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SUMMARY OF PHD THESIS

**OPTIMIZING THE FINANCIAL-BANKING MANAGEMENT
BY MEANS OF ASSETS SECURITISATION**

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SUMMARY OF PHD THESIS

2. ABSTRACT

The paper investigates, from theoretically and especially in terms of practical outlook, the identifiable ways through which the assets securitisation, financial derivatives and financial engineering altogether contribute decisively to the optimization of financial and banking management, by means of optimizing the management of all its constituent components: risks management, cost of capital management, returns management, capital management, investment management, portfolio management.

3. KEYWORDS

- Algorithms for quantitative modeling and optimization
- Asset-backed commercial papers
- Asset-backed securities
- Assets securitisation
- Assets securitisation regulations
- Collateralized-bond obligations
- Collateralized-debt obligations
- Collateralized-loan obligations
- Credit derivatives
- Credit-default swaps
- Credit-linked notes
- Financial derivatives
- Financial engineering
- Financial risks
- Foreign-exchange derivatives
- Interest-rate derivatives
- Mortgage-backed securities
- Optimization of bank management
- Optimization of investment management
- Optimizing capital management
- Optimizing financial risk management
- Optimizing the portfolio management
- Special-purpose vehicles
- Structured finance
- Total-return swaps

4. THE RATIONALE AND IMPORTANCE OF RESEARCH

The scientific approach traced through the PhD thesis entitled “**OPTIMIZING THE FINANCIAL-BANKING MANAGEMENT BY MEANS OF ASSETS SECURITISATION**” intends to research a critical and crucial theme of a paramount importance in the current framework of the global financial and banking industry. We anticipate dealing with this topic, of extremely complex and dynamic nature, in a synthetic approach, but in an analytical formulation, channeling our research on several major coordinates and applications of a theoretical, methodological and practical nature.

Starting from the theoretical concerns of past centuries through which a large number of researchers have contributed to the identification of the various ways to improve the financial and banking management of financial and non-financial institutions, continued with a set of fevered practical steps taken since the early 1980s and ending in the contemporary period of heated debates on the edge of the new financial and banking regulations of the 21st century, we can easily identify the importance and special interest granted to the chosen topic of this research. Optimizing financial risk management, capital management, investment management and portfolio management in terms of costs, returns/yields and the tactical and strategical decisions relating thereto constitute key elements in everyday life management of financial and banking institutions, investment corporations and non-financial companies altogether, all of them representing genuine driving forces behind the importance of the subject matter of this PhD research.

The correlated research on the multiple sources that influence the process of optimization of advanced financial and banking management is definitely necessary in order to identify and establish the nature and origin of resources and essential factors involved in optimizing the financial results. The paper elaborates the success of optimization process based on a few outstanding ingredients of a particular complexity, but at the same time, it offers the means for the implementation of the outcomes through a concrete and immediate set of broad solutions that are affordable and relatively easy to apply in terms of today’s current financial and economic realities.

We are facing today an exceedingly complex conjuncture of global financial and banking markets, witnessing a set of new challenges, with a highly dynamic emergence of new issues to be dealt with and a struggling rush to identify optimal solutions to settle them against the clock. In this environment, the research on the optimization of financial and banking management with the aim to identify general-valid optimal solutions represents a vindicated choice from both the financial and banking industry standpoint as well as from the real economy perception.

The paper aims to identify the key elements of banking and financial management from its advanced approach perspective, to exhibit how they correlate, to illustrate how these essential constituents are modeled into a whole, as well as to underscore the outcomes which follow the implementation of the innovative financial and banking management optimization process.

The final destination of the PhD thesis is to reveal the practical ways of optimizing financial and banking management through assets securitisation. To reach this destination, the paper will consider in turn a multitude of essential attributes related to assets securitization; international regulations of securitisation; financial derivatives; financial engineering; risk, capital, investment and portfolio management, both from a theoretical perspective and especially in terms of their actual and practical implementation outlook.

In compiling this study we employ various methods of scientific research, such as: development of concepts on the basis of theoretical and empirical research; chronological studies; comparative studies; analogue studies; analytical and synthetic studies; implementation of logical operations, causation, correlation, extrapolation; graphic and tabular information; case study method; induction and deduction methods; method research based on empirical studies; economic and statistical modeling in mathematics; quantitative modeling and optimization; the use of quantitative modelling algorithms and optimization for financial engineering; and so forth.

