

UNIVERSITEIT TWENTE.

Securitization of car financing assets: A capital raising strategy

PUBLIC VERSION

Vincent Bakker

Master Thesis commissioned by:

Bovemij Financieringsmaatschappij

&

University of Twente

Publication date: 21-03-2014



Securitization of car financing assets:

A capital raising strategy

Author:

V. (Vincent) Bakker Industrial Engineering & Management Specialization: Financial Engineering & Management

Supervisors:

University of Twente

Ir. H. (Henk) Kroon

University of Twente

Dr. B. (Berend) Roorda

Bovemij Verzekeringsgroep

J. (Jan) van der Vlist



Preface

This thesis is written as the final examination of my master study Financial Engineering & Management. In the summer of 2013 I got a great offer to perform my internship at the Bovemij Financieringsmaatschappij, with a study to securitization funding solutions.

I have experienced the topic of securitization as a very complex but fascinating field of structured finance. It turned out to be a very challenging research project, due to the complexity of securitization transactions. However, I have always had confidence in a good outcome. Besides that, I have gained a lot of knowledge and experience about the exact working of a finance company. I got several possibilities to attend discussions and calls with third parties about the topic of securitization. It has been a valuable learning period as a complement to my study.

I would like to thank my colleagues for their openness, friendliness and social interaction. In particular, I would like to thank my supervisor and sparring partner Jan van der Vlist for his guidance and pleasant collaboration. His knowledge and experience in the field of car related financings made sure that I got the necessary quality input for my research. In addition, our discussions and (critical) feedback sessions were very helpful to improve the quality of my research.

Besides that, I would like to thank Henk Kroon for his role as an exam supervisor. In our periodic discussions, he explained his critical view on the contents. His advice have put me in the right direction and improved the end result of this research. Moreover, his structural recommendations have ensured that the report is properly structured. I also want to thank Berend Roorda for his critical view and advice on the content and structure of the research.

Above all, I wish to thank my parents for their support during my study. Thanks to their support, I was able to successfully complete my master's degree.

I wish you pleasant reading!

Vincent Bakker

Bovenij

Management summary

This study provides insight in the possibilities of performing an asset-backed securitization program as a funding solution for the Bovemij Financieringsmaatschappij (BFM) and gives advice on the steps to be taken in order to facilitate a securitization funding strategy. Securitization is a structured finance solution that has the potential to raise cost-effective capital from capital markets by selling securities that are backed by a portfolio of cash flow generating assets.

The way of thinking of end customers is undergoing a change from owning a car towards using a car. They are getting more cost conscious and interested in a full service product in which they finance their car with additional services, such as maintenance, insurance and a guaranteed residual value for a fixed amount per period. However, most of the BOVAG enterprises are unable to offer a (profitable) full service product, due to high costs of funding, managing and controlling their car financing operations. They are not able to come along with the changing market and they may lose a part of the customer base or market share that shifts to a full service product. This results in a deteriorating position of the BOVAG enterprises in the car sales chain.

Confidential

Initially, we focused on self-contained securitization programs (master trust, owner trust and grantor trust securitization structures), in which capital is raised from capital markets solely based on the asset portfolio of the finance company. However, participating in a multi-seller asset-backed commercial paper securitization (ABCP) of a large bank turns out to be more interesting in the foreseeable future. We have developed an assessment model in which we formulated three criteria to weigh different securitization structures against each other. Based on the flexibility, certainty and the cost-effective deal size of the structures, we have determined which structure is most suitable for the finance company.

Confidential

The precise cost-effectiveness of a securitization program is depending on a number of (key) rating drivers that influence the quality and risks of a securitization transaction. Credit risk and residual value risk turned out to be the most decisive key rating drivers in car financing securitization transaction. To increase the quality of the potential securitization transaction, we have established a framework of the



key rating drivers to get grip on the rating and pricing process of the potential securitization transaction. This framework enables us to quantify and control the indicators of influencing factors that are used by rating agencies to estimate the variables that determine the level of credit risk and residual value risk.

The initial assessment of the creditworthiness of the securitization transaction will be largely based on the supplied historical portfolio performance data of at least 3 to 5 years and portfolio characteristics data. A compelling recommendation is to improve the data process and control on (historical) payment behaviour of customers & end customers and portfolio characteristics. We advise to start keeping record of historical performance data and portfolio data on two layers (customers and end customers). This facilitates not only a potential future securitization transaction, but also provides more insight in the portfolio characteristics and performance. During the actual creation of the transaction, credit enhancement methods can be used to increase the creditworthiness of the securitization.

Confidential

Bovenij

Table of contents

Preface	ii
Management summary	iii
List of abbreviations	. vii
Chapter 1: Introduction	1
1.1 Background & relevance	1
1.2 Research objective & problem statement	6
1.3 Methodology & approach	8
1.4 Report structure	9
Chapter 2: Securitization	. 11
2.1 Definition of securitization	. 11
2.2 Motivation for securitization	. 12
2.3 Process of securitization	. 14
2.4 Special purpose vehicle (SPV)	. 19
2.5 Credit rating	. 20
2.6 Credit enhancement	. 21
2.7 Conclusion	. 25
Chapter 3: Asset portfolio identification	. 27
3.1 Financial asset types	. 27
3.2 Current portfolio	. 29
3.3 Portfolio development	. 31
3.4 True sale & titling transfer	. 33
3.5 Conclusion	. 34
Chapter 4: Securitization structure decision	. 36
4.1 Master trust structure	. 36
4.2 Grantor & owner trust structure	. 38
4.3 Asset-backed commercial paper (conduit)	. 39
4.4 Assessment model for structure decision	. 44
4.5 Estimation of cost-effective deal size for BFM	. 49
4.6 Conclusion	. 53
Chapter 5: Key rating drivers	. 56
5.1 Credit risk	. 56
5.2 Residual value risk	. 58
5.3 Control of rating drivers	. 60
5.4 Historical portfolio performance data	. 61
5.5 Influencing factors & indicators	. 63
v Master Thesis Vincent Bakker 21-03-2014	

UNIVERSITEIT TWENTE.

5.6 Other rating drivers
5.7 Conclusion
Chapter 6: Conclusion, recommendations & discussion
6.1 Conclusion
6.2 Recommendations
6.3 Discussion
Reference list
Appendices
Appendix 1: Simplified organization structure
Appendix 2: Different lease types
Appendix 3: Funding and portfolio
Appendix 4: Synthetic securitization
Appendix 5: Credit ratings by different rating agencies
Appendix 6: Calculation of portfolio growth
Appendix 7: Revenue model of BFM
Appendix 8: Cost estimation
Appendix 9: Explanation of Excel model of cost-effective deal size

UNIVERSITEIT TWENTE.

List of abbreviations

- ABCP = Asset-Backed Commercial Paper ABS = Asset-Backed Security BF = Bovemij Finance BFD = Bovemij Financiële Diensten BFM = Bovemij Financieringsmaatschappij BVG = Bovemij Verzekeringsgroep C4L = Care4Lease CDO = Collateralized Debt Obligation CMBS = Commercial Mortgage Backed Security CP = Commercial Paper EAD = Exposure At Default EBIT = Earnings Before Interest and Tax LGD = Loss Given Default MBS = Mortgage Backed Security PD = Probability of Default
- RMBS = Residential Mortgage Backed Security
- SCR = Solvency Capital Requirements
- SPV = Special Purpose Vehicle
- SMB = Schadeverzekering-Maatschappij Bovemij
- SUBI = Special Unit of Beneficial Interest
- UTI = Undivided Trust Interest
- WACC = Weighted Average Cost of Capital



Chapter 1: Introduction

In the recent years it has become more difficult to obtain external funding. Influenced by the crisis, new regulatory framework (Basel III and Solvency II) and fragile economic recovery, banks have become more cautious with providing loans to enterprises and private individuals. Small and medium sized enterprises in various sectors are often highly dependent on traditional bank funding in order to obtain external funding. They are unable to acquire capital directly from the financial capital markets, because of their financial status, credit rating, (small) size and lack of knowledge of capital markets. The mobility sector in the Netherlands is also affected by the fact that banks have become more careful with providing loans. A large number of enterprises within the mobility sector do not have the power or the ability to achieve cost-effective funding on its own, making it difficult to have sufficient working capital.

This thesis is commissioned by the Bovemij Financieringsmaatschappij which is a new business unit of the Bovemij Verzekeringsgroep. Bovemij Financieringsmaatschappij is a fast growing finance company that has been launched to support enterprises and their customers, within the mobility sector, by providing financings against better rates than they can achieve via traditional bank funding or other financial sources. The new business unit is currently financed with equity, debt from the group and debt from a third party, but this funding is limited to a certain height. The growing portfolio of financings can possibly lead to capital shortage in the foreseeable future. Therefore, it is already of importance to find a suitable funding solution and determine a funding strategy in order to ensure the continuity of the finance company.

One of the considered options is conducting a securitization program. In the current market conditions, securitization is one of the few structured finance solutions that has the potential to raise cost-effective capital from capital markets by selling securities that are backed by cash flow generating assets. This research should clarify how capital can be raised through a complex branch specific securitization funding strategy, in which an asset portfolio of lease contracts may be securitized, with a car as collateral. The purpose of the first chapter is to introduce the relevance and background of the research topic. Furthermore, we explain the design and structure of the study. In Section 1.1, we outline the background and relevance behind this research. The section should be read as an introduction to understand the underlying idea of the research topic. In Section 1.2, we explain the objective, sub goals and problem statement of the research. In Section 1.3, we explain the methodology and approach that are used to accomplish the objective of this research. We address the research questions that are used for solving research questions. In Section 1.4, we explain the structure of the research.

1.1 Background & relevance

The Bovemij Verzekeringsgroep (BVG) is a medium sized insurance company which is established and partly owned by the BOVAG¹. Their financial services are focussed on the mobility sector in the Netherlands, by offering an extensive package of insurances, existing of business insurance, employee insurance and consumer insurance, to particularly BOVAG affiliated enterprises and their employees and customers. The BVG supports customers in the mobility sector in obtaining financings via two business units, Bovemij Financiële Diensten (BFD) and Bovemij Finance (BF). These units act as an intermediary between lenders and end customers in order to arrange financial products (funding and

¹ BOVAG is an inter-branch organisation of (± 11.000) members in the mobility sector. It is established for common interests within the mobility sector. The BOVAG is 83% owner of the Bovemij Verzekeringsgroep.



insurance) between both parties, whereby they receive commissions from lenders. They operate out of the BOVAG enterprises.

Influenced by deteriorating financial markets and developments in the mobility sector, the BVG has decided to start a new business unit; Bovemij Financieringsmaatschappij (BFM)². The objective of BFM is to support enterprises and their customers, within the mobility sector, by providing financings against better rates than they can achieve via traditional bank funding or other financial sources in order to increase the efficiency of enterprises. The new business unit is initially focussing on a particular part of the mobility branch. They have started to support car dealer and universal companies with their financing, management and administration of car financing products, with emphasis on lease related products.

In the Netherlands, many private and business cars are purchased with some form of financing. Figure 1 show how the total number of passenger cars is divided among private and corporate customers in the Netherlands. According to the VNA $(2012)^3$, the current passenger car fleet in the Netherlands exists of about 7,8 million cars. In addition, there are 851.000 commercial light vehicles. The passenger car market is distinguished in (6,9 million) private and (0,898 million) company cars, from which a part of the private cars is used for business purposes. About 326.000 private cars are used over 50% for business purposes. The other part (6,6 million) is less than 50% used for business purposes. Many of these private vehicles are purchased with some form of financing. They are financed through financial products such as personal loans, auto loans and revolving credit.



Figure 1: Private and corporate passenger car fleet distribution in the Netherlands in 2012 (VNA, 2012)⁴

The current business of BFM is focused on providing financings to car dealer and universal enterprises that are mainly used for operational lease purposes to business end customers. According to VNA (2012), the current business car market exists of 898.000 passenger cars and 851.000 light commercial vehicles, from which 557.000 passenger cars and 136.160 light commercial vehicles are registered as leased vehicles. The distribution between various types of lease is displayed in Table 1. These figures display that most part of the lease market is allocated to operational lease. On the one hand, there is an increase in the quantities of net operational lease and financial lease contracts. On the other hand, there is a decrease in the number of open end operational lease contracts. Other shifts are negligible low.

³ Vereniging van Nederlandse Autoleasemaatschappijen is an inter-branche organisation of leasing companies.

² For more details on the organisation structure we refer to Appendix 1.

⁴ The light commercial vehicle market is not included in the picture and exists of 851.000 vehicles. The research of VNA did not address the amount or percentage of other financings, such as car loans.



passanger car						
Dutch lease contracts	2012	2011	shifts	2012	2011	shifts
Operational lease closed end	387.400	375.600	3,2%	72.800	74.700	-1,7%
Operational lease open end	48.000	54.600	-12,1%	12.100	13.000	-1,6%
Financial lease	33.200	30.700	8,0%	21.800	21.300	2,6%
Carfleet	25.200	25.500	-1,4%	11.100	11.700	-3,7%
Net operational lease	13.900	12.300	12,5%	4.300	4.500	2,3%
Total	507.800	498.800	1,8%	122.200	125.100	-4,7%

Table 1: Dutch business lease contracts (in numbers) in the Netherlands, 2012 and 2011⁵

The usual car sales chain, as displayed in Figure 2, is as follows: *Manufacturer* \rightarrow *Importer* \rightarrow *BOVAG-enterprise (car company)* \rightarrow *Business or private customers.*



Figure 2: The car sales and car financing market chain

In many cases, customers will close a financial agreement (in the form of loans, lease and hire), in order to pay or finance the car. Generally, there are 3 possibilities: (i) the end customer arranges a financing on its own (for example with an ordinary bank loan or his private savings); (ii) the end customer arranges a financing with the car company (especially at leasing companies); (iii) the end customers arranges a financing with a third party via the car company. In the latter case (as displayed in Figure 2), the financing is typically arranged with the intervention of an intermediary, which acts as a middleman or intermediary between lenders and end customers. Such lenders are ordinary banks, captives (bank subsidiaries of major vehicle manufacturers and importers) and independent leasing companies. BVG (with BFD and BF) is acting as an intermediary between lenders and end customers through the BOVAG enterprises with the objective to arrange financing between both parties

⁵ Figures are based on the VNA affiliated members only. They represent about 90% of the total lease market. For a reminder of the differences between the lease contract types, we refer to Appendix 2.



(displayed in Figure 2). They operate from the point of sale at BOVAG members and use their collaborations with (ordinary) banks and captives in order to be intermediary in finance and insurance for customers. Thereby, they receive a provision from their lending partner.

A number of factors ensure that the strength of the collective of BOVAG affiliated enterprises is shifting away towards the major independent manufactures/ importers and their banks/ captives. The *way of thinking of end customers* is undergoing a change from owning a car towards using a car. Figure 3 shows the development of the car passenger lease market in the Netherlands⁶. After the crisis dip in 2009 and 2010, the number of passenger car leases has continued the upward trend as before the crisis. In addition, current developments show that there is an increasing demand for private lease constructions and lease products under the business market⁷. Customers are getting more cost conscious and interested in a *full service product* in which they finance their car with additional services, such as maintenance, insurance and a guaranteed residual value for a fixed amount per period⁸. Depending on the agreements, they know in advance what they can expect in terms of payments and services. Additional for business, this can ensure favourable accounting benefits. By financing cars instead of buying cars, it is possible for enterprises to keep scarce capital available for core businesses.



Figure 3: Development of passenger car leases in the Dutch market from 2003-2012 (VNA, 2012).

Most BOVAG enterprises that operate or wishes to operate in the car financing market are not wealthy enough or *unable to obtain (cost-effective) funding* through traditional bank funding on their own. They may not possess sufficient working capital. Above that, the costs of funding, managing and controlling their financing operations are often too high to operate in a profitable way. Consequently, most of the BOVAG enterprises are *unable to offer a (profitable) full service product*. On the other hand, the majority of banks and captives are (partly) owned by manufacturers or importers, which enables them to deliver the car <u>and</u> operate as a lender through their own banks and captives. Moreover, there is a development going on in which manufactures (and importers) and their captives apply directly to the end customer (displayed by the red dots line in Figure 2). Importers and manufactures can sell off their cars and funding directly to end customers, without the intervention of a BOVAG enterprise.

The change in mind-set of end customers will lead to more demand for car related financial products and full service products. But as already mentioned, most BOVAG enterprises are not in possession of

⁶ Again, figures are based on the VNA affiliated members only. They represent about 90% of the total lease market.

⁷ This is stated in the Bovemij year report of 2012.

