0.00187)	(0.00182)	(0.00187)	(0.00137)	(0.00128)
Exchange Rate	-3.85e-06	-4.62e-06**	-3.85e-06	-4.62e-06**	-4.93e-06**	-5.27e-06**
	(2.35e-06)	(2.34e-06)	(2.35e-06)	(2.34e-06)	(2.51e-06)	(2.59e-06)
Valuable Natural Resource	-0.00392***	-0.00396***	-0.00392***	-0.00396***	0.00134	0.00155
	(0.00139)	(0.00139)	(0.00139)	(0.00139)	(0.000993)	(0.000953)
Inflow	-0.0493**		-0.0493**		-0.0267**	
	(0.0229)		(0.0229)		(0.0120)	
Outflow		-0.0503***		-0.0503***		-0.0396***
		(0.0177)		(0.0177)		(0.0101)
Government Bond					0.157***	0.149***
					(0.0377)	(0.0354)
Constant	0.293***	0.282***	0.293***	0.282***	0.0127	0.00255
	(0.0551)	(0.0538)	(0.0551)	(0.0538)	(0.0361)	(0.0341)
Observations	405	405	405	405	306	306
Number of Countries	24	24	24	24	20	20

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

- FGLS method is used in table A8
- GOV is short for Government
- PVT is short for private sector

Table A9 Inflow and Outflow Control Using 5-Year Non-Overlapping Averages Data

VARIABLES	(1) Total LCBM	(2) Total LCBM	(3) GOV LCBM	(4) GOV LCBM	(5) PVT LCBM	(6) PVT LCBM
Economic Size	0	0	-0	-0***	0***	0**
	(0)	(0)	(0)	(0)	(0)	(0)
Trade Openness	0.00384***	0.00378***	0.00176*	0.00172*	0.000459	0.000218
	(0.00138)	(0.00135)	(0.000971)	(0.000967)	(0.000458)	(0.000522)
GDP Per Capita	-2.68e-06	-2.34e-06	-5.41e-06**	-4.49e-06*	2.06e-06	1.92e-06
	(2.74e-06)	(2.26e-06)	(2.67e-06)	(2.66e-06)	(2.21e-06)	(2.53e-06)
Banks Size	0.00242***	0.00242***	0.00112***	0.00112***	0.00222***	0.00219***
	(0.000726)	(0.000693)	(0.000277)	(0.000286)	(0.000200)	(0.000199)
Banks Concentration	0.00102	0.00111	0.000166	0.000413	-0.000186	2.85e-05
	(0.00162)	(0.00149)	(0.000905)	(0.000781)	(0.000915)	(0.00105)
Stock Market Capitalization	0.00101	0.00111	0.000271	0.000329	0.000855**	0.000843**
	(0.000718)	(0.000713)	(0.000285)	(0.000257)	(0.000366)	(0.000409)
Law & Order	-0.0752***	-0.0732***	-0.0331***	-0.0293**	-0.0337***	-0.0329***
	(0.0182)	(0.0173)	(0.0123)	(0.0122)	(0.00849)	(0.00859)
Bureaucracy Quality	-0.0520**	-0.0580**	-0.0326	-0.0462*	0.111***	0.105***
	(0.0254)	(0.0258)	(0.0245)	(0.0254)	(0.0195)	(0.0274)
Corruption control	-0.0716*	-0.0695*	-0.0604**	-0.0575**	-0.0544***	-0.0472***
	(0.0417)	(0.0406)	(0.0255)	(0.0246)	(0.0188)	(0.0182)
Investment Profile	0.00155	0.000245	0.00225	0.00323	-6.58e-06	-0.000389
	(0.00793)	(0.00763)	(0.00789)	(0.00720)	(0.00501)	(0.00559)
Inflation	0.00350	0.00343	0.00203	0.00229	0.00201*	0.00171
	(0.00221)	(0.00229)	(0.00193)	(0.00204)	(0.00118)	(0.00123)
Fiscal Balance	-0.0139***	-0.0133**	-0.0149***	-0.0144***	0.0149***	0.0154***
	(0.00520)	(0.00538)	(0.00343)	(0.00365)	(0.00447)	(0.00477)
Exchange Rate	-4.24e-06	-7.41e-06	-4.52e-06	-6.53e-06	7.80e-07	-6.45e-07
	(5.65e-06)	(6.48e-06)	(4.36e-06)	(4.87e-06)	(2.92e-06)	(3.52e-06)
Valuable Natural Resource	0.00297	0.00144	0.00439*	0.00268	0.00613**	0.00565*
	(0.00310)	(0.00282)	(0.00252)	(0.00257)	(0.00311)	(0.00331)
Inflow	-0.177		-0.147**		-0.0743	
	(0.115)		(0.0713)		(0.0551)	
Outflow		-0.123**		-0.0534		-0.0460
		(0.0612)		(0.0363)		(0.0523)
Government Bond					0.209***	0.231***
					(0.0357)	(0.0383)
Constant	0.528***	0.530***	0.476***	0.427***	-0.120	-0.127
	(0.173)	(0.161)	(0.131)	(0.120)	(0.120)	(0.114)
Observations	94	94	93	93	73	73
R-squared	0.342	0.337	0.399	0.403	0.619	0.614
No. of Countries	24	24	24	24	20	20

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

- PCSE method is used in table A9
- GOV is short for Government
- PVT is short for private sector

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