5. SYNTHETIC PRESENTATION OF THE CHAPTERS CONTAINED IN THE THESIS

In chapter 1: “*Structured finance and assets securitization*”, we debate the concept of structured finance, presenting the main views, definitions and interpretations thereof, advantages and benefits of using structured finance and motivations, aims and objectives of financial market participants carrying on structured finance transactions.

Further, we focus on a study of special-purpose vehicles employed in structured finance, reviewing the main aspects of their definitions, roles, operations, ways of structuring and accounting implications, legal and taxation aspects of their use and the essentials relating to the features and operational design of the main types of special-purpose vehicles.

Afterwards, we conduct a research on the concept of assets securitization, emphasizing the main definitions and interpretations thereof, the process of assets securitization and financial instruments issued under securitization transactions, the participants to such a transaction, and the phases and stages through which the securitization process runs. We will then review the basic principles of assets securitization, financial and economic motivations and objectives in terms of the securitization originators (corporations and financial institutions) and investors and the technical objectives of structuring securitization transactions.

Next, we examine the main elements of structuring securitization transactions where the deals are guaranteed by sovereign institutions/agencies (in terms of underlying assets’ prepayments treatment, the structure of sequential payments, the classes of special titles used), and where they are not guaranteed by sovereign entities (in terms of identifying the underlying assets of the reference portfolio, selection of these assets, identifying potential risks of the transaction, selecting the sources and the size of credit protection mechanisms, designing the classes and tranches of asset-backed securities, structuring the payment waterfall for each class/tranche of securities, selecting the sources and level of liquidity

facilities, identifying protection measures in case of early repayments and implementing the structural protection of the whole securitization transaction) .

Subsequently, we explore the credit support mechanisms and facilities employed in securitization transactions, highlighting the types, nature and amount of the major categories of such resources (provided by originators, structural, supplied by third parties).

Further, we perform a research of the main types of assets securitization transactions and asset-backed securities issued (ABS, ABCP, CDO) by means of outlining several technical characteristics, conferred at both theoretical and practicable levels.

Thus, we study the main types of ABS securitizations; motivations, objectives and benefits of these transactions; various categories of ABS securities issued; major classes of underlying assets used in ABS securitisations; and the most important features of the main types of ABS securitizations (retail loans, credit cards, auto loans, business loans and mortgage loans).

Then we explore the major types of ABCP securitizations; motivations, objectives and benefits; classes of ABCP securities issued; classes of underlying assets used in these transactions; ABCP vehicle types; and the essential elements related to the mechanisms and facilities of credit and liquidity support employed in this type of securitization.

Later, we will investigate the main types of CDO securitizations; motivations, objectives and benefits of these transactions; participants involved in such deals; classes of CDO securities issued; classes of underlying assets used; additional credit support mechanisms; general principles of structuring CDO securitizations; and the characteristics, forms and types of cash (balance sheet and arbitration) and synthetic CDO securitisations.

Through chapter 1, we examine, as well, the main features related to the securitization of assets, receivables and future revenues; motivations, objectives and advantages of these types of transactions; their specific characteristics; types of underlying assets employed; features of the secured lending structure; the mechanisms of credit support facilities; and the types of securitisations that are part of each of these categories.

Later, we will study the main attributes related to the advantages of assets securitization for the financial markets, economies and direct participants; emphasizing economic and financial impact of assets securitization on global financial markets (and their subcomponents: capital markets, credit markets, financial derivatives and synthetic instruments); assets securitization' benefits for the overall economy and, in particular, for the financial, banking and capital markets considered at the national (country) level (in terms of the impact on capital and financing costs, the impact on the banking disintermediation and the impact on the national economy as a whole); and the advantages of securitization for different categories of participants in such transactions (companies and corporations, banking and financial institutions, investors, regulators, governments and central authorities).