⁸ This is of course depending on the type of contract.



sufficient capital to provide full service products and often do not have the capacity to manage such products. Thereby, they are not able to come along with the changing market and they may lose a part of the customer base or market share that shifts to a full service product. In order to prevent that, and to ensure the continuity of BOVAG enterprises, it is important that they are able to offer full service products.

Confidential

⁹ Care4lease is a lease management and control company. They perform the complete control of leasing fleets of universal or dealer leasing companies and mediate in the car financings and insurance components.



Confidential

One of the considerations for the capital shortage problem is the introduction of a securitization funding strategy, by which the funding need of BOVAG members can be moved to the capital market. Securitization of the asset portfolio of lease contracts of BFM has the potential to raise capital from capital markets. Acting as a major joint player and centrally organizing the financing need of BOVAG members, ensure a large financing demand based on a diversified customer base. In addition, BVG enjoys the advantage of being a subsidiary of the BOVAG, giving them good insight in the operating market and customers. The expectation is that securitization is a proper funding solution for the finance company.

However, the introduction of securitization is not a guarantee for raising capital in a cost-effective way. Securitization transactions are often very specific for different enterprises and asset types, which makes it a complex technique to raise capital. It is more complicated than traditional financial products like equity, bonds and loans. Moreover, the cost-effectiveness of a securitization is depending on several risks and factors that influence the quality, costs and yield of a securitization transaction. For new and (fast) growing enterprises it can be a big challenge to conduct a cost-effective securitization program. The complexity of securitization makes it difficult to say in advance whether it is a cost-effective way of raising capital.

1.2 Research objective & problem statement

In this research, we try to find out how securitization can be used and organized as a funding solution for the finance company. This brings us to the following *two* research objectives:

¹⁰ The financial status of BFM is displayed in Appendix 3

⁶ Master Thesis Vincent Bakker 21-03-2014



- The *first* objective is to investigate how the securitization of car financing contracts can be organized as a suitable funding strategy in order to raise capital in a cost-effective way.
- > The *second* objective is to determine what adjustments need to be made to facilitate the introduction of a securitization funding strategy.

We have defined the following sub goals to support the research objectives:

- a) Understand the technique of securitization.
- b) Understand how securitization can be applied to car financing assets.
- c) Understand the influence of key rating drivers on the cost-effectiveness of a car financing securitization program.

The following problem statement is used to accomplish both objectives: *How can securitization of car financing contracts be organized in order to raise capital in a cost-effective way and what adjustments should be made to facilitate the introduction of a securitization funding strategy?*

By answering the central research question it is possible to draw conclusions and recommendations in which manner a securitization program can be realized as a cost-effective source of (external) funding. The outcome of the study should result in an advice for the Bovemij Financieringsmaatschappij. This advice should consist of the following deliverables:

- In the first place, this study should provide clarity about the opportunities to perform a feasible securitisation program in order to attract cost-effective capital. It should result in a well-founded advice in which manner securitization can be structured in the most suitable way for BFM.
- In the second place, this study should deliver an advice what adjustments are necessary to facilitate the introduction and quality of a securitization transaction.

1.2.1 Scope

This study will focus on the question how capital can be raised through securitization. The duration of this thesis consist of a pre-research and 6 months of investigation and is delimited for time purposes in order to provide a more detailed study on a specific subject.

Confidential

UNIVERSITEIT TWENTE.



Confidential

The research is not solely based on academic sources, but will also use information of a selection of publications of rating agencies and opinions of experts in the field of securitization. In particular, rating agencies play a key role in securitization.

1.3 Methodology & approach

In order to obtain enough knowledge to formulate a substantiated answer to the central research question, we have divided the central question into *four research questions*. In our opinion it should be possible to answer the problem statement by solving the following research questions:

1. What is securitization?

Question 1 contributes to the objective of understanding the technique of securitization and the main fundamentals of a securitization program (*sub goal a*). This question broadens our knowledge on securitization funding solutions. We conduct a literature research¹¹ in the fields of structured finance and securitization to define the technique of securitization and determine how a securitization transaction works. We examine and compare (pre and post crisis) papers of several authors on the fundamentals of securitization, such as process, transaction participants and motivation. The following sub questions will support us to formulate an answer to research question 1:

- a) What are the fundamentals of securitization?
- b) How does securitization work?
- *c)* What are the motivations behind securitization?
- 2. What are the potential car financing assets to be securitized and what are the characteristics of these assets?

Question 2 is used to understand how securitization can be applied to the potential asset portfolio (*sub goal b*). We determine the type of assets of the finance company that are eligible for securitization purposes. We do that by analysing documents & data related to the current portfolio and conducting interviews with employees about the business processes. Moreover, we try to clarify the expected development of the portfolio. For the determination of the strategy, it is important to know what the

¹¹ The master thesis syllabus (2012) (University of Twente, Industrial Engineering and Management) is used as a guideline for the literature research.



expected growth and expansion will be in the future. The following sub questions will support us to formulate an answer to research question 2:

- a) What different kind of financial products are offered by BFM/C4L?
- b) How are the contracts structured?
- c) How will the portfolio develop?
- d) What are the requirements for car financing asset securitization?
- 3. Which ABS structure is most suitable to BFM for the organization of the securitization of the asset portfolio of the finance company?

Question 3 is used to understand how securitization can be applied to the potential asset portfolio (*sub goal b*). First, we examine different kinds of securitization structures discussed in the literature. In particular, the work of Sabarwal, (2006); and Tavakoli (2008) discuss a number of structures that have the potential to be suitable for the car financing asset portfolio of the finance company. Moreover, we try to determine the main differences between these potential structures. Within the literature, we could not find an assessment model to evaluate different structures. Only a couple of criteria are mentioned by some authors. Therefore, we try to develop an assessment model in order to determine which structure is the most suitable to BFM. The assessment is based on a number of criteria derived from the work of Fabozzi & Choudhry (2004); Fitch (2001); Sabarwal (2006); and Tavakoli (2008). The following sub questions will support us to formulate an answer to research question 3:

- a) What are the common structures of (true sale) ABS?
- b) What are the differences between these structures?
- c) How to assess which of the structures best suits to BFM?
- 4. What are the key rating drivers that influence the cost-effectiveness of the car financing securitization program and how do you control them?

Question 4 is used to understand the influence of key rating drivers on the cost-effectiveness of a securitization program (*sub goal c*). We identify and quantify the key rating drivers that influence the cost-effectiveness of a securitization program and clarify the important role of rating agencies in securitization programs. Rating agencies have a key role in determining the credit rating and thus have a large impact on the pricing and cost-effectiveness of the securitization. We investigate the approaches and requirements of S&P, Fitch and Moody's to determine the decisive risks and factors that determine the credit rating, pricing & cost-effectiveness. Additional literature research enables us to quantify these risks. We try to create a framework of the key rating drivers, to get control of the influencing factors and indicators on the cost-effectiveness of the securitization program. Therewith, a clear overview of the most important organizational aspects of securitization can be established for the case of BFM. The following questions will support us to formulate an answer to research question 4:

- a) What are the requirements for an efficient securitization?
- b) What are the key rating drivers (according to rating agencies) involved in a car related securitization?
- c) How to quantify and control the key rating drivers?

1.4 Report structure

This report comprises six chapters. In chapter one, we have started with a description of the subject of this master thesis. We have explained the background of the research topic, which is particularly



important to understand the relevance of this study. Furthermore, we have defined the goal, problem statement and methodology of the study.

In the *second chapter*, we will define the technique of securitization and explain how securitization works. We will regularly refer to the case of BFM. This chapter enables us to answer the *first research question* and may already introduce some of the topics treated by other research question.

In the *third chapter*, we will determine what type of assets or receivables of the finance company are eligible for securitization purposes. We will discuss the several contract types and their structures. Moreover, we focus on the expected growth and expansion of the asset portfolio of the finance company. This enables us to answer *research question two*.

In the *fourth chapter*, we will discuss the securitization structures that have the potential to be suitable for the car financing asset portfolio. We explain them one by one and determine the main differences between the structures. Based on a number of criteria, we are able to determine the extent to which the structures best fit to the motivation and needs of the finance company. This chapter enables us to answer *research question three*.

In the *fifth chapter*, we create a framework of key rating drivers and rating drivers in order to get control of the influencing factors and indicators on the cost-effectiveness of the securitization transaction. We identify and quantify the key rating drivers that influence the cost-effectiveness of a securitization program. It focuses on the main risks identified by the rating agencies. This provides insight into key organization aspects of securitization for the case of BFM and enables us to answer *research question four*.

In the final chapter, we try to give a substantiated answer to the central research question. This chapter contains the conclusions and recommendations of the research. We describe the necessary changes that will facilitate the introduction of a securitization funding strategy. We summarize our research findings and reflect to the strong and weak points of our findings, methodology and approach in a discussion.



Chapter 2: Securitization

The objective of this chapter is to gain knowledge on the topic of securitization for BFM, by defining and understanding the technique of securitization and its fundamentals. This chapter serves as a general introduction to the topic of securitization, in order to broaden the knowledge of BFM. In the remaining chapters, we will frequently refer to specific sections and terms in this chapter.

Securitization is a structured finance technique that has the potential to raise cost-effective capital from capital markets by selling securities that are backed by assets. Several types of asset portfolios can be securitized in different ways, depending on the properties of the assets and the wishes of the originator (executor of the securitization). The technique is introduced in the 1970s on the U.S. mortgage market, where a mixture of mortgages was pooled and converted into tradable securities with mortgages as collateral. Later on, securitization was used to securitize non-mortgage assets, like car loans, student loans, credit cards receivables and equipment leases (Carey & Stulz, 2007). The first securitization transaction in the Netherlands was in 1996 (DNB, 2005).

Fabozzi & Choudhry (2004); and Vink & Thibault (2009) report that the securitization market is divided into three main categories: Asset-Backed Securities (ABS), Mortgage-Backed Securities (MBS) and Collateralized Debt Obligations (CDO). ABS are backed by a securitized pool of consumer or commercial related assets of a certain type. Examples of assets in ABS are consumer loans, car loans, car leases and credit cards receivables (Vink & Thibault, 2009). MBS are securities which are exclusively backed by credit or loans from mortgages (Martínez-Solano, Yagüe-Guirao, & López-Martínez, 2009). This main type of securitization is often divided into Commercial Mortgage Backed Securities (CMBS) and Residential Mortgages Backed Securities (RMBS). CMBS are securitizations of commercial real estate mortgages. RMBS are securitization of residential mortgages. A CDO is a less standardised form of securitization. CDOs are backed by a portfolio of assets that may exist of a portfolio of ABS, bonds, business loans, securitized receivables, and tranches of other CDOs or similar financial assets (Tavakoli, 2008).

In this research we are focussed on ABS transaction, because the car financing related assets (car loans and leases) of BFM fall within this category. However, ABS can be subdivided into several variants with specific characteristics. The choice of an ABS structure is depending on the asset type and need & motivation of BFM to use it a securitization funding strategy. In Chapter 4, we discuss various ABS structures that are suitable for the asset portfolio and incentives of BFM.

Within this chapter we try to define the word securitization and answer research question (1): What is securitization? We start with a comparison of several (pre and post crisis) literature studies and books to define the technique of securitization. Then, we explain why companies use securitization and why it is interesting for investors to invest in ABS. In addition, we will highlight the negative side of securitization, which was brought to light during the emergence of the crisis. Thereafter, we define how a conventional securitization process works and what participants are involved in the process. Next, we describe the main fundamentals of securitization. We determine the role of what is called a special purpose vehicle (SPV), credit enhancement and credit ratings. During this chapter, we try to link the theoretical concepts to the context of this research.

2.1 Definition of securitization

Despite the fact that many authors in various studies and books have paid attention to the concept of securitization, there is no general accepted definition of securitization. Nevertheless, some of them have attempted to define securitization. Mansini & Sparanza (2002) have defined securitization as:



"A financial operation which allows financial institutions to transform unmarketable financial assets, such as mortgage assets, or lease contracts, into marketable securities."

This definition emphasizes on the important property of securitization of transforming unmarketable assets into marketable securities. In other words, illiquid assets are converted into liquid assets. Fabozzi, Davis, & Choudhry (2006) confirmed that the conversion of not readily marketable assets into tradable securities belongs in the definition of securitization. In addition, they say that securitization can be applied to financial institutions, such as banks, insurance & finance companies and nonfinancial corporations. However, the definition above is in our opinion insufficient in the asset qualifications and the way of transformation. Jobst (2006) added some more details to the definition of securitization:

"Securitization converts regular and classifiable cash flows from a diversified portfolio of illiquid present or future receivables of varying maturity and quality into negotiable capital market paper issued by either the originator of the securitised assets/receivables or a non-recourse, single-asset finance company ("special-purpose vehicle" (SPV))."

This definition is more detailed in defining what actually is converted. It creates a distinction between different types of assets that may or may not qualify for securitization. Assets should meet the requirement of generating a regular and classifiable cash flow.

While the definition of Jobst (2006) is very clear formulated, it is not entirely perfect. A property of the securitization process that is missing in the definition above is that the repayment of the issued securities is not depending on the financial capacity of the originator, but solely based on the cash flow generated by the assets (PWC, 2006; Vink, 2009; and Vink & Thibeault, 2009). Based on definitions and characteristics in the literature (Fabozzi, Davis, & Choudhry, 2006; Jobst, 2005; Mansini & Sparanza, 2002; Vink, 2009; and Vink & Thibeault, 2009), securitization is clearly defined for the remainder of this report as:

A structured finance technique in which a collection of unmarketable, regular and predictable cash flow generating assets that may vary in maturity and quality, are converted into marketable securities. These securities are issued by a legal entity (SPV) and sold to (institutional) investors, who are repaid with interest and principal payments generated by the asset portfolio.

2.2 Motivation for securitization

Securitization can offer several benefits to the originator or executor and investors of the securitization. Prior to the process of securitization, there should be a reason for starting a securitization. The main motivations for securitizing a pool of assets are summarized in this section. We have separated the motivations from originator and investor perspectives.

2.2.1 General motivation of originators

According to Fabozzi & Kothari (2007); Jobst (2005); and Litwin & Levy (2000) the frequently mentioned key motivations for the originator of securitization of assets are mentioned below (several terms are explained further in this section):

• Raising capital by an alternative source of funding. Under circumstances it could be possible that the originator is unable to acquire funding through other funding alternatives, due to financial stress or other reasons. Securitization could be a potential outcome to attract investors and raise capital, because of the independent structure of the securitization process. Originators can raise capital from capital markets as alternative (cheaper) source of funding.

- The potential for reducing funding costs. The funding costs are depending on the assigned credit rating of the securitization transaction that is achieved by a credit rating agency. Securitization enables the originator to sell off their assets to a legal entity (Special Purpose Vehicle). The property of the entity is that it is independent of the originator. This enables them to achieve a higher credit rating on the 'isolated' asset portfolio than the originating company could achieve on its "whole" business, which results in lower funding interest rates for the specific asset pool because of the higher credit rating.
- Achieving off balance sheet funding. Many institutions use the technique of securitization for relief of regulatory capital. Securitization enables them to remove assets from their balance sheet and fund them off balance (on the balance of the special purpose vehicle). It enhances key financial ratios, like return on equity, due to the reduction of the amount of on-balance leverage. Especially banks use the technique of securitization to increase funding possibilities. However, full capital relief is (most of the time) not achieved, because of the requirements of credit enhancement and retained interest. Furthermore, analysts do not only focus on balance leverage, but also investigate the off balance positions.
- **Risk transfer: Managing corporate risk.** By using the technique of securitization it is possible to sell assets to an intermediate entity or special purpose vehicle. This ensures that the originating company is no longer exposed to the total credit risk and interest rate risk of the pooled assets. Investors of the securities issued by the SPV bear the risk of the asset portfolio.

2.2.2 Motivation of BFM

Confidential

2.2.3 General motivation of investors

For investors, securitization is an investment tool that (has the potential to) provide fixed interest income (BIS, 2011; and Feng & Long, 2010). The main reasons for investors to invest in ABS are summarized as follows:

- **Tailor-made risk/reward levels**. Investing in an asset-backed security gives investors the opportunity to assess the level of risk against the potential reward. They can determine the size and risk level of their investment, due to various tranches that differ in size, risk and return profile (explained in more detail in Section 2.6.1).
- The potential for diversifying investment sources. It enables investors to diversify their risk exposure. It enables them to invest in a pool of assets from the originating company instead of investing in the company itself.
- Access to investment sectors which are otherwise not possible for them to invest in. Securitization allows investors to invest in assets pools which are normally not available to them.

