The determinants of local currency corporate bond market development – the case of selected Asian economies in the context of experiences from financial crisis 1997

Summary of a dissertation

submitted in fulfillment of the requirements for the degree of Doctor of Philosophy, supervised by Professor Cezary Wójcik and Andrzej Torój, PhD

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Reasons for undertaking the scientific problem and originality of the research

The research on determinants[1] of local currency corporate bond market development is presented in the PhD dissertation. The panel includes: People's Republic of China, Hong Kong, Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, Japan and South Korea in 1995-2014. Focus on Asian financial debt markets is justified by their experiences from financial crisis of 1997 and evolution of their financial systems after 1997. The large East Asian economies' dependence on foreign bank credit financing is considered to be an important element that contributed to enhancement of the effects of the 1997 crisis. After 1997, the development of corporate bond market (direct debt financing channel) was observed in the majority of analyzed Asian economies. Moreover, the consequences of the global financial crisis 2008-2009 in Asian countries seemed to be less severe in comparison to 1997. Therefore, Asian financial systems are interesting subject for studies on the determinants of financial systems' evolution towards direct market debt financing.

The PhD dissertation extends existing scientific literature referring to this subject in the following way:

1. A wider range of measures for corporate bond market development was used. Among the dependent variables, in addition to value of outstanding bonds (a measure present in literature), the value of local currency annual issues as well as the value of annual issues of non-financial enterprises both in local and foreign currencies were also used (all dependent variables relative to GDP).

2. An in-depth analysis of the economic nature of the financial market development process in selected Asian countries was conducted. As a result the econometric approach, that had not been used as main research method in the literature, was applied and presented.

3. The robustness check of the results in the PhD thesis is wider and much more complex than in the research literature on the same topic.

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[1] The PhD thesis, which includes both model analysis and qualitative studies, concerns local currency corporate bond market's determinants in a broad sense. However, the main thesis as well as subsidiary hypotheses are verified based on quantitative study. In the part containing this study (chapter 4 of PhD thesis) the term "determinants" should be understood in a strict sense as factors. The terms "factors" or "determinants in a strict sense" are understood narrowly, as those determinants that directly affect the measures of local currency corporate bond market development; are quantifiable and can be subject to quantitative econometric research.

4. The scope of selection of explanatory (independent) variables in the study can be compared only to the most extensive research so far (Eichengreen i Luengnaruemitchai, 2004[2]). The significance of some factors – according to literature review – was confirmed for the first time, e.g. positive parameter for the *Subprime* explanatory variable.

5. A comprehensive analytical approach to the Asian 1997 financial crisis from different perspectives was presented and – based on qualitative studies – interpretation of the interlinkages between the 1997 crisis and the level of local currency corporate bond market development was proposed.

6. Analysis of the corporate bond markets in selected Asian economies as well as analysis of international initiatives among Asian countries aimed at development of this market were conducted. Due to them the more complex (compared to the literature) interpretation of quantitative research results was possible. They also enriched the list of recommendations for economic policy practice.

The aim of the research

The main research question in the PhD dissertation concerns the most important determinants of the development of local currency corporate bond market in selected Asian countries in 1995-2014. The aim of the research is to identify those determinants and indicate interlinkages between various elements of economic system that led to the development of debt financing obtained through market direct channel.

Research method

In the qualitative part of research, a broad spectrum of economic, institutional and regulatory determinants was analyzed on the basis of short case studies and literature review. Moreover, the interpretation of the role of direct debt financing (corporate bond market) in the economy was presented.

These qualitative works constituted the background of quantitative study based on panel econometrics methods. The main method in quantitative study was Fixed Effects model with Discroll and Kraay error correction. As econometric robustness test of results estimations were also carried out using the following methods: Hausman-Taylor estimator, Fully Modified

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[2] Eichengreen, B. i Luengnaruemitchai, P. (2004). Why Doesn't Asia Have Bigger Bond Markets? NBER Working Paper No. 10576.

Ordinary Least Squares (FMOLS) estimator, System Generalized Method of Moments (System GMM) estimator, Random Effects (RE) estimator and Prais-Winsten estimator (subtype of FGLS) with correction of standard errors (Panel-Corrected Standard Error, PCSE).

Empirical research results – main thesis verification in the econometric model

The main PhD thesis was :

The factors that had positive influence on the development of local currency corporate bond market in Asian countries in 1995-2014 were: the size of banking sector measured by value of the credit provided by banks relative to GDP, restricted sovereign bonds' market (potential crowding-out effect) and improvement in quality of institutional environment (in particular quality of regulations, efficiency of debt enforcement and the level of creditors' rights protection). Corporate bonds were not in the analyzed economies the competition for banking credit, rather the next stage of financial system development in reference to debt financing channels.

In the dissertation seven subsidiary hypotheses (SH) were verified. They referred to: macroeconomic determinants (size of the economy, level of economic development, stability of exchange rate and openness to international exchange) – SH1; global financial crisis 2008-2009 – SH2; stock market – SH3; sovereign bond market – SH4; presence of institutional investors – SH5; banking sector – SH6; quality of the institutional environment (e.g. level of protection of the creditor's rights) – SH7. The most important results from a broad econometric study is presented below.