We conclude chapter 1 by an exploration carried out through case studies, designed to reveal the financial and banking management optimizations provided through the assets securitisation. Thus, by means of the case studies, we examine: the structuring of a CDO cash-flow balance-sheet securitization; how the equity tranche of a cash arbitrage CDO securitization is generating returns; structuring of a cash arbitrage CDO securitization; structuring a partially-funded synthetic CDO securitization; structuring a partially-funded synthetic arbitrage CDO securitization; optimizing the risk-based capital management; optimizing the capital ratio management; optimizing the return on equity management; optimizing risk-adjusted return on capital management; optimizing the risk-based capital management and the capital ratio management (without interest subparticipations); optimizing the risk-based capital management and the capital ratio management (with interest subparticipations).

In chapter 2: *“International regulations of assets securitisation”*, we will undertake research on international banking & financial regulations as well as on the legal and accounting aspects of assets securitization. With regard to the international financial and

banking regulations, we examine the special-purpose vehicles regulations, in terms of participants (promoters, sponsors, investors) motivations for their use; transfer and risk management; forms and main technical characteristics of these vehicles; their use in the disaggregation and reallocation of risk and performance; and the implications of their utilization on regulators' policies.

Then, we investigate the financial and banking regulations provided under The Basel Securitization Framework through general considerations on the overall framework of asset securitization regulations set out in the Basel I and Basel II; Basel Committee's consultative process on the creation and implementation of Basel Securitization Framework; study the genesis and evolution of regulatory treatment of assets securitization under Basel I and Basel II Agreements; and the implications of the current framework of financial and banking regulations on the treatment of assets securitization.

Next, we study the recent enacted financial and banking regulations (both internationally and nationally) meant to boost assets securitization; elements intended to stimulate the use of securitization and eliminate inconsistencies and potential conflicts of interest among participants in these transactions; regulatory initiatives intended to encourage and foster the use of assets securitization within global financial and banking industry in the aftermath of 2007-2008 crisis; and the impact of Basel III and Solvency II on assets securitization.

As for the international legal regulations, we will conduct a scrutiny of key issues, general and specific, legal and technical regulations of the assets securitization from the perspective of the legal process of analyzing and structuring legal transactions; and the technical features of the assets securitization from a legal standpoint.

Referring to international accounting rules, we carry out an investigation into the tax implications of the assets securitization and we explore the general principles of international accounting standards IFRS and US GAAP on assets securitization transactions.

At the end of Chapter 2, we will examine the topic of international regulation of the assets securitization through case studies, an approach designed to exhibit the financial and banking management optimizations provided by means of assets securitization. In the case studies we investigate the optimization of risk-based capital management and the optimization of the capital ratio management with regard to both Basel I and Basel II Agreements.

In chapter 3: "*Financial derivatives*", we will research the concept of financial derivatives, featuring the main views, definitions and interpretations thereof, moving forward on exploring the financial derivatives market participants; the key characteristics of financial derivative transactions; basic components used in the construction of financial derivatives; and counterparty risk; reviewing the main characteristics of these topics.

Further, we aim to fulfill a research on three major categories of derivatives, underlining the main concepts, definitions and interpretations thereof. Thus, we examine foreign-exchange derivatives, focusing on the concept of currency derivatives, and investigating forward foreign exchange contracts, futures and options foreign-exchange contracts and currency swaps, as the most used foreign-exchange derivatives.

Subsequently, we perform an investigation on interest-rate derivatives, during which we introduce the concept of interest-rate derivatives and we focus our research on forward interest-rate contracts, interest-rate futures and options contracts, caps/floors/collars and interest-rate swaps, as the most common types of interest-rate derivatives.

We will then consider the main aspects of credit derivatives, where we focus on the concept of credit derivatives and credit events and we carry out a research of the most common credit derivatives: floating-rate notes, asset swaps, credit-default swaps, total-return swaps, credit-linked notes, credit spread derivatives, index swaps, basket credit-default swaps, collateralized-debt obligations, structured notes. We investigate, as well, the benefits of using financial derivatives in the financial and banking transactions.

We conclude chapter 3 by an investigation carried out through case studies, which is intended to uncover the main venues to integrate financial derivatives within the financial-

banking operations and asset securitization transactions. During the case studies we will examine: optimization of bank management through the use of currency swaps; optimizing the bank management through the use of interest-rate swaps; optimization of the bank management through the use of total return swaps; optimizing the bank management through the use of asset-backed securities blended with credit-default swaps and total-return swaps.