• **Clarity about risk profile through credit rating.** The securitization structure is extensively analysed by rating agency. They analyse the whole structure of securitization from collateral to the origination company. Consequently, the investor can rely on the credit rating from an agency as a fundament for his investment.

2.2.4 Drawbacks

Despite all outlined benefits, securitization transactions do not guarantee positive outcomes. The transaction could be a rather complex funding structure. Securitization has been designated as one of the causes of the credit crisis in 2007. One of the reasons is that the expected losses have been calculated inaccurately by rating agencies. Insufficient control & understandability of the quality of the underlying assets and the absence of data on the performance of the underlying asset portfolios have resulted in incorrect credit ratings (Vink, 2009). The ratings were based on complex models, in which the parameters were highly sensitive to small changes. Wrong estimation techniques and assumptions had a major impact on performance of a securitization transaction and were misleading with respect to the impact of realized defaults (Segoviano, Jones, Lindner, & Blankenheim, 2013).

Besides that, securitization was often used as an "originate-and-distribute" business model. The originator was more focused on originating assets and selling them into a securitization transaction. They did not bear the credit risk of borrower defaults, but often did have the control of the securitization transaction. Their focus on originating more assets for securitization purposes has led to deterioration in credit quality of the underlying assets (Malamud, Rui, & Whinston, 2012). Moreover, the credit crisis has revealed several other shortcomings of securitization (see also Caprio, Demigrüc-Kunt, & Kane, 2008; and Segoviano, Jones, Lindner, & Blankenheim, 2013). Therefore, it is important to weigh the advantages against the complexity of conducting a securitization.

2.3 Process of securitization

In practice, securitization transactions are structured according to the needs and purposes of the originator. The originator is the executor or party with securitization needs. The main motivation to introduce a securitization funding strategy for BFM is to raise capital. This can be achieved by a *true sale* ABS transaction. A true sale is a sale transaction in which the originator is remoted from the asset portfolio in terms of economic and legal base (Sullivan, 1998). The literature is very consistent in how a typical true sale ABS is structured. The structure described here serves as the foundation for structures of true sale securitizations and provides insight into the mechanism of securitization. Based on the studies from Carey & Stulz (2007); Fabozzi & Choudhry (2004); Fabozzi & Kothari (2007); Feng & Long (2010); Jobst (2005); Klee & Butler (2002); and Vink (2009), the process of a typical true sale securitization should involve the following steps:

- *Step 1*: In the first step, the originator (BFM) identifies a collection of unmarketable, regular and predictable cash flow generating assets that qualify for securitization purposes and pool them together into a portfolio, the "portfolio of assets".
- *Step 2*: In the second step, the originator sells the portfolio of assets as a true sale to the issuer of the securitization, which is called a Special Purpose Vehicle (SPV) or trust which is exclusively set up for securitization purposes by the originator. The true sale of the originator's asset portfolio will have an effect on the balance of the originating enterprise and the SPV. This ensures that the assets are isolated from the firms' balance. It is thereby possible to determine a credit rating that is solely based on the isolated portfolio. Section 2.4 covers the legal structure of an SPV in more detail. The proceeds from the true sale will increase the capital of the originator.

UNIVERSITEIT TWENTE.

Bovenij

- Step 3: In the third step, the SPV converts the asset portfolio into a set of securities in order to finance the true sale as cheap as possible. The securities can be divided into tranches with different risk and yield profiles. This ensures that different credit ratings can be assigned to different parts of the portfolio based on the risk and yield profiles. The allocation among different tranches is called subordination. Subordination divides the securities into different tranches, with specific risk profiles from very low risky investment (senior notes) to medium risky investments (mezzanine notes) and high risky investments (junior/ equity notes). It can increase the credit worthiness of upper tranches. This is explained in more detail in Section 2.6.
- Step 4: In the fourth step, the quality of the portfolio of assets is examined by one or more rating agencies to achieve a credit rating for the different tranches, which improves the marketability of the securities. The effect of a default in the portfolio can be negligible through diversification in the portfolio. On top of that, the portfolio is isolated from the originators balance and bankruptcy risk of the originator. Therefore, a large part of the securities can be rated with the highest credit rating. Higher credit ratings have the possibility to provide cheaper the funding. In most cases, it is for investors impossible or too time-consuming to analyse and evaluate the underlying assets portfolio. A credit rating facilitates the consideration to invest in the portfolio. Later on, we will discuss the role of the rating agency and their credit rating.
- Step 5: In the fifth step, the securities (issued by the SPV) are sold to (institutional) investors. Due to clear risk profiles and credit ratings, it is possible for investors to invest in securities with an appropriate risk and yield profile. The proceeds from the sale of notes, received from investors, are transferred through the SPV and used to pay for the true sale transaction with the originator. The issuer uses the proceeds to purchase the portfolio of assets from the originator. Investors will receive interest and principal payments depending on the performance of the securitized asset portfolio.
- *Step 6*: In the sixth step, the securitization process will be serviced and controlled. Normally, the originator of the securitization is also the servicer of the asset portfolio and controls the transfer of cash flows, but it can also be serviced and controlled by third parties.

In spite of the fact that the steps are numbered in the most logical order, there is no mandatory order of steps. In addition, the number of steps and extent of each step can differ from another. The true sale securitization process is summarized in Figure 5. The described steps of the securitization process should not strictly be followed in this order. In fact, several steps can and will be undertaken simultaneously.

Bovenj



Figure 5: structure, flows and roles of a typical true sale securitization process.

The securitization transaction involves a number of roles performed by various transaction participants. A number of these roles have already been mentioned above and in Figure 5. The precise number of roles is depending on the deal-specific securitization structure. Based on BIS (2009); CEBS (2010); PWC (2006); and Telpner (2003), we have summarized a list of roles involved in a typical securitization process in Table 2. However, depending on the deal-specific securitization structure, it may occur that there are additional roles and transaction participants involved.

	1
Role in the securitization process	Description of the role
Originator	The role of the originators is to create the assets to be securitized or owner of already created assets to be securitized. It is the party with the incentive to perform a securitization transaction. They sell the assets to the securitization entity (SPV). Originators are sometimes also mentioned as the seller or executor of the securitization process.
Sponsor	The sponsor is a credit institution other than the originator that establishes and manages a securitization scheme or asset-backed commercial paper programme on behalf of third parties. This is sometime also called the program manager or program administrator
Obligor	The obligor is a party or end user of the underlying assets, which are ultimately responsible for the payment stream. They are responsible for the cash flow stream and performance of the portfolio.
Issuer	The role of the issuer is buying and holding the asset portfolio from the originator and issuing securities. The issuer is in most cases structured as an SPV. This entity enables the isolation of the asset portfolio from the originator. Because the issuer has a pivotal role in the securitization



	structure, it is discussed in more detail in Section 2.4.
(Institutional) Investor	The role of the investor is to buy the securities and bear the risks of the portfolio losses. Part of the securities can be taken back by the originator and is called retained interest in the securitization.
Rating agency	An independent third party will evaluate the securitization structure, quality and rating agencies assign credit ratings to the securities. This enables investors to invest in a suitable risk profile, without a thorough analysis of the asset portfolio.
Servicer	The role of the servicer is to control and manage the asset pool and day- to-day operations, collecting the principal and interest payments from obligors. In most cases, the originator acts as the servicer of the securitization. The servicer is sometimes mentioned as the administrator of the SPV.
Credit enhancement (CE) provider	The role of a credit enhancement provider is to provide guarantees and improvements for the credit risk in the portfolio. It can be used to cover losses in the asset portfolio to repay interest payments and principal to note holders.
Liquidity provider	The liquidity provider supports in mismatches between collected cash flows from the asset portfolio and the distributed cash flow under the structured securities. Moreover, a liquidity provider is used in asset-backed commercial paper structures to support asset liability mismatch of medium to long term assets and short term commercial paper (this is explained in more detail in Section 4.3).
Underwriter	An investment bank or third party involved in structuring, underwriting and marketing of the securities that is responsible for attracting potential investors and the sale of securities.
Trustee	Third party that oversees the proper functioning of the SPV. This is often an unaffiliated party that is the owner of the SPV.
Paying agent	A bank that arranges the settlement of payments on securities to investors and provides cash and banking administration services for the issuer.
Legal, tax and accounting advisers	Parties that provide assistance in legal, tax and accounting structures through the process of securitization from third parties
Swap counterparty	The swap counterparty is a third party which is involved in the swap transaction. Their role is to hedge the issuer against interest rate risk. An interest rate swap is used to cover interest losses, that arise when floating (fixed) rates are received and fixed (floating) rates are distributed to investors.

 Table 2: Roles in a securitization process.

The roles are performed by transaction participants who are chosen by the originator or sponsor of the of the securitization transaction. Some roles may be carried out by one and the same transaction participant. For example, the BFM will be the originator of the securitization, but may also be the servicer of the asset portfolio hold by the SPV, the CE provider, the liquidity provider, the investor, and the swap counterparty. The sponsor may also be liquidity provider, underwriter, paying agent, servicer and swap counterparty. Moreover, it is also possible that multiple parties have the same role in the securitization process.

2.3.1 Balance sheet consequences

The following example explains the working and balance sheet effects of a (true sale) securitization. The example is based on the work of Gangwani (1998); and Kane (1997). A fictive finance company ABC invests parts of its money in car leases with equity and unsecured debt (see Figure 6). We



assume that the company has invested $\notin 1000$ in lease contracts and no cash is available (liquid assets). Their liabilities consist of $\notin 200$ equity and $\notin 800$ debt. The current debt capital capacity is $\notin 800$. Their liquid assets are dried up, meaning that there is a need for new cash in order to continue their funding businesses.

Initial situation				
	Assets		Lia	bilities
Liquid assets	€ -	Equity	€	200
Lease contracts	€ 1.000	Debt	€	800
	€ 1.000		€	1.000

Figure 6: Initial balance sheet of ABC (example)

There are multiple ways to increase capital for the company in order to continue their funding businesses. Normally, debt is cheaper than equity and it is therefore logical to look at the possibilities of increasing debt first. One of the easiest ways to raise debt capital is through an unsecured bank loan. A bank is able to offer an unsecured loan to ABC, with a rate based on the financial status (credit rating of the company) and performance of its business. However, this may be an expensive form of borrowing money and is often limited to certain leverage ratios. Moreover, the interest rate asked by the bank or funder will increase, because the higher leverage ratio. An alternative way of funding is to use the current assets as collateral. In that case, a selected part of the assets can be pledged against the loan and is called secured debt (not a true sale, assets stay on-balance). This enables ABC to get a slightly better interest rate on its debts than in the case with unsecured debt. The balance sheet effects of secured debt are shown in Figure 7.

Initial situation					Situation with secured	debt			
	Assets		Liab	ilities		Assets		Lia	bilities
Liquid assets	€ -	Equity	€	200	Liquid assets	€ 500	Equity	€	200
Lease contracts	€ 1.000	Debt	€	800	lease contracts	€ 1.000	Unsecured debt	€	800
							Secured debt	€	500
	€ 1.000		€	1.000		€ 1.500		€	1.500

Figure 7: Balance sheet effects of entering a secured loan transaction (example).

Besides the increase in liquid assets of \notin 500 cash, there is also an increase in debt, where a secured loan of \notin 500 is added to the company. Debt-equity ratio will increase from 4.0(=800/200) to 7.5(=1500/200). The increased leverage will lead to a higher interest rate asked by the bank or funder.

A next, and potentially better alternative, could be introducing a securitization program. In the securitization transaction the lease assets will be funded off balance. The bundle of illiquid assets (\notin 500 of lease contracts), identified as described in step 1 of the securitization process, is sold to an SPV and converted to securities. The proceeds from the sale of the assets are transferred to ABC (+ \notin 500 liquid assets). The SPV serves as a pass-through and is the buyer and owner of the bundle of illiquid assets, financed by the issued securities. The balance sheet effect of the securitization transaction is illustrated in Figure 8. This enables ABC to fund a part of its assets off balance in the SPV.



Initial situation					Situation with securitize	ntion				
	Assets		Lia	bilities		Ass	ets	Li	iab	oilities
Liquid assets	€ -	Equity	€	200	Liquid assets	€	500	Equity 🖸	£	200
Lease contracts	€ 1.000	Debt	€	800	Lease contracts	€	500	Debt 🖸	E	800
	€ 1.000		€	1.000		€ 1	1.000		E	1.000
					SPV's balance					
						Ass	ets	Li	iab	oilities
					Bundel of	€	500	Senior securities 🕯	£	400
					lease contracts			Mezzanine secur 🖸	£	50
								Equity securities	£	50
						€	500		£	500

Figure 8: Balance sheet effects of introducing a securitization transaction for ABC (example).

If we compare the securitization solution with the secured debt solution, we see that securitization provides new capital without changing the total balance sheet value. Thence, the debt –equity ratio of ABC will not change (800/200=4). Moreover, a large part of the current debt capital position can be redeemed, which will decrease the total balance sheet value and debt-equity ratio of ABC. Additionally, securitization has the potential to obtain lower interest expenses, because the interest rate is based on the isolated asset portfolio. This results in more costs savings on interest charges. However, securitization must contain a certain volume in order to realize a cheaper way of raising capital compared to secured debt.

It may be that it is not the incentive to perform a securitization with the objective of raising capital, but reducing credit risks of a specific portfolio of (financial) assets. In that case, it is also possible to conduct a synthetic securitization transaction instead of a true sale transaction. This type of securitization differs from a true sale transaction in terms of transferring the ownership of the assets. A synthetic structure is focussed on transferring the credit risk, instead of selling the assets itself (Fabozzi & Choudhry, 2004). This is done through entering into a credit default swap (CDS) with an SPV. In case of a default in the asset portfolio, the SPV will guarantee the losses experienced by originator. The portfolio of assets is not sold, and thus not raises capital for the originator. So, synthetic structures can be used for the reduction of credit risk exposures. However, this structure does not fit the main motivation of BFM to obtain additional capital. We refer to Appendix 4 for a more detailed explanation about the synthetic structure.

2.4 Special purpose vehicle (SPV)

A usual step in the process of securitization is the creation of a legal entity or a trust, often called a special purpose vehicle (SPV). Sometimes it is referred as a special purpose entity (SPE), special purpose trust (SPT) or special purpose company (SPC). For the remainder of this thesis we will classify it as an SPV. An SPV serves as a pass-through vehicle between originator and investors for the transformation of illiquid assets into liquid securities and must protect investors in case of bankruptcy events of the asset originator (Klee & Butler, 2002). Gorton & Souleles (2007, p. 555) defined an SPV as: "a legal entity created by a firm (known as the sponsor or originator) by transferring assets or receivables to the SPV, to carry out some specific purpose or circumscribed activity, or a series of such transactions". Others, such as BIS (2009); and Vink & Thibeault (2010), have defined it in the same manner without too many varying views as an entity with some specific purposes that is (usually) created by a financial institution to purchase and facilitate the sale of assets.

An SPV may take the legal form of a limited liability company (*besloten vennootschap met beperkte aansprakelijkheid*), a trust (*stichting*), or a corporation (Gorton & Souleles, 2003; Johnson & MacIvor, 2012; and Klee & Butler, 2002). The choice of the legal form is depending on tax and accounting issues. In most Dutch securitizations, the SPV takes the legal form of a trust or limited liability company. The SPV may be a subsidiary of the originator or sponsor, or an orphan company¹², but may not be consolidated with the originator/sponsor for tax, accounting and legal purposes. SPV's are usually tax neutral structured, which means that profits of SPV's are not taxed (Gourton & Souleles, 2003). However, when tax neutrality SPV is not achieved, it will lead to double taxation for the originator of the SPV and most likely will make the securitization transaction unprofitable.

The SPV should be designed *bankruptcy remote* from the originator of the assets and any other creditor (Klee, & Butler, 2002). The bankruptcy remote feature is used to separate the SPV entity from the originating or sponsoring company in case they enter into a bankruptcy procedure (Tavakoli, 2008). This ensures that creditors can have no possible claim against the SPV or its assets, in case of bankruptcy of the originating company, due to the isolation of the asset portfolio from the originators balance sheet. This can be achieved by a true sale of the asset portfolio, in which the SPV becomes the legal owner of the assets. Due to the fact that the pool of assets is separated from the bankruptcy risk of the originator, it has the potential to ensure much lower funding costs (Fabozzi & Kothari, 2007; and Vink, 2009). The isolation of the assets enables the originator to increase the creditworthiness of the asset portfolio. Bankruptcy remote also means that the SPV itself can never become bankruptcy (Gorton & Souleles, 2003). To achieve that, the SPV structure is limited to several restrictions.

