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MACROPRUDENTIAL REGULATION. THE IMPACT OF FINANCIAL STABILITY ON STABILIZING THE ECONOMY

Field: Economic sciences
Major: Finance

Ph.D. thesis written under the supervision of

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Warsaw, May 2017

Summary of doctoral dissertation

C. Borio and P. Disyatat wrote in 2009 that "in the wake of the current financial crisis, monetary policy will probably never be the same again". It seems that the above remark is also adequate when it comes to supervisory, and regulatory policy. Despite intensive efforts on the part of academic bodies, as well as central banks, almost nine years after the collapse of Lehman Brothers there still remain a lot of "uncharted waters" for financial safety net institutions. Despite the significant progress in the field of macroprudential regulation and policy, its final shape has yet to be determined, as demonstrated by initiatives to forge a new Basel IV and to revise the CRD IV / CRR package. This PhD thesis provides a voice in the discussion concerning the appropriate macroprudential policy, which is to function effectively in a small open (emerging) market economy.

An efficient financial system is an essential condition for the development of real economy. It contributes to a more effective resource allocation, productivity growth, as well as a better income distribution, and as a consequence, to economic growth. Destabilization of the financial sector may conversely pose significant costs to the real economy. According to the financial instability hypothesis formulated by H. Minsky in late 1970s and early 1980s the above mentioned destabilization is a natural consequence of the processes occurring in the economy and the financial sector. Such an approach changes drastically the perception of financial stability. Instead of focusing at preventing the system from losing its stability, it emphasizes the relevance of limiting the growth of financial instability and controlling the financial (credit) cycle volatility.

The last 30 years, and first of all, the financial crisis of 2007-2009 have shown that the previously valid assumptions laying behind the functioning of financial safety net (and prudential regulations in particular) have proved inadequate to the changes taking place in the global economy, and financial system since the late 1970s. The events occurring over and since this period indicate that the financial instability hypothesis is not only a theoretical device, but constitutes a consistent, and precise reflection of real economic processes.

The analysis of numerous historical case studies leads to a conclusion that one of the most crucial causes of mounting instability of the financial sector, and real economy is the excessive growth of financial intermediaries' leverage taking place during an unstable credit boom, and leading to increasing indebtedness of economic subjects. Such a conclusion is valid in particular for developing economies where the financial sector is usually dominated

by banks. The analysis of the reasons behind excessive credit expansion in these economies points at a key role that is played in this process by the increasing share and volume of non-core liabilities that flow into the emerging economies through capital investments. Such an outcome is backed up by several case studies conducted in the dissertation.

Before the outbreak of the global financial crisis it was taken for granted that the financial system requires further deregulation. Financial innovations were expected to establish foundations for further economic development, and strengthen financial stability. The conclusions coming from theoretical analyses were supported by empirical research, conducted mostly during the period of the so called "Great Moderation" (1990s and 2000s).

Over twenty years of a stable economic expansion combined with low and stable inflation resulted in underestimating financial and economic risks, thus enabling an excessive growth of asset prices (with housing as a frontrunner). The end of this period was marked by an outbreak of the global financial crisis. The financial system that was supposed to constitute the source of economic development proved to be internally unstable.

Following the outbreak of the crisis long forgotten or marginalized theories, and hypotheses on causes of financial crises gained importance. Moreover, new fields of research were developed. Finally economic policy has been equipped with several new tools. A research area that has gained the most attention has been the macroprudential policy. Such a policy uses legal tools to reduce systemic risk, i.e. a threat that the financial system ceases to be stable, hence will not fulfill its economic growth-enhancing functions properly. An opposition to such an approach is constituted by the so called microprudential approach that dominated prior to the global financial crisis. It is focused on separate financial institutions, whereas the macroprudential approach concentrates on the financial system as an aggregate.

Due to microprudential characteristics, the pre-crisis financial (and in particular – banking) regulations have not saved the financial sector from mounting systemic risk, and have not prevented the outbreak of the financial crisis. The extensive work taken following the crisis has led to the preparation of new regulations that, initially, were to contain macroprudential characteristics. The Basel Committee on Banking Supervision has prepared the so called Basel III as a supplement to the older Basel II. On the EU level the CRD IV and CRR package has been prepared basing on the BCBS's documents. On the institutional level, new bodies were founded to conduct the macroprudential policy.