The main thesis was verified partially positively, i.e. the essence of the main thesis was positively verified. The empirical study confirmed positive impact of the size of banking credit, the negative impact of sovereign bond market and the positive impact of the level of creditor's rights protection. Detailed verification of subsidiary hypotheses, in particular on the basis of the main estimation (Fixed Effects) supports the last element of the main thesis. The banking sector was the first stage in development of debt financing in Asian economies. The local currency corporate bond market appeared and has been developing supported by economic development, growth of banking sector, as well as institutional investors and improvement in the creditor's rights protection. The development of both debt financing channels (i.e. indirect and direct) was not mutually exclusive, rather interlinked and reinforcing. In addition, the model

shows that local currency corporate bond market provided significantly more financing in the global financial crisis of 2008-2009 for Asian economies.

Conclusions from research work: contribution to scientific debate and recommendations for economic policy

The most important outcome from **qualitative studies** can be summarized in the following two points:

(I) The development of local currency corporate bond market in emerging economies, characterized by a predominance of bank credit, may contributed to the increase of the financial system's resilience primarily through:

−   diversification of channels of debt financing by corporates;
−   increasing the possibility of obtaining debt financing by corporates in home currency, reducing at the same time the maturity mismatch.

(II) From the macroeconomic perspective, debt financing in the economy should be characterized by diversification at two levels, i.e.:

−   at the level of origin of financing: financing from domestic entities versus financing from foreign entities;
−   at the channel level: bank credit (indirect channel) versus issue of debt instruments (direct channel).

The results of the **quantitative study** (the main model and robustness check estimations) were interpreted in the context of the results of the qualitative study. In the end one can present the following points synthetically summarizing the contribution of the PhD dissertation to the scientific debate:

1. **Relations between the indirect debt financing channel (banking sector) and the direct channel (corporate bond market):**
    The size of banking sector relative to GDP was one of the main determinants of corporate bond market development. Therefore, the dissertation provides arguments for confirming the positive relationship between the two debt financing channels in Asian countries.

2. **Providing debt financing to the economy during the crisis:**

The econometric model suggests that the global financial crisis of 2008-2009 had a significant positive impact on the corporate bond market measures relative to GDP.

3. **Negative impact of growing shares' market capitalization on the level of corporate bond market development in the economy:**

   The research results indicate that debt financing through the direct channel was developing at a slower pace in the periods of increased share issues.

4. **Relations between sovereign bond market and corporate bond market:**

   The model confirmed the that parameter's sign for variable representing sovereign bond market changed and became negative along with economic development. The parameter in the estimation conducted for emerging markets was insignificant or positive, whereas for the whole panel it was negative.

Based on the qualitative and quantitative studies, the recommendations regarding the development of local currency corporate bond market in Poland were made. Among the recommendations were: (1) fostering the sustainable development of banking sector, (2) a policy for sustainable economic development with an increasing role of export in relation to GDP, (3) projects aimed at increasing the level of creditor's rights protection , (4) moderate sovereign debt issues, (5) supporting the activity of domestic institutional investors on the corporate bond market, (6) active participation of Poland in shaping reforms of the debt securities market within the European Capital Markets Union, (7) increasing financial market transparency; (8) establishing, with the support of public institutions, a domestic rating agency with the mission of providing ratings to small and medium-sized enterprises; (9) introduction of the obligation to obtain a rating for local currency issuances without setting a minimum rating level; (10) public issues of large enterprises as a part of building a long-term financing strategy; (11) creating an information and data portal on the bond market similar to *Asian Bonds Online*; (12) raising awareness and financial knowledge in society.

Limitations of the study and further research directions

The most important limitations of the quantitative research are:

− lack of distinction related to the issuer's rating, and therefore credit risk of particular issues;

− lack of consideration the industry structure and concentration in the non-financial corporations sector.

Moreover, the econometric study cannot cover the full spectrum of local currency corporate bond market determinants due to limited availability of data or the nature of some phenomena, i.e. inability to quantify them. Among the determinants not included in the model or included only partially are:

– the presence and operating standards of credit rating agencies;
– the impact of transparency in the economy and financial markets on the liquidity of the secondary corporate bond market;
– the quality of market and ICT infrastructure, the use of the latest technologies, including in the future the Distributed Ledger Technology (DLT);
– broadly understood development of the investor base, i.e. the presence of institutional investors, the scope of their operation, but also the presence of offer for individual investors (e.g. investment funds) and the level of regional integration of financial markets (providing an opportunity to offer local currency corporate bonds to non-residents);
– the level of FX derivatives market development;
– the scale of the repo market;
– the quality and scope of financial intermediaries' services, i.e. the level of consultancy services and investment banking development;
– the level of financial education in society.

Some of the abovementioned determinants were analyzed in the qualitative part of the dissertation and the results of this analysis were taken into account when formulating recommendations.

The limitations of quantitative empirical study indicate potential directions for further research that will appear along with the development of economic databases.

Structure of the dissertation

The PhD dissertation consists of five main parts:

1. Introduction (motivation, goal of research, thesis and significance).
2. Position of the PhD dissertation in relation to the scientific literature on the topic of corporate bond market's determinants.
3. The role of local currency corporate bond market in financial system in the context of experiences from Asian financial crisis 1997.

4. Empirical research – local currency corporate bond market's determinants.

5. Summary, conclusions for the economic theory related to the development of corporate bonds and recommendations for Poland.