Other purposes of an SPV are holding the specified pool of assets and issuing securities against these assets, which can be divided into different risk tranches (Fabozzi & Choudhry, 2004). SPVs are (normally) managed by the servicer. The operational and business decisions of the SPV are made by the originator and servicer. Moreover, they have no physical location nor independent management or employees.

2.5 Credit rating

As already mentioned, rating agencies play a key role in the process of securitization. A credit rating is an assessment of the creditworthiness of an entity, debt instrument or other financial instrument to be financed in a normal way (Haan & Amtenbrink, 2011). One of the main reasons for the existence of credit ratings is enhancing the asymmetric information between sellers and buyers of debt instruments (DeMarzo, 2005). Asymmetric information between sellers and buyers is a problem in the sense that buyers face a lack of information and are not able to adequately assess the credit risk of certain debt instruments or companies. This ensures that no proper prices can be established between buyers and sellers. It is the job of rating agencies to bridge this gap and provide reliable standardized information and are not characterized by geographic factors nor the type of instruments rated, allowing investors to compare different types of investments based on credit ratings (Groeneveld, 2008). It is possible to sell securities against better (interest) prices by obtaining a rating for securities, because that makes them more marketable and comparable to other investments.

According to DNB, there are around 150 credit rating agencies, but 95% of the market share is represented by three major rating agencies: Fitch Ratings (Fitch), Moody's Investors Service

¹² An orphan company's shares are held by a trustee and is not beneficially owned by someone on a non-charitable bases (source: Investopedia)



(Moody's) and Standard & Poor's (S&P) (Haan & Amtenbrink, 2011). They use different scales of letters to determine the creditworthiness of debt instruments or companies. Roughly, a distinction is made between high grade and low grade investments. The highest rating is indicated by AAA (S&P, Fitch) or Aaa (Moody's). The lowest grade is indicated by D (Moody's, S&P) or DDD (Fitch). In spite of the fact that the agencies use different scales, they are comparable. Appendix 5 contains a comparative table of all investment grades of the three major rating agencies.

The three common rating agencies Fitch, Moody's and S&P have their own approaches for the analysis of car lease ABS (see Fitch, 2011; Moody's, 2011a; and S&P, 2011). They use various assessment approaches for different types of assets, because each type of assets has its own characteristics and risks that affect the creditworthiness of the securitization transaction. A credit rating in a securitization is primary based on credit risk. Credit risk is the risk that the obligor will default on its obligation to make periodically payments under an agreed contract, resulting in a loss (Doff, 2005; and S&P, 2011). The final determination of credit risk and related credit ratings is done by rating agencies.

Rating agencies quantify the exposure to credit risk in a car lease securitization by an estimation of the default and loss distributions. The models used by rating agencies are quantitative tools to determine the portfolio default and loss distribution (Fitch, 2006; and Groenveld, 2008). Despite the different approaches between agencies, they use their own Monte Carlo simulation models in order to determine a credit rating (Groenveld, 2008). They run their analysis on a wide pool of portfolio data which is an important input requirement to achieve a proper credit rating. A key input to predict the future pool performance is based on historical performance data. Rating agents try to estimate a full probability distribution of the expected credit loss of the pool and its variance, based on the estimates of the expected credit loss and its variance (Fitch, 2011; and Moody's, 2011a). It is important for originators to properly maintain all relevant data. In the remaining chapters, we try to determine the relevant data for the case of BFM. The key rating drivers for car financing securitizations are identified in Chapter 5.

2.6 Credit enhancement

In order to obtain greater certainty in the securitization transaction, it is possible to enhance the quality and performance of the securitization process. *Credit enhancement* (kredietondersteuning) is a method to achieve greater certainty and thus improve credit ratings from rating agencies by using features to mitigate several risks in the pool of assets. It is needed to protect investors against certain level of losses due to poor performance of the collateral (Gupta et al, 2007). Credit enhancement can be divided into internal and external credit enhancement. Internal credit enhancement is a form of enhancement in which the credit protection is obtained from collective generating cash flows (Gupta et al, 2007). Externally generated credit enhancement involves a third party which provides a form of guarantee in case of bad performance of the collateral against a certain fee (Gupta et al, 2007).

Credit enhancement can be used to improve the credit rating and lower interest rates on securities. However, any shape and extent of credit enhancement provides a certain cost. It is important to make an assessment on the benefits and costs of credit enhancement in order to achieve a high as possible credit rating against covered expenses in the securitization process (Fabozzi, Davis, & Choudhry, 2006). The alignment of the level of credit enhancement is generally done in consultation with the credit rating agency in order to obtain a preferable credit rating.

Below we describe the different internal and external forms of credit enhancement. The common types of internally generated credit enhancement are excess spread, subordination, reserve accounts and



overcollateralization. The common external types explained in this section are monoline insurance and letter of credits. Depending on the asset portfolio characteristics and securitization purposes, one or more of the following described credit enhancement methods can be used to improve credit ratings. However, specific securitization structures or characteristics can provide additional credit enhancement options or risk mitigations in order to improve the quality of the securitization.

2.6.1 Subordination

One of the regular methods to credit enhance the securitization process is *subordination*. As described in Section 2.3, the issued securities are often divided into different tranches which have their own risk and yield profile. Subordination is the process of dividing the total amount of assets into sub tranches. The structure of the subordination is crucial for the determination of the credit ratings of different tranches. Usually, there are a couple of tranches within a securitization structure, which are ranked from low to high risk level. A securitization can consist of many different subordination structures. Like others (Fabozzi, Davis, & Choudhry, 2006; and Vink, 2009), we assume that the conventional securitization structure is composed of three tranches: senior tranche, mezzanine tranche and equity tranche. In practice, higher or lower number of tranches can be used in order to obtain the desired risk profiles and credit ratings. Figure 9 displays how an asset pool is subordinated into three tranches.



Figure 9: Asset pool subordination structure

Every tranche has its own repayment prioritisation and volume. Depending on these variables, it is possible to determine a specific risk and yield profile of a particular tranche. In most cases of securitization, there is a prioritisation of repayment to investors, which is often referred to as the cash flow waterfall (Fabozzi & Choudhry, 2006). The highest ranked tranche (the senior tranche) is fully reimbursed before other tranches receive anything. Then, the second highest ranked tranche (mezzanine tranche) is fully reimbursed before other tranches receive anything, and so on. This means that the equity tranche is the most risky tranche, since the first losses are absorbed by this tranche.

Besides the prioritisation of repayments, volume is the other variable that determines the risk and yield profile of different tranches. Tranches can differ in volume or percentage of the total asset amount. In case of defaults in the underlying portfolio of assets, the first losses will be allocated to the equity tranche according to the prioritisation. If the losses exceed the value of the equity tranche, the losses will be allocated to the mezzanine tranche. Thus, the bigger the equity tranche, the more losses can be absorbed by the equity tranche before the mezzanine tranche is held liable for covering the losses and the less risky the mezzanine tranche, the more losses are absorbed by the mezzanine tranche, the more losses are absorbed by the senior tranche before the senior tranche is held liable for covering the losses and the less risky the senior tranche will be. By adjusting the prioritisation and volume of tranches it is possible to customize the risk profiles of the tranches to a certain level.



According to BIS (2008), the investors in the senior tranche are generally banks in order to diversify their credit portfolio and supplementing their conduit financing (explained in Section 4.3). Insurance companies and assets managers (from investments banks, hedge funds, pension funds and mutual funds) form the largest group of investors in the mezzanine tranche (BIS, 2008). Investing in mezzanine tranches can result in a more efficient method of gaining credit exposure than regional corporate bond markets and is used to reduce their exposure to stock market (BIS, 2008). The equity tranche is usually contained by the originator or speculative asset managers, active traders and institutional investors.

Retained interest

Retained interest is the part of economic interest that is hold by the originator of the securitization structure (ECB, 2013). Post crisis, it turned out to be of crucial importance for both regulators and market standards. By the so called "skin in the game" or long term economic exposure in the securitization transaction, the originator gains interest in the securitization transaction. This should induce a better alignment between originators and investors, more concern for the quality of the asset portfolio and better screening of obligors of underlying contracts (ECB, 2013). In general, the originator retains a position in the equity tranche.

Post crisis, regulators have introduced "risk retention rules" that requires originators to take an economic interest in the securitization transaction (CEBS, 2010). The EU risk retention rules are stated in Article 122a of the Capital Requirements Directive (CEBS, 2010) and require the originator to retain an interest of at least 5% in their own securitization transaction, based on the assumption that this improves the screening and monitoring of borrowers and thus increase the quality of the transaction. By the "skin in the game" originators stay exposed to a part of the credit risk of the securitized asset portfolio.

This means that BFM has to take at least 5% of the securitization volume back. In addition, it is also possible that the group (Schadeverzekering-Maatschappij Bovemij, SMB) takes a position in the issued securities of the securitization transaction. In this way, it is possible to optimize the subordination structure. However, this does have implications for the Solvency II requirements. Solvency II is a regulatory risk-based framework for insurance companies to assess solvency requirements. The regulation requires insurers to hold a minimum amount of capital, the solvency capital requirement (SCR), based on the risk characteristics of assets hold on its balance sheet, which have to be valued mark-to market (S&P, 2012b). The capital charges are depending on the risk characteristics of the assets.

The investment in securities of a securitization transaction is considered as an investment and classified as an asset. Solvency II requires insures to hold capital charges for securitization investments, which are assessed in a similar way as corporate bonds (S&P, 2012b). An insurer is required to hold an amount of capital against the assets depending on the expected loss under unfavourable conditions. This required capital fall under the *spread risk module* of the SCR (S&P, 2012b). Based on the assigned credit rating to the invested tranche and the duration of the investment, the spread risk factor can be determined and incorporated in the calculation of the SCR. The standard formula of Solvency II can be used to determine the capital charges for securitized assets. Table 3 gives an interpretation of the used spread risk factors for different rated tranches and durations.



Risk factor (%) 7 16	19	20	82	100	100
Maximum modified duration 6 5	4	2	1	1	1

Table 3: Spread risk factors for securitization investments (S&P, 2012b)¹³

When the SMB is willing to fund a part of the issued securities of the securitization transaction, this will have implications for the capital charge of the SCR under Solvency II. Depending on the credit rating of the tranche and duration of the securities, they have to hold a specific amount of capital under Solvency II.

2.6.2 Excess spread

Excess spread is the most standard form of credit enhancement. Excess spread is the difference between revenue and expenses of the SPV. It is the difference between the weighted average rate of interest associated with the collateral and the weighted average funding costs and transaction expenses such as servicing, trustee and professional fees (Fabozzi & Kothari, 2007; and Mezzanotte, 2013). A positive difference can be used on a monthly base to absorb first losses in the asset pool. At the end of the securitization it is possible that there is a positive reaming part of excess spread. This can be used for next securitization transactions or as profit for the originator (de Coninck, 2009).

2.6.3 Reserve account

Reserve accounts are funds in which a certain amount is put for replenishing potential gaps in the collected receivables (Mezzanotte, 2013). The amount is often deposited by the originator or liquidity providers. These accounts are liquidity cash positions that are usually invested in high rated liquid investments and not dependent on the performance of the collateral. The amount in the reserve account will be used to cover unexpected losses. Reserve accounts are usually prepared at the time of issuance. Later on, they can be supplemented by a part of the cash flow income from the collateralized asset portfolio (de Backer, 2009).

2.6.4 Overcollateralization

Overcollateralization is an internal form of credit enhancement in which the amount of the collateral in the securitization exceeds the total raised amount from investors (Mezzanotte, 2013). The percentage of overcollateralization can be used to absorb losses in the collateralized asset portfolio. For instance, if the raised capital is 100 million and the backed assets have a value of 103 million, there is an overcollateralization of 3% which can serve as a loss buffer.

2.6.5 Monoline insurance

Monoline insurance is a form of insurance in which the issuer is guaranteed against defaults of the asset pool. In this case a highly rated insurance company (AAA or AA rated) is paid a premium in order to guarantee scheduled payments of principal and interest on the security in the event of a default in the asset pool (Fabozzi, Davis, & Choudhry, 2006). The monoline insurance premium can be offset by the lower interest rate paid to investors, due to lowered risk and higher credit rating.

2.6.6 Letter of credit

Letter of credit (LOC) is a financial guarantee committed by a bank. This type of credit enhancement reimburses credit losses in the asset portfolio up to a predetermined amount (Fabozzi, Davis, &

¹³ For example, an AAA-rated securitization with 2 years duration requires a capital charge of 14% (2*%). An AAA-rated securitization with 8 years duration requires a capital charge of 42% (6*7%).



Choudhry, 2006). LOCs carry a credit rating which is the same as the issuing bank. This means that this type of credit enhancement is only attractive with highly rated banks (Telpner, 2003). Under the current market circumstances, this type of credit enhancement is rarely used.

In most transactions, multiple types of credit enhancements are used to improve the credit rating and price of the securitization transaction. The order in which credit enhancement is used, depends on the predetermined payment scheme of the securitization program, in line with the cash flow waterfall principle of subordination.

2.7 Conclusion

The objective of this chapter was to define securitization and to gain broader understanding of the fundamentals of securitization by providing a thorough literature research. Securitization can be defined as a structured finance technique in which a collection of unmarketable, regular and predictable cash flow generating assets that may vary in maturity and quality, are converted into marketable securities. These securities are issued by a legal entity (SPV) and sold to (institutional) investors, who are repaid with interest and principal payments generated by the asset portfolio.

Securitization has the potential to bring a lot of advantages for both the originator and the investor. By introducing securitization, it is possible for the originator to: reduce funding costs, achieve off balance

Confidential

effective way. Securitization enables investors to: invest in a tailor-made product, diversify investment sources, invest in unusual investments and make investment decisions based on credit ratings provided by rating agencies. However, there is a downside to securitization. The credit crisis in 2007 has shown that securitization does not guarantee positive outcomes. Expected losses have been calculated inaccurately by rating agencies. Moreover, insufficient control & understandability of the quality of the underlying assets (mortgages) and the absence of data on the performance of the underlying assets have resulted in incorrect credit ratings.

ABS transactions can be structured in many different ways based on the asset type and originators motivation. However, the process of securitization of different originators or asset types shares many similarities. For example, a number of primary roles are involved in every securitization process, but the executing parties may differ by each securitization transaction. The process generally includes the establishment of a special purpose vehicle (legal forms: limited partnership, limited liability company, trust, or corporation). An SPV serves as a vehicle between originator and investors for the transformation of illiquid assets into liquid securities and should be designed bankruptcy remote from the originator, hold the assets portfolio and issues securities with different risk profiles. Due to the fact that the pool of assets is separated from the bankruptcy risk of the originator, it has the potential to increase the creditworthiness of the asset portfolio and ensure much lower funding costs for the originator.

Two of the main features of securitization are credit enhancement and credit rating. Rating agencies play a key role in the process of securitization as they assess the creditworthiness of an entity, debt instrument or other financial instrument. It is the job of rating agencies to bridge the asymmetric information gap between sellers and buyers of securities and provide reliable standardized information to the market in the form of a credit rating. A credit rating in a securitization is primary based on credit risk, which is the risk that the obligor will default on its obligation to make periodically payments



under an agreed contract, resulting in a loss. A key input for achieving a proper credit rating is (historical) performance and portfolio data, which are used to estimate a full probability distribution of the expected credit loss of the pool and its variance, based on the estimates of the expected credit loss and its variance. The costs and prices (and thus quality) of a securitization transaction are strongly dependent on the assigned credit rating.

Credit enhancement is a method to achieve greater certainty for investors and thus better credit ratings from rating agencies. This chapter has explained different credit enhancement methods to mitigate several risks in the pool of assets that can improve the credit rating of the securitization. Internal credit enhancement methods are credit protections that are obtained from the collective generating cash flows. Main forms are subordination, excess spread, reserve account and overcollateralization. External credit enhancement methods are credit protections that are obtained from third parties against a certain fee. Main forms are monoline insurance and letter of credits. The alignment and final organization of the level credit enhancement is generally done in consultation with the credit rating agency in order to obtain a preferable credit rating. Subordination is the main form of credit enhancement. It is generally used in all securitization transaction. BFM is required to retain a minimum percentage of 5% of the total portfolio volume. Above that, it enables SBM to take a position in a tranche. The right balance of interest of BFM and SBM in tranches of the securitization can increase the quality of the most senior tranche and result in a higher rating on that tranche.

With this chapter we have answered the first research question: *What is securitization?* This chapter will serve as a theoretical basis for the remainder of this report. In the next chapter we will discuss the asset portfolio of BFM.