It is worth emphasizing that the Basel regulations are prepared for big internationally active banks headquartered mostly in developed economies. Nonetheless, they are also being implemented in developing economies, where the scale, as well as characteristics of banking

business are not similar to what big global banks do. Moreover, due to the openness to external capital flows, emerging economies are particularly prone to flows of foreign funding that (through demand shocks) disturb local business cycles.

This PhD dissertation aims to draw up and analyze the **macrostabilizing (i.e. stabilizing the real economy) features and aspects of macroprudential policy conduct in a small open (developing) market economy**. An additional goal is to **identify the causes of financial instability in emerging economies, particularly in the European Union, and indicate the macroprudential instruments targeted at controlling and eliminating the earlier identified causes of financial instability.**

These goals closely relate to the research problem tackled in the dissertation, i.e. **how to shape effective prudential regulation in emerging economies?** In order to solve this research problem the dissertation tackles three following research questions:

1. What are the characteristic features of the current prudential regulations?
2. Where are potential weaknesses of these regulations?
3. What factors does the effectiveness of prudential regulation depends on in emerging markets?

The answers to these questions have been given basing on conducted research studies. Several research methods have been utilized. They consist mostly of non-reactive research. All in all they allowed for a credible verification of proposed research hypotheses. The two major methods utilized in this thesis are the following:

- the literature review. The literature studies concerned both research papers, as well as reports prepared by several private and public organizations. As a result of the studies a consensus on the role, form and a method of macroprudential regulations could have been sketched;
- content analysis. The analysis covered numerous official documents allowing to outline the shaping institutional solutions regarding conduct of macroprudential policy currently in place. Also specific regulatory proposals being implemented in the European Union were analyzed.

Other research methods employed in the dissertation included:

- historical-comparative research method (the analysis of banking prudential regulations implemented since the 1980s until the present day; presentation of the evolution of central banking theory and practice towards tackling potential financial instability);

- the method of matching patterns to particular dependent variables, which allowed for the falsification of existing theories regarding the central banks' and financial supervisors' approach in tackling evolving financial instability;
- comparative legal analysis method, which has been utilized when comparing the institutional legal frameworks of macroprudential policy and supervision in the European Union, USA, United Kingdom, Germany, Switzerland, and in Poland;
- qualitative, as well as quantitative data analysis, in particular econometric modelling allowing for setting the direction and estimating the size of a possible impact of changes to macroprudential regulations in South Korea on the structure of liabilities, as well as the volume of credit (linear regression); estimating the impact of changing liabilities structure on the level of credit expansion (linear regression), comparison of proxy measures of the natural real interest rate in South Korea and Poland, and finally comparing the flows of capital to Korea with other states (panel regression).

The utilization of various research methods allowed (through the triangulation technique) to draw meaningful and reliable conclusions from the dissertation.

The dissertation consists of an introduction, five chapters, summary, references, and other lists. The main task of the first chapter is to introduce the issues of financial stability, macroprudential regulation, and non-core liabilities. The theoretical considerations, as well as the analysis of numerous historical case studies led to the conclusion that the basic reason for growing financial instability, as well as the destabilization of the real economy is the excessive increase of financial intermediaries' leverage taking place during the unstable credit boom. It leads to growing indebtedness of economic subjects. The above finding relates particularly to developing economies, with financial systems based on banking sector. The research points at rising share of non-core liabilities in financial intermediaries total liabilities as a dominant source of excessive credit expansion in these economies. This conclusion has been proved by numerous case studies analyzed in the dissertation.

The history of financial crises, at least since the 1980s shows that the direct culprit of the turbulences is the financialization of the economy, as well as the financial sector alienation from the real economic activity. One of the signs of this process are the rapidly growing balance sheets of financial institutions. Their growth is followed by changes in the structure of financial liabilities, which constitute the most important source of funding for asset purchases and credit expansion. During the unstable credit boom the growing volume of credit ceases to mirror the growth of the core, retail deposit base. As a result, it stops to collate with the rising ability to pay back debt, which is approximated by the pace of GDP growth.