In chapter 4: “*Financial engineering*”, we examine the concept of financial engineering, introducing the main views, definitions, interpretations and uses thereof; moving forward with our research on the optimization process of financial and banking management; the concept of optimization; its specific elements and hypothesis; the optimization process (in the general sense) and the financial and banking management optimization (in particular); elements, phases and stages of an optimization problem that goes through from the time of its formulation upto validating the results in the real life; the steps taken in the process of optimizing financial and banking management; reviewing all the key aspects related to these topics.

The practical module of this chapter shall be materialized by a case study through which we will explore the real features of quantitative modeling and optimization of asset-backed securities, portfolios of financial assets and assets securitization transactions. The modeling of securities as well as of the portfolio and CDO assets securitization optimizations will be carried out through the Monte Carlo method of quantitative modeling.

In chapter 5: “*Risk, capital and portfolio management*”, we will examine the tangible routes by which the financial derivatives and assets securitization lead the way to the optimization of risk management, bank management, capital management, investment management and portfolio management.

During the research of risk management optimization, we delve into the concept of financial risks and the main types of financial risks; we analyze the concept of financial risk management; we examine the forms of materialization of financial risks; and we carry out a divergent comparative analysis on the traditional approach and methods of financial risk management as opposed to the advanced approaches and methods of financial risk management; we inspect the economic approach to financial risk management; the advantages of using financial derivatives and assets securitization within financial risk management, both in terms of vendors and buyers of (protection to) risks.

Concerning banking management optimization, we conduct a research on the implications of the main issues involved by the development of financial derivatives and assets securitization for the banking industry and we consider the changes entailed in the functional and the organizational structure of global banks as a result of the the modern approach to the loan portfolios management.

With regard to the optimization of capital management, investment management and portfolio management, we undertake an investigation on modeling the capital, investment and portfolio management through structured finance, assets securitization and financial derivatives; we examine the modeling of portfolio risk management using financial derivatives and securitized assets; the implications of financial derivatives and assets securitization to the capital, investment and portfolio management; the active management of bank loan portfolios; the methods by which the modeling and optimization of the assets securitization management is carried out through financial derivatives.

Later, we will undertake a review of the main applications of financial derivatives and assets securitization within the risk management, capital management, investment management and portfolio management, exploring the implications that financial derivatives and securitized assets have on the banking market, capital market and the financial market as a whole; and the main categories of applications concerning the investment management, capital market transactions, banking management, portfolio management, management of corporations and non-financial companies.

In concluding chapter 5, we perform a research through case studies, of the main drivers of financial and banking management optimization. During the case studies, we investigate: optimizing the economic return on a banking relationship; risk management and capital management optimization with regard to the management of a bank portfolio; optimizing the management of bank loan portfolios; optimizing the management of the risk-based capital, the capital ratio, the return-on-equity and return-on-assets and the risk-adjusted return-on-capital.

In chapter 6: *“Prospects and developments of assets securitisation”*, we will carry out an investigation into the perspectives of assets securitization from the international financial and banking regulations standpoint, citing the shortcomings of current regulatory framework concerning assets securitization; the negative impact caused by the new provisions related to the regulations of the international financial and banking markets; a survey of the assets securitization market captured beyond the stigma of 'shadow banking', highlighting the measures undertaken by the global central banks (through monetary policies stipulations implemented post 2007-2008 financial crisis) in order to stimulate the assets securitization and to alleviate the negative effects of its forthcoming regulations treatment.

Next, we underline the contribution of assets securitization to financial stability of the global banking and financial systems; highlight the role and contribution of securitization in the promotion and development of global financial markets and national economies; emphasize the support of banking and capital markets along with the expanding importance and role of global financial markets in the global economy through the economic and financial impact of assets, receivables and future revenues securitization to the financial and banking markets and the national economy; evoke some advanced strategies of investment and portfolio management.

While researching the global banking markets' prospects, we undertake an examination of transformations of the current banking market and the shifts taking place within the modern financial and banking markets, referring to the high-dependency of the real economy on the bank lending and bank financing; the malfunctioning of banking intermediation channels; the global banking disintermediation process and the fragmentation of global financial markets.

As regards the medium- and long-term of the financial and banking system, we perform an investigation of the main pieces pertaining to the new architecture of global financial and banking system as it exhibits itself at the beginning of the new century, analyzing several solutions for the rehabilitation of the malfunctioning mechanisms of monetary policy transmission, solutions for the rehabilitation of the broken channels of banking intermediation, as well as an advanced model for financing the real economy and the implementation of an alternative financing system of the real economy.