Chapter 3: Asset portfolio identification

The objective of this chapter is to examine the potential assets to be pooled in the securitization and get a clear answer on sub question (2): What are the potential car financing assets to be securitized and what are the characteristics of these assets? In order to determine an appropriate securitization structure, it is important to examine the car financing assets that meet the qualifying definition mentioned in Section 2.1 (the asset must generate a regular and predictable cash flow, and may differ in maturity and quality). An important factor in securitization transactions is the volume of the asset portfolio. Moreover, the finance company just started their business and is expected to grow significantly. It is not only important to determine the exact type and structure of the car financing assets, but also to examine the expected growth and development of the portfolio.

In the first section of this chapter we examine the characteristics of the (current) financial assets. Different customer types contain different contract structures, which may lead to different characteristics in the financial assets. Then, we investigate the expected development of the finance company for the next 5 years. This will be divided into extension of the current asset types and possible expansion of asset types in the future. Next, we determine the differences in dealing of different asset types in the securitization transaction and the asset requirements.

3.1 Financial asset types

The majority of the invested amount is composed of financial contracts to customers (BOVAG enterprises), who in turn enter into contracts with end customers; business customers of BOVAG enterprises. A small part is directly provided to end customers. C4L distinguishes 4 different types of customers:

- Management & funding customer
- (Solely) Funding customer
- Label lease customer
- (Solely) Management customer

In case of (solely) management customer, neither BFM nor C4L will be the funder of the contract. This type of customer is supported by C4L with their administration and management of leasing activities. These agreements contain no funding contract and are not suitable for securitization purposes of BFM and C4L. The other customer types do contain a financing contract. In the following sections we will explain the other three customer types and corresponding contract structure in more detail in order to examine their suitability for securitization purposes.

3.1.1 Management & funding customer

Confidential



Confidential

3.1.2 Funding customer

Confidential


3.2 Current portfolio



¹⁴ From the monthly report of September
¹⁵ See Appendix 3 for an overview of the current funding balance







3.4 True sale & titling transfer

Confidential

All contracts are car related contracts that produce a regular and predictable cash flow stream with a similar asset as collateral. Credit rating agencies have a list of requirements which must be satisfied in order to obtain a credit rating on the securitization transaction of lease related assets (Fitch, 2011; and Moody's, 2011). Eligibility criteria for leases to be included in a securitization are:

- > At lease the first payment must be made (1 month seasoning)
- ➢ No receivables more than 30 days or 60 days past (no delinquency)
- > No lessee can be in a bankruptcy procedure
- ➤ The lease is assignable

The assets that meet these requirements can be included in the asset portfolio to be securitized. In addition, a number of legal issues must be met, but these are covered in Section 5.6.3.

An important point of attention in car lease securitizations is the assignment of a true sale transaction, when the assets are considered to be securitized. In all cases, the legal ownership must be isolated from the originator and no claims may be made on the asset by any creditor in case of a bankruptcy procedure of the originator. The legal title must be transferred to the SPV, in order to ensure that the SPV becomes legal owner of the underlying asset.

Confidential

The operations to achieve a true sale transaction or retitling of the assets can require much effort and expenses (Litwin & Levy, 2000). It may be useful to introduce a *titling trust* before starting a

securitization transaction. The titling trust (established by the originator) is intended to be bankruptcy remote from the originator (Moody's, 2011). In the pre-securitization phase, a titling trust can be used to hold the vehicle title and leases from the beginning of the underwritten lease contract. The originator is never listed on any title, but has an *undivided beneficial interest (UTI)* in all leases and related vehicles (Fitch, 2007; and Litwin & Levy, 2000). The originator is contractually engaged as a servicer of the titling trust.

When a securitization actually takes place, the titling trust will issue certificates that represent a *special unit of beneficial interest (SUBI)* on the assets to be securitized (Fitch,2007), which are sold (true sale) to the securitization trust or SPV. No transfer of titles is needed and the vehicle ownership and lease contracts remain with the titling trust. Only the SUBI certificates and the associated rights are transferred to the securitization SPV (Fitch,2007).

3.5 Conclusion





With this chapter we have answered the second research question: *What are the potential car financing assets to be securitized and what are the characteristics of these assets*? In the next chapter we will determine what type of securitization structure best fits the potential assets portfolio and motivation & needs of BFM/C4L.



Chapter 4: Securitization structure decision

The objective of this chapter is to examine what type(s) of securitization structure(s) best suits to the considered asset portfolio, motivation and need of the finance company. As already mentioned in Chapter 2, raising capital is the most important motivation to perform a securitization transaction for BFM. A true sale securitization can achieve that objective. However, a true sale ABS can be organised in several ways. Initially, we focused this research on self-contained securitization programs that are specifically organized for one originator, in which capital is raised from capital markets solely based on the asset portfolio of the finance company. But, participating in an ABCP securitization structure may also be interesting for BFM. Therefore we examine both.

According to Sabarwal, (2006) and Tavakoli (2008), four common true sale ABS structures are:

- Master trust structure
- Owner trust structure
- Grantor trust structure
- Asset-Backed Commercial Paper (ABCP)

These four structures are very similar to the typical true sale securitization structure as defined in Chapter 2. There are a number of structure specific features that make them differ from one another.

In the first sections, we will define the four ABS structures. We will start with the three selfcontaining securitization structures and then explain ABCP. We explain the main features of the structures. Thereafter, we develop an assessment model with three criteria in order to determine which structure is most suitable for the finance company. This enables us to answer research question (3): Which ABS structure is most suitable to BFM for the organization of the securitization of the asset portfolio of the finance company?

4.1 Master trust structure

A master trust structure is structured as explained in Section 2.3 and can be used for the securitization of either *short-term or long-term assets*. This securitization structure is a self-contained structure in which the transaction is specifically organized for one originator. The SPV is characterized by a master trust. The master trust issues series of *investor certificates and seller certificates* with a medium to long term maturity (over one year) (Fabozzi & Choudhry, 2004). The originator is expected to retain a percentage of the principal in the certificates which is called seller's interest in the asset portfolio. The seller's interest is primary used to absorb daily fluctuations in the amount of receivables of the trust, arising from many factors, such as delinquent payments and early termination (Fabozzi & Choudhry, 2004). In addition, seller's interest provides more alignment between the originator and investors, because the originator would also benefit from a well serviced transaction. The investor's certificates give investors an undivided beneficial interest in the asset portfolio of the issuing trust (Sabarwal, 2006). These may be divided into several asset classes with different seniority.

The main feature of a master trust structure is that the trust has the possibility to *issue multiple series of securities* from the same trust on an on-going basis. Each additional series of securities will be backed by the whole asset portfolio and not only by the added part of the portfolio (Tavakoli, 2008). The master trust structure is a very flexible securitization structure, due to the possibility of issuing new series of certificates can be done from the same master trust structure. New portfolios can easily be added to the existing transaction, so that it is not necessary to organise a new transaction. Thereby, it can save costs and effort.



Issuance of new series changes the characteristics of the underlying portfolio. This means that the composition and performance of the securitized asset pool can change during de term of the transaction. Moreover, new series can differ in size, maturity, credit rating and interest rate (Tavakoli, 2008). Every series has an expected final payment date and a legal termination date. At the expected final payment date, the investors are expected to receive the last principal payment. After the legal termination date, investors have no rights to any additional cash flow. Despite the differences between issued series, they are all covered by the entire portfolio and have to meet predetermined requirements of the credit rating agency. Each additional issued series has to be assessed by the rating agent. The master structure allows originators to choose a cash flow structure to repay the investors in securities. This can be divided into the following structures:

- Pass-through
- Pay-through

4.1.1 Pass-through

A pass-through structure is a cash flow structure to repay principal investments to investors. These are sometimes also called amortizing transactions, uncontrolled amortization or fast pay structure (Fabozzi & Choudhry, 2004; and Tavakoli, 2008). In pass-through structured ABS, the originator sells a portfolio of assets via a true sale to an SPV. The main feature of a pass-through structure is the way of repayment of interest and principal to investors. Investors that invest in a pass-through ABS take a direct exposure on the performance of the asset portfolio in the securitization (Fabozzi & Choudhry, 2004). They actually invest in pass-through certificates issued by the SPV. They obtain a *share of ownership* in the underlying cash flow generating asset portfolio.

The repayment of principal and interest is passed-through (or returned) to investors during the lifetime of the securitization transaction to repay the initial invested amount and interest. This is depending on the performance of the asset portfolio. The pass-through structure is particularly applicable for assets with *longer maturities* and assets with interest and principal payments that depend on the *amortization schedule* (see Figure 13). In the early periods, most of the repayment is allocated to the interest instead of the principal. Later on, most of the repayment is allocated to the principal instead of interest. The proceeds from the asset portfolio are collected by the servicer and passed through to investors. In the event of shortcomings or late payments in the securitized asset portfolio, payments to investors are (to some extend) covered by credit enhancements.



Figure 13: Pass-through or amortization structure (Source: Fabozzi, & Choudhry, 2004).

4.1.2 Pay-through

In a pay-through structure, the originator sells a portfolio of assets via a true sale to an SPV just as in the case of a pass-through structure. However, a pay-through structure is somewhat different than a pass-through structure. The main feature of a pay-through ABS is that it is a *borrowing structure* and



not participation (Tavakoli, 2008). Investors do not directly own the underlying assets, but are only invested into a bond backed by these assets. This enables issuing entities to de-synchronize or to manipulate the cash flows into separate cash payment streams (Fabozzi & Choudhry, 2004). Thereby, it is possible to reconstruct the repayment of cash flows to investors into different levels of debt.

A pay-through structure, sometimes also called a revolving transaction, is often used for assets with *short term maturities* (between 60-120 days) and is divided into two periods, namely the *revolving period* and the *controlled amortization period* (Sabarwal, 2006). In the revolving period, the only payments made to investors are interest payments. The other proceeds received from the securitized asset pool are used to service and maintain the securitization, by paying servicing fees and purchasing new assets. This structure ensures a predictable payment stream for investors.

Pay-through structures have a predetermined legal end date. Investors are expected to receive all of their principal back before the legal end date of the securities. Principal investments are paid back to investors during the controlled amortization period or pay-out period. Fabozzi & Choudhry (2004); and Tavakoli (2008) distinguish two different forms how the principal can be returned to investors during the controlled amortization period by *soft or hard bullets*. When the structure is structured with a hard bullet, the principal is stored in a reserve account during a certain period (the controlled amortization period) and paid back in one payment to the investors through a hard (single) bullet payment. The soft bullet repayment starts earlier paying back the principal. Instead of depositing the principals into a reserve account, they are paid in several instalments during the controlled amortization period (generally 1 to 3 years). The pay-through structure is displayed by an example in Figure 14.



Figure 14: Pay-through or revolving structure with soft bullet (grey) and hard bullet (black) controlled amortization period (Source: Fabozzi, & Choudhry, 2004)

Both pass-through and pay-through structures can be combined into a *hybrid structure*. In a hybrid structure can be chosen for a short revolving period (for generally 0-2 years), followed by a pass-through structure (Fabozzi & Choudhry, 2004). The revolving period can be used to optimize the asset portfolio in the first two years. The hybrid structure is often used for medium to long term assets.

4.2 Grantor & owner trust structure

Grantor and owner trust structures are a type of *pass-through* securitization structures and are organized as explained and displayed in Section 2.3. These securitization structures are *self-contained structures* in which the transaction is specifically organized for one originator. In grantor and owner trusts, an originators pools together a portfolio of assets and sell them off by a true sale to an (grantor or owner trust) SPV. The SPV issues (long term) pass-through certificates to investors in order to



finance the purchase of the asset portfolio. Thereby, the investors in the certificates obtain a direct *share of ownership* in the receivables. These securitization structures are *standalone securitization* structures. This means that the structure can be used once for the securitization of a portfolio of assets and cannot be reused for the issuance of new securities. The repayment structures are corresponding to the pass-through structure as explained in Section 4.1.1.

In case of a grantor trust, interest and principal generated by the asset portfolio is passed-through in proportions to the holder of the certificates after subtraction of several servicing fees and expenses of the securitization transaction. This structure can provide little flexibility by subordinated classes of securities, but only the interest part of subordinated classes can be used to absorb losses of senior tranches (Sabarwal, 2006). Grantor trusts have a limited ability to reinvest cash flows and purchase additional asset, making them less suitable for short-term assets (such as credit cards) (Tavakoli, 2008). This tranching repayment is displayed in Figure 15.



Figure 15: Grantor (left) and owner trust (right) amortization structures (Fabozzi, 2000).

The owner trust structure allows more flexibility in structuring the cash flows, due to a more flexible *seniority time-tranching* (Sabarwal, 2006; and Tavakoli, 2008). Time-tranching allows the issuer to create different security tranches on a tailor-made basis to suit investor preferences (Fabozzi, 2000). In owner trusts, cash flows generated by the asset portfolio can be allocated to the different classes of issued securities in terms of interest, principal and maturity (Sabarwal, 2006; and Tavakoli, 2008). This means that both interest and principal of subordinated tranches can be used to absorb losses of the senior tranche. This allows originators to adapt the profiles in terms of risk and return profile of issued security tranches. The owner trust (as well as the grantor trust) can be used for the securitization of *medium to long-term assets* (Tavakoli, 2008). The owner trust is displayed in Figure 15, shows how the principal is repaid to investors. The first tranche (A1) is paid back fully before other tranches get paid. Then, the second tranche (A2) is paid back fully before others get paid. This subordination follows the cash flow waterfall principle as explained in Section 2.6.1.

4.3 Asset-backed commercial paper (conduit)

Asset-backed commercial paper (ABCP) is a form of short term senior secured debt by issuing commercial papers (CP) through a *conduit*, which are backed by a pool of *short or long term* (financial) assets (Blackrock, 2011; and Moody's, 2003). ABCP structures are particularly used to acquire (short term) low-cost, off balance sheet funding. Just as in the case of the other ABS structures described in this section, the assets of the originator are sold to an SPV as a true sale transaction. ABCP programs itself have no maturity and are intended to be *perpetual*.

4.3.1 Basic mechanism

The SPV in an ABCP is usually called a conduit or ABCP conduit, because it reflects its function as a collector and payer of cash receipts and payments (Blackrock, 2011; and Fabozzi & Choudhry, 2004). The conduit is the issuer of *commercial papers* (CP) and uses the proceeds from CP to fund an



originators portfolio of cash flow generating assets that meet the definition in Section 2.1. These CP have a maturity range from 1 up to 365 days and often have a shorter term than the backed assets (DBRS, 2013). The actual maturity of CP depends on the kind of assets to be securitized (Covitz, Liang, & Suarez, 2009). Originators have the possibility to securitize a wide range of assets in terms of (long and short) maturity and type (for example credit card receivables, auto-backed assets and mortgages receivables). A pool of cash flow generating assets from a single type or group of various asset classes can be securitized in the ABCP transaction (Blackrock, 2011). The conduit's legal structure is often classified as a regulated investment company (RIC). However, it may take various legal forms like trusts, corporations and limited partnerships, as long as it is legally structured as bankruptcy remote as possible (Fitch, 2012; and Gorton & Souleles, 2003). It is not owned or consolidated with the sponsor (bank) of the conduits.

In ABCP, the proceeds generated by the asset portfolio(s) are used for the payment of interest & principal to investors and maintenance of the conduit's investments (Fitch, 2001). In general, interest proceeds from the asset portfolio cover the interest payment to investors and conduit fees. The amortization income of the backed asset portfolio is generally used to maintain the conduit and repurchase of new assets in the conduit. As a result, the value of the conduit remains around a certain value. At expiration of CP, (current) investors will be repaid or rolled over with new issued CP in order to cover the initial deposit. This process is called "*rolling the CP*" and enables the conduit to continue additional issuances of commercial paper, which enables originators to fund long-term assets on a continuing basis with short term debt (DBRS, 2013; and Moody's, 2003).

4.3.2 Conduit types in ABCP

ABCP are subdivided into securities arbitrage conduits, trade receivables conduits and hybrid conduits (Fabozzi & Choudhry, 2004). Securities arbitrage conduits are exclusively used to generate revenues from arbitrage gains between security investments (ABS, MBS and government bonds) and highly rated paper that is used to fund these assets. Trade receivables conduits are used to provide funding for cash flow generating asset portfolios. Hybrid conduits take a form of both securities and trade receivables conduits.

ABCP can be carried out by one or more originators and multiple asset portfolios depending on the type of assets and securitization motivation (Covitz, Liang, & Suarez, 2009; Fabozzi & Choudhry, 2004; and Moody's, 2003). The ABCP is called a *multi-seller ABCP* if multiple originators are involved in the securitization transaction. The ABCP is called *single-seller ABCP* if one originator is involved in the securitization transaction.