The non-core liabilities, which enable the extension of credit volume have two basic sources. Their significance depends directly on the level of particular country's economic, as well as financial system development. These two sources include: the rehypothecation (in developed economies), as well as the inflows of speculative, short-term capital (into the developing economies), mostly coming from the carry trade. During the upturn, both of them remain independent from the local monetary policy. Hence they provide an almost endless source of funding for loans. In the time of recession, both of them dry out (in line with reversing investor sentiment), leading to vanishing market and funding liquidity, and finally to a credit crunch.

Macroprudential regulations have been introduced all over the world in order to restrain the problem of financial instability. Their fundamental task is to limit the credit expansion, and asset price increases in the time of a boom, with a purpose of reducing the negative effects of a possible recession. The macroprudential policy does not only use the supervisory tools, but also the instruments of: monetary policy (reserve requirements), fiscal policy (taxes), as well as competition policy (mergers and acquisitions). It also exploits modified microprudential tools, due to a dominating principle of targeting the macroprudential regulation at limiting the systemic risk. All in all, all prudential regulations serve to protect the depositors from the insolvency of financial and credit institutions. Microprudential regulations help to maintain the stability of each and every single bank, whereas the macroprudential ones focus on the entire system

Such an approach prevails in developed economies, including the European Union. As proved in the second chapter of the dissertation, **macroprudential regulations that have been implemented in the EU following the global financial crisis are directed at strengthening the resilience of credit institutions and investment firms against an economic slowdown, as well as financial market perturbations**. Indeed, the main goal of prudential regulation and policy conducted in the EU after the global financial crisis of 2007-2009 is safeguarding banks capacity to absorb eventual loses stemming from incoming system-wide shocks. Hence, they define financial stability in a similar manner to the pre-crisis regulation, aligning it to stable banks. To achieve this goal, the macroprudential instruments are directed at limiting the excessive growth of lending (first of all to housing sector), and the maturity as well as currency mismatch between assets and liabilities.

There are numerous controversies related to EU banks' prudential regulations in the form of the CRD IV and CRR package. Most importantly, they result from their maximal harmonization, as well as microprudential character, embodied in the focus put on the capital

adequacy of banks. The new regulations do not have a general character that would be achieved, if they were focused on banks' funding structure. Whilst concentrating on the housing market they enable the transmission of bank lending to other sectors (like credit cards, consumer credit, durable goods loans, loans for purchase of stocks or other assets including commodities, student loans, corporate credit). It all could lead to a credit boom, resulting in excessive debt accumulation in distinct sectors, thus destabilizing their activities.

The macroprudential regulations in the EU are not tailor made for each single member state, but rather unified within maximum harmonization framework. However, the EU lawmakers seem to have forgotten that the European Union is a community of economies that display different levels of development, and different structure of the financial sector, and real economy. As a result, taking into consideration the freedom of capital movement, some of the member states are particularly prone to funding inflows from other EU economies (the developed ones). What is important, **the inflow of capital from EU's developed economies to peripheral (emerging) economies contributes to changes in the structure of banking sector liabilities, constituting a recurring source of financial instability in the latter states**. Capital flows enable the convergence of nominal interest rates leading (at different inflation level due to a different stage of economic cycle or development) to falling real interest rates in emerging economies (often below their natural level). As a consequence credit boom takes place (often an unstable one) that contributes to changing structure of the economy, as well as an unstable growth of demand (investment and consumer), leading to increased amplitude of business cycle.

Such theoretical corollaries are supported by case studies of Spain, Ireland, Iceland (that does not belong to the EU), Hungary, and Latvia conducted in the third chapter. All of them confirm that the main and primary cause of the unstable credit booms is the growth of non-core financing of the lending expansion. In developing economies the additional funding comes from abroad and gets to the local financial system as capital flows, in particular portfolio capital flows. The main channel of their transmission are foreign banks (and their branches), whose credit policy has been characterized by a higher level of expansiveness (embodied in lower requirements placed on the borrowers).