With regard to the developments of the assets securitisation, in chapter 6, we will carry out an investigation of the main areas where the role, importance and use of securitization reveals an absolute certainty of expansion and progress. Among the areas identified as the most conducive to the development of the securitisation one can find: expansion and diversification of the nature and categories of securitized instruments (CDOs issued on currencies, commodities, shares) and the advantages of these new classes of asset-backed securities; securitization of future revenues; whole-business securitizations; securitization of life and non-life insurance policies; real estate securitizations; microfinance securitizations; SMEs financing through the assets and receivables securitisation; non-performing loans securitizations; sovereign public assets and receivables securitizations.

During chapter 6, the topic of prospects and development of assets securitization will be addressed through the research of several technical aspects, emphasized on both the theoretical and especially on the practical level, as well as by means of case studies, which are intended to validate how the optimization of financial and banking management is achieved through assets securitization.

6. THE SYNTHESIS OF SCIENTIFIC RESEARCH' FINDINGS

Starting in the 1980s, both companies and corporations, as well as financial and banking institutions, and not least local and central public authorities began to be more concerned with identifying new alternatives of financing, refinancing and capitalization that should be cheaper, plentiful, more effective and more affordable, as well as more focused on employing new tools to optimize the cost of capital management, portfolio management, investment management, on-balance sheet assets management and risk management. On the other hand, during the same period, investors were becoming also more concerned about identifying new investment alternatives able to provide them with portfolio returns optimizations, investment management optimization and portfolio management optimization, all in terms of a more efficient risk management approach.

Along time, the international financial community has designed and implemented a variety of mechanisms, techniques, tactics, strategies and processes that have provided multiple solutions to all the problems mentioned above, and then perfected and further developed these solutions. Specific applications of these solutions in the everyday life of companies, corporations, investors and the international financial and banking institutions have confirmed their success, which prompted the speed at which these solutions have been propagated globally, starting to be used by an increasing number of participants from global financial markets.

The global financial crisis of 2007-2009 and the global economic recession of 2008-2010 have demonstrated the usefulness and necessity of these financial mechanisms, pinpointing them into chief tools used to enhance the viability and streamlining of global financial flows. The proof of this outcome lays in the fact that all major regulatory institutions of the global banking industry contributed in recent years with programs and measures to promote the development and generalization of these mechanisms internationally.

Of the many alternatives analyzed and tested in this context over the past 30-40 years in the international banking and finance universe, the solutions offered by financial engineering, financial derivatives, structured finance and, especially, assets securitization had detached and have impressed by the efficiency and complete-fullness of the results achieved.

The paper **“OPTIMIZING THE FINANCIAL-BANKING MANAGEMENT BY MEANS OF ASSETS SECURITISATION”** conducted research on multiple key issues: the concepts of structured finance and assets securitization; the most important aspects of the framework of international regulations related to assets securitization; several classes of financial derivatives; main issues concerning financial engineering and the ways in which this branch of sciences models and optimizes algorithms through extremely complex and laborious, design, structuring and implementation of financial and banking transactions based on financial derivatives and assets securitization; the most important aspects of the ways in which financial derivatives and securitization help to optimize risk management, bank management, capital management, investment management and portfolio management; and the applicability areas and some concrete applications of assets securitization in the banking and financial industry and the real economy by means of analyzing the perspectives and developments foreseeable that assets securitization will experience in the short-, medium- and long-term.

In the future we intend to deepen the study of optimizing financial and banking management through assets securitisation, financial derivatives and financial engineering both at the international level, through the analysis of the progress and the results recorded globally, but especially by adapting, implementing and monitoring them at the local level of the Romanian financial and banking industry. We propose also to participate actively, both on a theoretical level, but especially on the applied field, to the dissemination, launching, development, conducting and implementation of these types of transactions on the Romanian market, carried out both on the level of local financial and banking institutions as well as on the public and private companies grounds. Enjoying the financial and logistical support and

collaboration with first-class international partners already enrolled in these projects, we rely on the success of our approach to contribute to the modernisation and development of the Romanian financial and banking industry and of the local business environment.