A multi-seller ABCP structure involves the purchase of *multiple portfolios* of assets from *various unaffiliated originators* from a wide variety of industries, companies and asset types (Moody's, 2003; and Tavakoli, 2008). Conduits of multi-seller structures are established, administrated and sponsored by large commercial banks (Fabozzi & Choudhry, 2004). These banks serve as the program administrator or sponsor of the conduit and often provide credit enhancement and liquidity support to the securitisation transaction (Fitch, 2001). In multi-seller structures, the CPs have a claim against the entire pool of asset portfolio's funded by the conduit (Tavakoli, 2008). The multi-seller structure is displayed in Figure 16.



Figure 16: Multi-seller ABCP structure

In a multi-seller ABCP, separate SPVs are established for each involved originator in the transaction with the aim of owning the asset portfolio. Assets portfolios are purchased via a true sale from originators by the corresponding *deal-specific SPV*. The SPVs are financed by the conduit on a borrowing base. In fact, the conduit takes a first priority perfected security interest in the SPV, which means that the conduit is the first in the order of priority in allocating receivables from asset portfolios. Thereby, the conduit receives the senior interest in the asset portfolio of the SPV. The conduit issues CP in order to attract money from investors. The proceeds from CP are used to fund the SPVs. This structure is called a *two-tier legal structure* (Fitch, 2001). This is displayed in Figure 17 which explains the dotted line of Figure 16 in more detail.



Figure 17: Two-tier legal structure in ABCP

The two-tier structure can be divided in a *deal-specific* and *program-wide* part. Deal-specific refers to the transaction specific part of one originator in the transaction. Every deal-specific transaction is usually structured in the same way as a term ABS, in which it has its own intermediate deal-specific SPV that holds the assets (see Figure 5). Program-wide refers to the whole conduit structure and all involved originators. Each added transaction or added portfolio of an originator must be structured in line with the program-wide risk profile and CP rating.

The conduit sponsor is the administrator of the conduit and is responsible for the management and continuity of the conduit. The liquidity provider of the conduit is a third party that provides liquidity when needed. The credit enhancement (CE) provider of the conduit is the third party that provides credit enhancement on program-wide basis. These parties request an additional fee for their contribution to the securitization transaction.

Any transaction or portfolio of an originator funded by the conduit has to have a deal-specific first loss protection depending on the quality of the portfolio (Moody's, 2003). This first loss position is often retained by the originator as a percentage of the total deal-specific volume. ABCP can profit from a *two-layered credit enhancement* structure. Deal-specific credit enhancement can improve the credit risk of a specific portfolio of an originator. Deal-specific credit enhancement can only cover the losses belonging to the specific-deal originator and cannot be used to cover losses in other deal-specific pools (S&P, 2005). The level of deal specific credit enhancement must be commensurate with the rating of the ABCP to be issued, in order to ensure that the deal specific transactions are funded largely independent (GCRC, 2013). In addition, a program-wide credit enhancement is used to improve the overall risk of the conduit and is arranged by the conduit sponsor. This program-wide credit enhancement.

A single-seller ABCP structure involves the purchase of cash flow generating assets from one originator. In single-seller structures, the originator uses a conduit as a source of funding for its own businesses. The assets are usually sold to an SPV by a true sale. The conduit is the issuer of commercial paper and lends the proceeds from CP to the SPV. The structure of a single-seller conduit is displayed in Figure 18.



Figure 18: Single-seller ABCP structure

Single-seller ABCP structures are mainly interesting for originators with a very large portfolio volume and different type of asset classes (Tavakoli, 2008). While originators in single-seller ABCP have the advantage of significant control over the costs of administrating the conduit, they also contribute to the costs alone and need very large volumes to cover these costs. Therefore, they are not interesting as a funding solution for the finance company in the foreseeable future. In the remainder of this report we focus on the participation in a multi-seller ABCP structure as a funding solution for the finance company.

4.3.3 Support mechanisms

A key feature of ABCP is the support that is provided to the ABCP program. The support mechanisms of ABCP typically exist of credit enhancement and liquidity support (by the liquidity provider). Credit support refers to the dependency of repayments supported by third parties. Distinction is made between *fully and partially supported ABCP programs*.



In fully-supported ABCP programs, credit losses in the transaction are full protected. Investors are exposed to the risk of a third party that guarantees the repayment of the assets or receivables and not to the risk of the performance of the assets or receivables themselves (Fabozzi & Choudhry , 2004). Investors are not exposed to the credit risk of the asset portfolio. These programs are 100% credit enhanced by a properly rated entity in order to guarantee the repayment of investors. In this case, the analysis of the conduit is focused on the credit enhancement provider itself and not on the collateral quality. The rating assigned to the ABCP is often corresponding to the rating of the enhancer.

Partially supported ABCP programs have less than 100% of credit enhancement available. In this case, investors are partly exposed to the credit risk of the asset portfolio. They are, to some extent, depending on the performance of the asset portfolio(s) of the conduit. This means that the analysis of the partially supported ABCP will not only be focussed on the credit enhancement provider, but also on the deal-specific credit enhancement and portfolio quality, including the asset quality and first loss protection at deal-specific level. The rating of partially-supported ABCP programs depend on the performance of the assets, the rating of providers of credit enhancement facilities, the rating of providers of liquidity facilities and the conduit sponsor's expertise (Moody's, 2003).

In most cases, ABCP involve an *asset-liability mismatch* in which medium to long term assets are financed with short term commercial paper. A risk of ABCP is the risk that investors may not be willing to refinance maturing CP and no new investors can be found to roll over the CP (Kacperczyk & Schnabl, 2010). This is called *roll-over risk* or liquidity risk. The roll-over risk increase risks for investors because the conduit may go bankrupt if all investors stop funding the conduit at the same time and the conduit is not able to sell of its assets to repay their investors (Kacperczyk & Schnabl, 2010). This also happened when the ABCP collapsed in 2007. Investors became concerned about the quality of ABCP and their collateral. As a result, many investors were not willing to refinance maturing CP, which increased the spread (above treasury rates) on overnight ABCP from 10 basis points to 150 basis points within two days (Kacperczyk & Schnabl, 2010). The costs of funding via ABCP became an expense form of funding within only two days.

The liquidity provider¹⁸ has an important role in ABCP securitizations. The liquidity provider guarantees to take the CP that cannot be refinanced to investors. This liquidity guarantee ensures the repayment of principal investment to investors. The transaction must have a liquidity support that is able to cover the value of the CP to fund the transaction, in order to ensure the repayment to investors and funding of the originator in the event of new CP cannot be issued or rolled over (Moody's, 2003). In most cases, this is provided by the conduit sponsor that often operates as the liquidity provider of the conduit. This bank provides liquidity to facilitate the ABCP transaction in case of timing mismatch between cash flow proceeds and payments or in the case of CP cannot be rolled over by market disruption (DBRS, 2013).

For multi-seller ABCP structures, liquidity support is generally provided at each transaction specific deal and should cover at least 100% (GCRC, 2013). Liquidity support can be provided on by a *liquidity loan agreement* (LLA) or a *liquidity asset purchase agreement* (LAPA) (GCRC, 2013). In LLA, liquidity support is provided by a liquidity loan by which good (non-defaulting) assets of the conduit are posted as collateral. In a LAPA, the good (non-defaulting) assets of the conduit are sold to the liquidity provider (Moody's, 2003). Hence, the liquidity provider will bridge the timing mismatches between repayment of maturing CP and either cash payments from proceeds of newly

¹⁸ Or providers

⁴³ Master Thesis Vincent Bakker 21-03-2014



issued CP (Moody's, 2003). Small volumes of CP that cannot be rolled over will be supported by the liquidity provider. They will take over the position and wait for new investors to issue new CP and reduce their support again.

In the case of larger volumes of CP cannot be rolled over to investors, *stop-issuance* and *wind-down triggers* are used to minimize the losses resulting from the inability of rolling over the CP (Fitch, 2001). The activation of these triggers ensures that the ABCP deal-specific or program level is wind-down or even stopped. The conduit will stop the issuance of new CP and liquidate its positions. These triggers are defined at deal-specific and program-wide level (Fitch, 2001). In addition, the stop-issuance and wind-down triggers are also used to minimize losses resulting from underperforming asset portfolios (Fitch, 2001). This especially focuses on deal-specific performance. Deal-specific triggers are used to wind-down or stop funding underperforming asset portfolios in order to ensure that losses from an underperforming asset portfolio has limited effect to the entire conduit funding. The dependence of unaffiliated originators in a multi-seller ABCP can be limited do to these stop-issuance and wind-down triggers.

4.4 Assessment model for structure decision

The alternative structures are to some extent suitable for the securitization of the car lease portfolio of BFM and the main motivation of raising capital through securitization. In order to determine which structure best suits, we examine their performance on a number of criteria that determine the feasibility to BFM. The literature (Fabozzi & Choudhry, 2004; Fitch, 2001; Sabarwal, 2006; and Tavakoli, 2008) is particularly focused on the flexibility of the structures. Less attention is paid to the cost-effective deal size and certainty of the funding. However, these are the important criteria for the finance company:

- Flexibility
 - Flexibility of the structure is the extent to which a structure can be organized to the wishes and needs of the originator and the ability to reuse the structure for additional funding.
- ➢ Certainty
 - Certainty of the structure is the extent to which the structure provides a secure and long term debt solution to ensure continuity of the originator's business.
- Cost-effective deal size
 - The cost-effective deal size of the structure determines the minimum volume required to cover all costs involved in the transaction. This includes all securitization costs, funding costs and the costs of equity.



Figure 19: Structure assessment model

These criteria are used for the assessment of the most suitable structure for the finance company (see Figure 19). The best suitable securitization structure is determined by high flexibility, high certainty and a cost-effective deal size that is feasible for the finance company. The cost-effective deal size is the key quantitative criteria for the feasibility analysis of a funding solution for BFM. The



securitization process must be a cost-effective way of funding for the finance company, in order to meet the return on equity and debt requirements. Lower cost-effective deal sizes enable the finance company to start a securitization program at lower portfolio volumes.

Flexibility and certainty are qualitative criteria. Depending on the assets type, motivation, requirements and boundaries of BFM, it is possible to assess the structures on these criteria on a qualitative basis. Especially when there is little to no difference in the cost-effective deal size, these criteria can be decisive for the choice of a securitization structure. The performance on the three qualitative criteria is depending on the different features of the structures. The main features of the structures are discussed in the previous sections. In Table 8 we summarized the main distinctive characteristics and differences between the structures, based on a number of literature studies (BIS, 2009; Black Rock, 2011; DBRS, 2013; Fabozzi & Choudhry, 2004; Fitch, 2001; Kacperczyk & Schnabl, 2010; and Moody's, 2003) and findings in earlier sections. In the next sections we will explain how these features and differences lead to an assessment on the criteria.

	Master trust	Grantor trust	Owner trust	Multi-seller ABCP	
Asset term	Long & short	Long	Long	Long & short	
Security type	Certificates	Certificates	Certificates	Commercial paper	
Maturity of issued security	Over 1 year (Capital market debt)	Over 1 year (Capital market debt)	Over 1 year (Capital market debt)	1- 365 days (Money market debt)	
Maturity of the program	Term, fixed life	Term, fixed life	Term, fixed life	No final maturity, perpetual	
Repayment	Interest & principal or new issuance	Interest & principal	Interest & principal	Interest & principal or new issuance	
Repayment structure	Pass-through or pay-through	Pass-through	Pass-through	Pass-through or pay-through and warehousing	
Credit enhancement	Deal-specific	Limited deal- specific	Deal-specific	Deal-specific and program-wide (depending on multi/)	
New issuances	New issuances possible	Standalone	Standalone	New issuances required (rolled over)	
Liquidity support	Small	Small	Small	100% or partially	

Table 8: Summary of the main features of ABS structures

4.4.1 Flexibility

A large part of the differences between securitization transaction structures is focused on flexibility. The flexibility of a structure is dependent on a number of features that characterize the structure. Characteristics such as cash flow structure of the transaction, diversification, credit enhancements and new issuance possibilities determine the flexibility of the structure. More flexibility enables the finance company to organise the securitization transaction to their needs and motivation.

Standalone & new issuance structures

Standalone securitization transactions are transactions that are established for one time securitization and cannot be used for new issuance of securities. Each new securitization transaction requires the originator to set up a new trust. New issuance structures allow originators to issue additional series



from a single trust. The associated costs and effort with issuing new series is lower for new issuance structures than standalone structures (Fabozzi & Choudhry, 2004).

Master trusts and ABCP structures do have the possibility to issue new series of securities through the same structure and trust. In terms of new issuance possibilities, master trusts and ABCP are more flexible than grantor trust and owner trust, which do not have the possibility to issue new series of securities with the same trust.

Confidential

Repayment structure

The repayment structure or cash flow structure is the way in which the cash proceeds from the underlying portfolio is distributed to the investors. Grantor and owner trusts can only be structured with a pass-through cash flow structure. Therefore, they have limited flexibility to modify the cash flow structure. Master trust and ABCP can be either structured with a pass-through or a pay-through structure, making them more flexible than grantor and owner trusts.

Another difference between the structures is the maturity of issued securities (Fabozzi & Choudhry, 2004; and Black Rock, 2011). ABCP issue securities with short maturities (30-365 days). Master, grantor and owner trusts issue securities with longer maturities (over one year).

Pay-through structures enable originators to reinvest principal investments of investors and maintain the asset portfolio with newly assets. The principal is used to buy new assets in the portfolio. This enables master trusts and ABCP to securitize both long and short term assets into the transaction. This provides more flexibility for ABCP and master trusts.

Diversification

In all structures it is possible to apply diversification in the portfolio existing of the same type of assets. Multi-seller ABCP structures have the opportunity to finance multiple types of asset portfolios through a conduit (Fabozzi & Choudhry, 2004; Fitch, 2001; and Black Rock, 2011). This ensures additional diversification of portfolios, better risk spread and thus better credit ratings. The diversification level for master, grantor and owner trust structures is only within a portfolio (or deal-specific), where multi-seller ABCP structure has the possibility to diversify within and between portfolios (or deal-specific and program-wide). However, you have no control over the other involved portfolios in a multi-seller structure. So this flexibility of improving diversification is limited to the conduit administrator.

Credit enhancement & Subordination

Deal-specific credit enhancement can be used in all structures. However, the levels of possible credit enhancement methods differ amongst the structures. Grantor trusts are most limited in terms of credit enhancement. Grantor trust can issue subordinate classes of securities, but only on an interest basis. This means that losses of senior tranches are only covered by interest of subordinated classes. Owner trusts have more flexibility to transfer cash flows amongst classes of securities. In owner trusts, interest and principal of subordinated classes is used to absorb losses of senior tranches. Multi-seller structures have the same flexibility of credit enhancement as owner trust. However, each additional new issuance must meet the predetermined requirements for issuing senior and subordinated classes.



The credit enhancement of multi-seller ABCP can be established in deal-specific and program-wide credit enhancement. Deal-specific credit enhancement is the portfolio specific credit enhancement. This credit enhancement layer is the same as in master trusts. Program-wide credit enhancement is used as a second layer to absorb credit losses of portfolios. This is the level of credit enhancement that is applied to the whole structure (thus all portfolios) that is used to reduce program-wide credit risk. However, you are dependent on the requirements of the conduit administrator in a multi-seller structure. While this additional layer provides a double layer of credit enhancement, the flexibility is limited to the requirements of the conduit administrator.

We have ranked the four alternative structures based on their flexibility in Table 9. Both master trust and ABCP structures have many options to adapt the transaction to the needs and motivation of BFM. Moreover, they can be used for multiple issuances of securities, making it possible to securitize multiple parts of the portfolio at different time points through the same securitization program instead of one large portfolio at a time. Although owner trust and grantor trust structures are deal-specific, they have limited options to adapt the transaction to the needs and motivation of the finance company. Master trust and ABCP structures are most suitable based on their flexibility.

Flexibility ranking	
Master trust structure	Very High flexibility
Multi-seller ABCP	High flexibility
Owner trust structure	Medium flexibility
Grantor trust structure	Low flexibility

 Table 9: Flexibility ranking

4.4.2 Certainty

The financial solution must provide a secure source of funding which ensure the continuity of the finance company. The aim is to obtain a secure funding solution for a long term. In particular, ABCP differ from the other three structures in terms of certainty of the provided funding.