The excess liquidity of the financial sector in the time of the boom enabled keeping the pace of lending expansion higher than the (growing) capacity of economic subjects to pay back their debt. Hence, the credit boom was unstable. Loans have been taken, because borrowers thought that they would be able to sell the property at higher prices within a short time. Some of them have been attracted by historically low interest rates. Of importance was

also the low level of borrowers economic knowledge exemplified by a belief that this time would be different, and the anomaly would continue forever. It was supported by the appreciation of the currency of the countries receiving extraordinary capital inflows. As a result, the structure of the real economy has changed, with bigger and bigger role played by construction industry. When the economic sentiment plummeted following the outbreak of the global financial crisis, the existing recipients of capital witnessed the reversal of the flows they have received during the boom. In effect, banks ceased to finance the construction industry causing end to the boom on real estate market. Reduced construction output translated directly into collapsing GDP (at least by the previous share of speculative construction activity) and rising unemployment rate (i.e. by the workers previously hired on construction sites). What is most important, the unemployment took the form of a structural (not cyclical, deficient-demand) one, because young locals were abandoning studies in order to take the job on building sites. After the construction machines stopped to work, the young builders did not have enough qualifications to take another job.

As it has been shown in the dissertation, a similar course has been taken by the crisis in some emerging economies of the European Union. The Union itself (or even more integrated Eurozone) is not economically homogenous. It includes both developed and developing economies as members. The region of the Central and Eastern Europe is mostly exposed to speculative capital flows from the "old" European Union economies, because of the free movement of capital, often rigid foreign exchange rates, as well as a very high local banking sectors penetration by Western European banks, with their branches or subsidiaries serving as pipelines for foreign (including FX) funding.

All of the above corollaries show that the credit and leverage cycles (including the changes to financing of lending expansion) should become an area of lively interest of economic policy, particularly in the CEE region. The identification of the growth of non-core liabilities volume as a vital driver of an unstable credit boom proves that **it is crucial for small open developing market economies to broaden the scope of macroprudential regulations by instruments targeted at the control of financial sector funding structure in order to immunize themselves against destabilization of financial markets, and real economy**.

The use of new (macrostabilizing) macroprudential policy instruments is possible in the EU, despite the harmonization of these regulation through CRD IV and CRR package, as shown in the fourth chapter of the dissertation depicting the new macrostabilizing approach to financial system regulation. This new approach is based on the formulation of the main goals

of an effective macroprudential policy (there could be more tactical and operational targets than those enumerated in the dissertation). The strategic goal of macroprudential policy should be to limit the instability of the financial sector, understood as the systemic risk with its two perspectives: the cross-sectional and cyclical ones. The tactical goal of the macroprudential policy should focus at providing such a structure of credit expansion financing that the pace of credit volume's growth does not differ substantially (taking into account the fact that in emerging economies the level of credit-to-GDP ratio is very low) from the growth of output. The latter, being consistent with growing wealth of economic subjects, reflects their growing creditworthiness and capacity to pay back their debt. The tactical target concerns both the total growth of credit volume, as well as the credit expansion towards specific sectors of the economy. In such a case, the operational goal of macroprudential policy could be formulated as: limiting the credit action financing from the non-core liabilities (deposits), because it leads both to growing interlinkages between financial institutions (domestic or foreign ones), as well as to strengthening the cyclical component of credit expansion.

Fourth chapter of this thesis contains the list and description of a number of instruments, which could be used to achieve the goals of macroprudential policy as set out earlier (including inter alia: (un)remunerated reserve requirements, financial leverage ratio, maximum levels of Loan-to-Deposit or Loan-to-Non-Core-Deposit ratios, limits on derivatives transactions or a tax on non-core liabilities), both in terms of systemic risk reduction, as well as financial cycle stabilization, and (indirectly) business cycle stabilization. Some adjustments of the currently utilized tools have been proposed too (including capital buffers, (variable) risk weights, or Loan-to-Value and Debt-to-Income ratios). Moreover, possible ways to counteract regulatory arbitrage have been described. It is important, because possible implementation of new norms would most likely lead to some attempts to bypass the new regulations by financial intermediaries. Finally, the instruments have been selected and presented that could be used in small open market economies.