The ABCP structure is a short term debt instrument and raises capital at cheap short-term rates (between 30-365 days) from *money markets*. Most ABCP conduits issues fixed rate CP, expressed on a 365-day basis (Moody's, 2003). The interest on commercial paper is a little higher than interest rates on Treasury Bills with the same maturity, and about to be the same as LIBOR rates (London Interbank Offered Rate) and makes it one of the cheapest ways to obtain capital (Kacperczyk & Schnabl, 2010; and Moody's, 2003). CPs are freely tradable in secondary markets among investors, but they are usually held until final maturity. Rolling the CP (see Section 4.3) enables the originator to obtain a source of long term funding. However, it is uncertain whether investors stay interested in buying these CP in the future (DBRS, 2013; Kacperczyk & Schnabl, 2010; and Moody's, 2003). When investors are no longer interested to invest in the CP and not willing to receive new CP, the issuer needs to find financing elsewhere in order to repay maturing CP (new investors or liquidity provider). There is an uncertainty that the CP cannot be rolled over to (new) investors. This puts the long term funding of an ABCP structure at risk and may result in significant liquidity and solvency pressure if sponsors are unable to refinance the portfolio (BIS, 2009)

The other three structures (master, grantor and owner trust) are long term (over one year) debt instruments and raise capital from *capital markets* by the issuance of long term certificates. These are therefore sometimes classified as 'term' securitizations (Fitch, 2001; and Moody's, 2003). The interest rate on certificates is often the LIBOR rate plus an interest spread or premium in accordance with the risk of the asset portfolio. Despite the fact that the interest rate is higher than the rate of CP, it is a more secure source of funding for the issuer due to the longer term of outstanding certificates.



Furthermore, the interest rate on CP is less predictable than the interest rates on the longer term debt (Fabozzi, & Choudhry, 2004). There is more volatility in short term rate than in long term rates, making it more difficult to determine the interest rate on CP.

Master trusts have the possibility to issue new certificates. There must be investors willing to invest in the new issuance. There is a little uncertainty that no investors will be found to invest in the additional issuance. As a result, grantor and owner trust structures are slightly more secure source of funding. We have ranked the four alternative structures based on their issuer certainty in Table 10. Both grantor trust and owner trust are very attractive as a secure source of funding. For BFM, the long term debt structures provide high to very high certainty.

Certainty ranking	
Grantor trust structure	Very high certainty
Owner trust structure	Very high certainty
Master trust structure	High certainty
Multi-seller ABCP	Medium certainty

 Table 10: Certainty ranking

4.4.3 Cost-effective securitization



4.5 Estimation of cost-effective deal size for BFM

The cost-effective deal size of a securitization transaction is depending on the net *interest income* and *additional securitization costs* of the transaction. As the net interest income is high enough to off-set the transaction costs of a securitization, it can be a cost-effective way of funding for BFM. The net interest income is in turn depending on the *interest revenue* realized by the securitized portfolio and the *interest expense* of the securitization transaction (interest rates offered to investors of different tranches). The additional costs can be split into *up-front costs* and *running costs*. The dependency of a cost-effective securitization is displayed in Figure 20.



Figure 20: Dependency structure of cost-effective securitization

The cost-effective deal size can be found with the following equation:

Net interest income- additional securitization costs = 0

However, it is practically not possible to calculate an exact number of the cost-effective deal size prior to the potential securitization transaction of BFM, because it is not possible to quantify the variables exactly in this early stage of securitization. Without assumptions it is practically not possible to quantify the net interest income and additional securitization costs. Only empirical research can provide support to determine cost-effective deal size of the structures in the current pre-securitization phase of BFM (Wang, 2007).

Nevertheless, we have tried to determine the reliability of the cost-effective deal sizes (as given in Section 4.4.3) of ABCP and ABS structures for the case of BFM with the aid of several assumptions (for as far as possible). We have built an Excel model to estimate the cost-effective deal size for BFM. In our model and calculations we have examined a very basic securitization transaction. Possible defaults and credit enhancements or structural possibilities to improve the senior rate are disregarded in our model, except the subordination of senior and equity tranches. As a starting point, we assume that BFM retains a position in the equity tranche of 15% of the total volume. The other part (85%) is defined as the senior tranche and is funded by an external party.

Confidential

4.5.1 Net interest income

The net interest income of the securitization transaction is the excess of the *interest revenue* of the portfolio minus the *interest expense* of the securitization funding (Fabozzi & Choudhry, 2004; and Gorton & Souleles, 2007). The interest revenue is depending on the weighted average return on assets (r_A) and volume (V) of the securitized portfolio. The interest expense is depending on the weighted



average cost of capital of the securitization transaction ($WACC_{sec}$) and the volume of the securitized portfolio (V). They can be calculated by:

 $Interest revenue = r_A * V$ interest expence = $WACC_{sec} * V$

The return on assets or r_A is determined by the weighted average interest rate of the financial contracts

Confidential

In our model we have made the assumption to fix r_A of the portfolio based on the expected growth (see Section 3.3) and revenue model. By adjusting the parameters of the revenue model, it is possible to influence the contract rate of future contracts. However, it is not possible to change contractual interest rates of already closed contracts. In the case of securitization, a portfolio of *existing* assets is securitized. This means that the interest rate of contracts is determined on forehand. Despite the fact that it is possible to influence the contract rate of future contracts, we classify r_A of the portfolio as a "*fixed*" parameter in our model, because this is already determined at commencement of the contracts.

The cost of capital of the securitization transaction or $WACC_{sec}$ is determined by the coupon rates offered to the holders or investors of issued securities on different tranches and the volume of these tranches. It is determined by the weighted average interest rate paid to investors that have a position in securities (Fabozzi & Choudhry, 2004). The exact height of the rates is depending on the quality and structural characteristic (especially subordination) of the securitization transaction. For simplicity we assume that the transaction involved 2 tranches, an equity tranche and a senior tranche. The formula for the $WACC_{sec}$ is therefore comparable to the basic WACC formula: $WACC_{sec} = \left(\frac{S}{S+E} * r_S\right) + \left(\frac{E}{S+E} * r_E\right)$, in which S is the proportion of senior tranche, E is the proportion of equity tranche and r_S and r_E the corresponding interest rates of the tranches. As already mentioned, the proportions of equity tranche and senior tranche are fixed (15% and 85% of the total volume). We assume that the equity tranche is retained by BFM. Thereby, S and E are determined in our model. r_E (return on equity rate) is the unknown parameter we are looking for in our model.

The senior coupon rate r_s on commercial paper is, on average, higher than interest rates on Treasury Bills with the same maturity, but a bit lower than LIBOR rates with the same maturity (Kacperczyk &

Schnabl, 2010)¹⁹. The coupon rate on certificates of term ABS structures is often the LIBOR rate plus an interest spread or premium in accordance with the risk of the asset portfolio²⁰. The exact height of the coupon rate is depending on the risks and structural factors that influence the quality of the securitization transaction and the actual market for commercial paper and securitization securities. In this pre-securitization phase it is hard to define an exact expense rate for the case of BFM. Therefore, we vary the coupon rates on commercial paper and securities in our model in order to determine the cost-effectiveness at different coupon rates based on the average spread rates on ABS and ABCP. Thereby, we defined r_s .

Besides varying the coupon rate to senior tranche investors, we also vary the portfolio volume in the model. The *portfolio volume* (V) is a key variable that determines the amount of income and expense, and thus the cost-effective deal size. The height of the total volume ultimately determines whether the additional costs of securitization can be offset by the lower interest expense. The total volume and its allocation to tranches are decisive whether or not to perform a securitization of assets.

4.5.2 Additional securitization costs

The additional securitization costs are the costs involved in setting-up, implementing and maintaining a securitization. There is little to no attention in the literature or on the internet for additional costs of a securitization, due to the fact that securitizations are differently structured and thus have different cost structures. It is therefore difficult to determine the additional costs of a specific securitization. Nevertheless, to analyse and estimate the additional costs in a reasonable way, we have divided the costs of securitization in 2 categories: *up-front cost* and *running cost*. This enables us to make the costs more transparent. We have asked several experts in the field of securitization to provide information about the additional costs of a securitization transaction in accordance with our potential asset portfolio and the current market conditions (see Appendix 8). This has enabled us to identify and estimate the additional costs of a securitization for both fixed up-front and running costs.

Up-front costs are the costs that arise in the preparation and set-up phase of the securitization process. For example, structuring the legal aspects of the securitization, the establishment of an SPV and getting a credit rating from rating agencies involve serious costs before even starting the securitization. We assume that the (estimated) up-front costs of the securitization transaction can be classified as fixed costs. As an originator of a securitization transaction, you have very limited influence on these costs. A number of fees and costs of transaction participants can be hardly influenced. The only probable (small) variation is the fee price demanded by third parties. Therefore, we classify up-front costs as "*fixed*" costs. The costs below are based on discussions and documents provided by experts in the field of securitization. Total amount of up-front costs are displayed in Figure 21. These total costs must be annualized according to the expected term of the securitization structure.

²⁰ Two recent Dutch car related lease securitization transactions have a senior rate of 1,3% (Bumper 4 Finance B.V. – Leaseplan) and 1,23% (Highway B.V. - Athlon). Source: http://www.leaseplan.com/images/en LP/bumper 4 sp issue report.pdf

51 Master Thesis Vincent Bakker 21-03-2014

¹⁹ The coupon rate on asset-backed commercial paper is expected to be between 0,1% and 0,3% (source: <u>http://www.federalreserve.gov/releases/cp/rates.htm</u>).

Up-front costs		nated cost			
Revieuw Counsel	€	100.000			
Legal advise fees (incl reporting)	€	375.000			
Accounting and tax advice	€	25.000			
Listing fees	€	2.500	Punning costs / foos (nor month)		
SPV and trust establishment	€	10.000	Running costs/ rees (per month)		
Rating agent	€	337.500	SPV Administrator	€	10,000
portfolio audits	£	2.000	SPV trustee	€	10,000
Cash manager	€	5.000	Cash manager	€	5,000
account bank	€	3.000	Account bank	€	3,000
paving agent	€	2.000	Aaying agent	€	2,000
trustee	€	5.000	Rating agent	€	10,000
Data model	€	50.000			
			Total fees	€	40,000
Total	€	917.000	Peryear	€	480,000

Figure 21: Estimation of fixed up-front costs (left) and running costs (right)

Running costs are the costs that arise during the execution of the securitization. For example, servicing the SPV and payment control involves serious costs to the running process of securitization. Running costs consist basically of two types of costs. The first category can be compared to the up-front cost in terms of periodic fees to transaction participants that stay involved in the transaction for a fixed amount per period. As in the case of up-front costs, we assume that these costs can be classified as *"fixed"* costs. The first part exists of fees and an estimation (based on experts opinion) of these fees is displayed in Figure 21.

The second category of running costs is depending on the volume of the portfolio. The price of some specific roles or running costs in the securitization process is based on a percentage of the portfolio volume. We assume that these cost percentages are also fixed based on the same reason as up-front costs. As an originator of a securitization, you have very limited influence on these running cost percentages. We classify this part of the running costs also as "*fixed*" costs.

For the term ABS, these are the underwriting costs and interest hedge costs. The *IRS hedge costs* can be estimated by the IRS rate corresponding to the term of the contracts. The *underwriting* is a premium for the sponsor for marketing, attracting and finding investors. Based on expert opinions, the fees of underwriting are equal to 0,25% of the portfolio volume.

For ABCP, these fees exist of: *liquidity premium, credit enhancement premium, underwriting premium and interest hedge* cost, but banks turned out to be very reluctant in providing information about their conduit fees. The credit premium and liquidity premium are depending on the ultimately transaction quality and structure. The IRS hedge costs can be estimated by the IRS rate corresponding to the term of the contracts. Often these are paid at one rate to the conduit sponsor who arranges all supports and lies between 0,5% and 3%, depending on the quality of the portfolio and the originator. However, this range is too large in order to make useful calculations. For medium-sized lease companies, this amount is around 2,25% (by expert opinion). Depending on the quality of the portfolio and originator, this premium can be lowered. In the case of BFM has the advantage of a two layered credit protection by customers and end customers. We expect a lower rate based on the double credit protection. We assumed the following rates in our model.

- The conduit sponsor will account a 0,25% fee for underwriting the commercial paper (same as in term ABS).
- We assume that the liquidity sponsor premium fee is 0,3%
- We assume that the CE provider fee is also 0,3%.



4.5.3 Model

Recall the equation of the cost-effective deal size:

Net interest income- additional securitization costs = 0

Above, we defined the net interest income and additional securitization costs. This enables us to determine an equation to determine the cost-effective deal size for BFM:

 $V * r_A - V * WACC_{SEC} - (annualized up-front costs) - (running costs) = 0.$

 $V * r_A - V[\left(\left(\frac{S}{S+E}\right) * r_S\right) + \left(\left(\frac{E}{S+E}\right) * r_E\right)] - (annualized up-front \ costs) - (running \ costs*(1+V)) = 0$

 r_E is the unknown parameter which is computed by the model. Recall that we assume that BFM retains the equity tranche position. In our model, we will vary the volume and rate on senior tranches.

Confidential

4.5.4 Results

Confidential

However, it turned out to be hard to determine a cost-effective deal size, since we do not have visibility in all costs and variables. We have estimated the costs based on the experiences of experts in the area of securitization. Some costs can only be identified at a later phase of the (pre)securitization process. Moreover, banks (often the sponsor) are reluctant to provide information about the fees they charge for several supports in securitisation transactions. They may provide more clarity by entering into a confidentially agreement in which the bank will act as the sponsor of the potential securitization transaction.

4.6 Conclusion

The objective of this chapter was to identify the most suitable securitization structure for the asset portfolio and motivation/needs of BFM/C4L. Four common true sale securitization structures are examined in this chapter:



- Master trust structure
- Grantor trust structure
- Owner trust structure
- (Multi-seller) ABCP conduit structure

In order to determine which structure is most suitable for BFM, we have established an assessment model based on three criteria:

- Flexibility; the extent to which a structure can be organized to the wishes and needs of the originator and the ability to reuse the structure for additional funding.
- Certainty; the extent to which the structure provides a secure and long term debt solution to ensure continuity of the originator's business.
- Cost-effective deal size; determines the minimum volume required to cover all costs involved in the transaction. This includes all securitization costs, funding costs and the costs of equity.

Confidential

Although we are quite sure of the first step and potential second step, this conclusion can be a bit questionable. It is doubtful whether the numbers mentioned by Fabozzi & Choudhry (2004) are still reliable cost-effective deal sizes. Changed market conditions and new regulation for financial institutions may have influenced these numbers, making them less reliable. Our own cost-effective deal size model confirmed that the cost-effective deal size range of ABCP is quite reliable, but the



range of the other ABS structures is much wider. However, we had to make a number of assumptions in our model, whereby the reliability of the model can be a bit questionable.

Within this chapter we have answered research question 3: *Which ABS structure is most suitable to BFM for the organization of the securitization of the asset portfolio of the finance company?* However, some further investigation is needed to determine the level of cost-effective deal sizes per structure. These will be identified and quantified in the next chapters.



Chapter 5: Key rating drivers

The objective of this chapter is to determine the key rating drivers or risks that have an influence on the cost-effectiveness of the securitization of the asset portfolio of BFM/C4L and create a framework to get control on these key rating drivers. This framework can provide comprehensive support for the organization of the potential securitization transaction. A company should be well prepared in order to use securitization as a funding strategy. It is important to determine the requirements and assumptions that make a securitization funding strategy more readily applicable. In particular, small to medium sized companies need a proper infrastructure in order to utilize a beneficial securitization funding strategy. The cost-effectiveness of the obtained capital is depending on the risks involved in the securitization transaction. In car related ABS transactions, rating agencies (Fitch, 2011; Moody's, 2011; and S&P, 2011) are focussed on two key rating drivers:

- credit risk
- residual value risk

In this research, we are particularly focused on these two key rating drivers (credit risk and residual value risk). They have the most influence on the credit rating and pricing of the securitization transaction. In addition to credit risk and residual value risk, rating agencies have identified a number of other rating drivers that may influence the quality and credit rating of car related ABS transactions. This chapter enables us to answer research question (3): *What are the key rating drivers that influence the cost-effectiveness of the car financing securitization program and how do you control them?*

In the first sections of this chapter we will define credit risk and residual value risk. We will also discuss to what extent the risk affect the case of BFM. Then, we explain the quantification process in order to determine how the two key risks affect the rating and pricing of the securitization. Furthermore, we will explain how these risks can be made insightful and controllable for BFM. Next, we identify and define the other risks that may have an influence on the pricing and rating of the securitization transaction. We will end up with the framework of key rating drivers that can be used to get control on the rating drivers and be used as a guideline for the organisation of the securitization transaction of the car financing portfolio.