At the end of this dissertation, in chapter five, the case study of South Korea has been conducted as an example of an effective use of macrostabilizing macroprudential regulations. **The analysis of the functioning of macroprudential regulations in South Korea (that was once an example of a small, open, developing market economy) demonstrates that their efficacy increased following the introduction of tools focused on controlling the financial sector funding structure.**

South Korea has been one of the economies affected by the recurring waves of financial crises. Following the Asian financial crisis the authorities introduced many new regulations, that presently could be regarded as macroprudential. They were mostly targeted at strengthening the resilience of the financial sector against shocks (i.e. improving its loss absorption capacity). What is important, some of them (including Loan-to-Value and Debt-to-Income ratios) have been used in a dynamic, countercyclical way. As a result, credit action of the property sector has been limited. However, capital flows from abroad have not been restricted. Therefore, the inflowing funding has been directed to non-financial corporations. South Korea experienced a repetition of earlier Japanese 'zombie lending' scenario. New funding flew to less efficient and innovative corporations, which in many cases were existing on the verge of insolvency. Prudential regulations did not cover the entire financial sector, allowing for regulatory arbitrage and the emergence of unregulated shadow banking system leading to increased competitive pressure on banks.

The outbreak of the global financial crisis, and in particular the bankruptcy of Lehman Brothers, have led to foreign investors sentiment reversal and capital outflow from South Korea, which was enabled by speculative, short-term nature of the earlier inflows. As a result Korean financial system witnessed an abrupt depreciation of the Won. The economy has been hit by financial and economic crisis. In October 2008 only 39.9% of maturing foreign liabilities have been rolled over. In total, almost USD 69.5 billion dried out until January 2009. It is important to note that despite no need of restructuring financial institutions (they remained stable from the microprudential point of view), Korean economy has been hit by the crisis more severely than other economies in South-East Asia.

As a result of the crisis, Korean authorities introduced new prudential tools (the "second generation" of macroprudential regulations as compared to the "first generation" introduced following the Asian financial crisis). One of their main characteristics concerns the inclusion of the macrostabilizing approach into the prudential nature of the tools. The new approach focuses on the limitation of the role of non-core liabilities in the overall liabilities of financial institutions. The main way to achieve such a result is through curbing speculative short-term capital inflows from abroad. A broad range of indicators assessing the financial system stability point at its significant enhancement since the new tools have been implemented. Moreover, the quantitative analysis presented in the dissertation shows that not only were the new tools successful at curbing the non-core liabilities inflows, and reshaping the maturity structure of financial sector liabilities, but also they were able to steer the inflows. In particular, following the so called taper tantrum (when the Federal Reserve tapered

the QE3 Program) the loosening of the regulations resulted in increased inflows of capital to South Korea, whilst other "emerging" markets were struggling with foreign capital flight. As a result Korean financial stability was strengthened in contrast to other economies from South-East Asia.

The utilization of all the methods outlined earlier in this summary (leading to formulating aforementioned conclusions drawn from distinct parts of the research study) allowed to confirm the doctoral thesis. **Using macroprudential regulations targeted at the control of the structure of financial sector's liabilities in small open developing market economies is more beneficial from financial and real economy stability perspective than adopting an approach basing solely on improving the own funds and controlling the directions of credit action.**

This conclusion allowed for, and contributed to the identification of new research gaps, and helped to outline new research directions, which have the potential to lead to: (1) a better understanding of the transmission mechanism of shocks to the emerging economies, (2) decomposition of non-core liabilities structure, as well as formulation of early-warning indices measuring the accumulation of financial instability, and (3) setting out of efficient institutional solutions leading to growing effectiveness of macroprudential policy. Therefore, further research studies may focus on comparing the structure of non-core liabilities in various countries, as well as the creation of a common, uniform early-warning indicator (which will, however, always have to be adjusted for specific characteristics of a particular economy and financial system). Moreover, the new research should concentrate on formulation of possible new macroprudential policy instruments, which could be utilized in a currency union (and which would be legally binding, and lawful, at the same time not undermining the free movement of capital). Finally, an in-depth analysis is required regarding the differences in the approach to financial sector regulation under specific jurisdictions. It seems worthwhile to analyze the reasons behind this diversity. It is also vital to conduct further research on historical events of credit booms, and financial cycle itself in order to distinguish further common elements, and point out some regulatory solutions, which (for different reasons) were not effective in the environment of a strong growth of lending. In this context, it seems particularly interesting and not trivial to apply the solutions for banking regulation postulated under the behavioral finance and economics. The particular attention should be paid to actions having impact on capital flows, as well as their sudden stops and reversals.