5.1 Credit risk

Credit risk is a primary concern and is a key rating driver in rating securitization transactions. Credit risk is the risk that the obligor will default on its obligation to make periodically payments under an agreed contract, resulting in a loss (Doff, 2005; and S&P, 2011). A default in a car lease contract is realized when the lessor has unilaterally cancelled the agreement, because the obligor did not met his obligation to make periodically payment under an agreed contract (Schmit, 2004). In the event of a default, the lessor is able to repossess the car and claim any losses incurred by the default (Schmit, 2004). A credit loss occurs when the proceeds from the sale of the repossessed car, insurance claim and judgements collected from the obligor are insufficient to cover the remaining securitization value (Fitch, 2011).

The major part of the recovery on the defaulted contract will be reimbursed by the sale of the car. Moreover, there is usually no money left to pay the claims, whereby the recovery is often solely based on the market value of the car. The market value of the car should therefore cover the carrying amount of the contract in order to eliminate the credit risk. However, this is often not the case. A mismatch between the book value of the contract and the market value of the car during the contract can possibly result in a loss (or profit) in the event of a default. This is displayed in Figure 22.



The figure is an example of a 3-year lease contract with an initial value of $\notin 20.000$ and a final payment of $\notin 10.000$ (based on an expected residual value of $\notin 10.000$ at lease end). The red line is the outstanding amount or book value of the contract at a specific month, which exists of two parts: an amortization part and a residual value part. The amortization part represents the depreciation of the car, which is repaid at a constant rate (annuity). The residual value part is the expected residual value of the car at lease end. The green line represents the expected market value of the car during the contract term. As the prediction of the car's value is correct and periodically payments are paid 'normally', the car is worth $\notin 10.000$ at lease end which is equal to the final payment.



Figure 22: Example of exposure to potential credit loss of a car lease contract

In the event of a default during the contract term, the market value of the car is less valuable than the book value of the contract, because the car depreciates faster than the repayment on the contract at the beginning of the term (see DBRS, 2010). This means that during the contract, the finance company is exposed to credit losses in the event of default (indicated by the area between the red and green line).

5.2.1 Credit risk in portfolio of BFM

5.2 Residual value risk

Bover

The residual value risk is a key risk in car related securitization transactions. Residual value of car leases is the sale price of the vehicle at the end of the contract term. Residual value risk in car leases is the risk that the value of the leased car at the end of the lease contract is lower than the predetermined expected residual value at start date (Fitch, 2011).

A residual value loss arises due to a lower fair value of the asset than its residual estimated value at lease inception (Pirotte, Schmit, & Veassen, 2004). Depending on the difference between the predetermined residual value and the actual residual value at lease end, there may be a loss if the actual residual value of the vehicle is lower than the estimated residual value. A faster than expected depreciation of car (depending on market development), will result in a residual value loss. This is displayed in Figure 23, which is based on the same numbers in the example of Section 5.1. In addition, a blue line is added, which is the actual residual value development (in this example). The actual residual value of the car is depreciated at a faster rate, which in the end results in a difference between the expected market value of the car and the actual residual value of the car at lease end. This is the residual value loss (It is also possible that the car depreciates slower than expected, which lead to a gain). If the returned car is sold for less than the base value or contract stated residual value, a residual value loss is occurred (DBRS, 2012). Depending on the expected turn-in rates of cars and the expected market value development for used vehicles, the exposure to residual risk can be determined.



Figure 23: Example of exposure to potential residual value loss of a car lease contract

58 Master Thesis Vincent Bakker 21-03-2014



Residual value risk is present in all type of lease contracts. Depending on the type of contract, the potential loss on residual value may be for the account of the lessee or lessor (Fitch, 2006). In operational lease contracts, the economic and legal ownership of the underlying assets is with the lessor (originator) of the contract. At the end of the lease term, the car is (in most cases) returned to the lessor. The lessor is responsible for the sale of the car and is directly exposed to the residual value of the car. Any losses on residual value are for the account of the lessor.

The residual value of the underlying asset is typically included in the securitization transaction. This means that the risk of losses on residual value is passed through to the issuer and, in turn, to investors. Thereby, the compliance of (operational) auto lease securitizations is not only affected by credit risk, but also strongly depends on the performance of residual value and is directly exposed to (historically) volatile used vehicle market (Fitch, 2011; and Moody's, 2011a).

The situation for financial lease contracts is different. In financial lease contracts, the economic ownership of the underlying assets is with the lessee of the contract. In financial lease contracts, the lessee can agree two options:

- Compulsory purchase: He agrees to buy the car at lease end against a predetermined final instalment
- Option to buy: He agrees an option to buy the car at lease end.

In the first case, the customer is required to buy the car for a predetermined amount. If the market value of the car at lease end is lower than the predetermined final value, a loss is incurred. This loss is passed on to the lessee, because he is obligatory to buy the car (Fitch, 2006). Only in the event that the customer is unable to pay the final sum, the loss will be for the account of the lessor. In that case, he defaults on the final payment.

In the second case, the customer can choose whether he buys the car at lease end. If we assume a rational customer, he would buy the car when the value is higher or equal than the market value. The customer will return the car if the market value is lower that the predetermined option price. In his case, the losses are for the lessor.

Typically, a claim on the final instalment of a financial lease contract is securitised in the transaction. For the compulsory purchase structure, the issuer bears the risk of residual value losses in case of a default of the customer on the final payment. For the option to buy structure, the issuer bears the risk of residual value losses when customers do not use their option to buy the car and return the car at the end of the lease term.

5.2.1 Residual value risk in portfolio of BFM



5.3 Control of rating drivers

The establishment of a credit rating and pricing is determined by the rating drivers of a securitization transaction. To gain more insight into the credit risk modelling of rating agencies, we have investigated the credit rating approaches and requirements for auto lease securitizations of the three rating agencies (Fitch, 2011; Moody's, 2011; and S&P, 2011) and the Portfolio Credit Model of Fitch (Fitch, 2013). This model uses Monte Carlo simulation to derive a distribution of portfolio default and loss rates (Fitch, 2013). This method is similar to the Value at Risk method (VaR). VaR is a method to determine a single number that summarizes the total credit risk of a portfolio. The single number represents the maximum amount to lose within a confidence level and time period.

Credit risk and residual value risk are the two key rating drivers in a car lease securitization. The quantification of credit risk and residual value risk in car lease securitization is depending on a number of variables (Fitch, 2013). Rating agencies determine the credit risk of a portfolio by a number of *quantifying variables* (ECB, 2007; Fitch, 2006; Fitch, 2013; Hull, 2010; and Schmit, 2004):

- Probability of a default (PD): a measure of the probability that an obligor defaults over a specified time horizon.
 - $\circ\,$ Maturity: the average time to maturity of outstanding financial contract in the portfolio.
- Recovery rate: the (discounted) percentage of the principal that can be retrieved by selling of the collateral and proceeds from claims against the obligor in case of a default. This is 1- loss given default.
 - Loss given a default (LGD): the expected amount of loss in the event of a default. This is calculated from the recovery rate and the exposure at default (EAD).
 - \circ $\;$ Exposure at default (EAD): the value of the contract at the moment of default.
- Default correlation: a measures for the extent to which assets default together. In credit risk literature, this is often called default correlation.

The rating agency uses Monte Carlo simulations to derive a base distribution of portfolio default and loss rates based on the portfolio data. Subsequently, for each credit rating level a rating default rate (RDR) and a rating loss rate (RLR) is determined in a similar way as the VaR method. The RDRs and RLRs are the percentiles on the default and loss distributions that correspond to the specific confidence levels of each credit rating (Fitch, 2013).

Default correlation in an asset portfolio is the most difficult parameter to determine (ECB, 2007). It measures the extent to which two obligors will default in the same period (Zhang, Zhu, & Lee, 2008). Distinction is made between positive default correlation and negative default correlation. Positive default correlation (for example when both obligors operating in the same industry or company) and negative default correlation (for example when a default or elimination of one obligor, increases the market share of the other obligor) (ECB, 2007). However, this correlation is very hard to estimate, because defaults (and in particular correlated defaults) occur rarely and data on default is often very



limited available (ECB, 2007). Therefore, rating agencies are focussed on *asset correlation* to estimate the default correlation within a portfolio (ECB, 2007). Asset correlation is the extent to which asset values move together within a portfolio (Fitch, 2006). In combination with default probabilities, they are able to model default correlation.

However, the variables have to be quantified prior to the simulation. The quantifying variables of credit risk and residual value risk are depending on a number of *influencing factors* and the *historical performance* of the portfolio (Fitch, 2011; and Fitch 2013). Historical portfolio performance is particularly focussed on the payment behaviour of obligors in the portfolio of assets. The influencing factors are current characteristics of the asset portfolio and market conditions that are used to determine the asset correlation and influence on the value of variables. The quality of both historical performance and influencing factors is determined by a number of indicators. The quantification structure is displayed in Figure 24.



Figure 24: Quantification structure for the assessment of credit rating and pricing of a car lease securitization transaction

5.4 Historical portfolio performance data

Historical portfolio performance is a key input to determine expected future pool performances under various scenarios, in particular payment behaviour of obligors. Rating agencies expect to receive historical data to obtain a credit rating (Fitch, 2006). They try to estimate a full probability distribution of the expected credit loss of the pool and its variance, based on the estimates of the expected credit loss and its variance (Fitch, 2011; and Moody's 2011a). The rating agencies expect to receive at least 3 to 5 years of historical performance data of the portfolio of *defaults* and *delinquencies* (Fitch, 2011; and Moody's 2011a). The rating securitization transaction (Fitch, 2011). The (historical) payment performance of car lease securitization transactions can be measured by delinquencies and defaults. In order to measure this accurately it is important to define whether an asset is delinquent or in default.

A delinquency in a loan or lease occurs when a borrower fails to make one or more periodically payments under an agreement (Fabozzi, Davis, & Choudhry, 2006). Portfolio delinquencies provide insight in the payment performance of lessees and refer to the number of days that a lessee failed to make his payment. By defining delinquencies correctly, it is possible to gauge whether lessees are unable to make its payments and the seriousness of the delinquencies. More insight in the lessees with delinquencies and their seriousness is obtained by defining classifications of delinquencies (Fabozzi,



Davis, & Choudhry, 2006). We use the most common method of delinquency classification, which was recommended is the Office of Thrift Supervision (OTS) and broadly used in ABS transactions²¹:

- Current delinquent: Payments to 30 days late
- 30 days delinquent: Payments from 30 to 60 days to late
- 60 days delinquent: Payments from 60 to 90 days to late
- 90+ days delinquent: Payments 90 days or more to late

If the lessee is unable to meet its payments, it is possible that he goes into default. A default in a car lease contract is realized when the lessor has unilaterally cancelled the agreement, because the obligor did not met his obligation to make periodically payment under an agreed contract (Schmit, 2004). Generally, defaults occur for leases that are 90+ days delinquent with no prospect of improvement of periodic payments.

The basis for credit loss analysis is the portfolio loss data and the static pool loss data. Portfolio loss data is simply the losses that occur in each period as a percentage of that period outstanding portfolio balance, which composition is changed over time (Moody's, 2011a). The conditional default rate (CDR) provides insight in the development of defaults per month on an annualized basis. A static pool loss data is an isolated static subsets of originated contracts and used for a detailed tracking of its performance of the contracts over time (Fitch, 2011). It is used to determine the expected credit defaults and net losses that arise in the securitization. It shows the ratio of cumulative losses to original lease balance for a static pool of assets. The cumulative default rate (CDX) is the proportion of leases in the portfolio that has gone into default as percentage of the total value of the portfolio. The loss curves derived from the static pool data are used to estimate expected losses based on the static pool. These expected losses can be applied to the securitized portfolio, in order to determine the total expected loss from defaults of the securitization transaction (Moody's, 2011a).

Fabozzi, Davis, & Choudhry (2006) discuss a combination of two parameters for quantifying default performance in an asset portfolio. The conditional default rate (CDR) is the annualized value of the balance of new defaulted leases. This is calculated over the course of a month, as a percentage of the unpaid balance of the portfolio at the beginning of the month. The conditional default rate for month t is calculated as follows:

$$Default rate = \frac{defaulted \ lease \ balance \ in \ month \ t}{Beginning \ balance \ for \ month \ t - scheduled \ principal \ payment \ in \ month \ t}$$

In order to get the annualized CDR, the following formula is used:

 $CDR_t = 1 - (1 - Default \ rate)^{12}$.

The CDR provides insight in the development of defaults per month on an annualized basis. In the same way, conditional delinquency rates can be determined. (Moreover, this can be split into the different delinquency classes as explained in above).

The cumulative default rate (CDX) is the proportion of leases in the portfolio that has gone into default as percentage of the total value of the portfolio. This is calculated as follows:

²¹ OTC was a department of treasury that was involved in supervision and regulation of federal chartered and state chartered banks, savings and loan associations.



$CDX = \frac{Total face value of defaulted leases}{Total face value of portfolio}$

In the same way, cumulative delinquency rates can be determined. (Moreover, this can be split into the different delinquency classes as explained in above). Default and delinquency rates alone do not provide sufficient insight into the performance of a portfolio. It could happen that a number of defaults in a portfolio results in small losses, while one default in a portfolio can result in large loss. Therefore, rating agencies also focus on the impact of a default (Fitch, 2011; Moody's, 2011a; and S&P, 2011). In the event of a default, the lessor is able to recover a portion of the value of the lease contract as explained in Section 4.2. The proceeds from the legal recovery process and sale of the car can be used to reduce losses on defaults. Fabozzi, Davis, & Choudhry (2006) define a parameter for the loss severity rate or LGD rate in order to measure recovery effects. However, rating agencies prefer to see recovery rate in order to measure recovery performance of portfolios. Therefore, it makes sense to define a recovery rate based on the LGD rate²². The LGD for month t is calculated as follows:

```
LGD = \frac{(Default \ balance \ in \ month \ t-Recovered \ proceeds)}{Defaulted \ balance \ in \ month \ t} \text{ and } Recovery \ rate = 1-LGD
```

Confidential

For the performance of realization of residual value it is important to determine the loss frequency and severity. Residual value risk of a portfolio is determined by the following key variables (Fitch, 20011; and Moody, 2011):

- Turn-in rate: the percentages of non-defaulted obligors that return their car to the lessor (*loss frequency*).
- Residual value realization rate: the difference between the expected predetermined residual value and actual residual value at lease end (*loss severity*).

5.5 Influencing factors & indicators

Historical portfolio performance data is not the only necessary input data to get a securitization transaction rated. Four influencing factors that are determinative for the future portfolio performance and its credit risk are (Fitch, 2011; and Moody's, 2011):

- Obligor profile
- Collateral quality
- State of car industry and market
- Macroeconomic conditions

²² Recovery rate = 1 - loss severity rate

⁶³ Master Thesis Vincent Bakker 21-03-2014



The factors can be determined by a number of indicators. In particular, the data of obligor profiles and collateral indicators are of interest for the finance company, because they are responsible for providing portfolio data on obligor and collateral characteristics. Portfolio data can be used to determine diversification and concentration advantages within the portfolio characteristics.

5.5.1 Obligor profile

The number of defaults in auto lease securitization is highly correlated to the financial health of obligors or lessees (Fitch 2011; and Moody's, 2011a). They must ultimately provide the payment stream to the financing company. The obligor profile is determined by the following indicators:

- Obligor dollar concentration
- Obligor credit score

Rating agencies examine lessee dollar concentrations or total amount of funding per lessee in order to determine concentration risk and diversification benefits of the asset portfolio. The lessee dollar concentration risk influences the amount of credit risk (Moody's, 2011). The lessee dollar concentration provides information about the exposures to different customers (Moody's, 2011). Large exposure to a few customers can significantly increase the amount of credit risk. A default of a large customer can result in a big credit loss. Rating agencies are focused on the top one, top five and top ten lessee concentration. Lessee dollar concentrations can be measured by:

Lessee dollar concentration = $\frac{\text{Lease balance of customer }i}{\text{Total lease balance}}$.

Confidential

A better interest expense rate is acquired by a customer base consisting of financially healthy lessees. Therefore, it is important to examine the financial status and performance of the lessees. The average financial health of the securitization customer base can provide a good indication of the frequency of expected defaults in the underlying portfolio. It is therefore important that data on creditworthiness of customers are maintained accurately. Credit rating agencies expect that originators apply an adequate method to determine obligor credit scores. According to credit rating agencies, it is advisable to assign a score to each customer in order to gain more insight in the credit score of customers (Fitch, 2011; and Moody's, 2011).


An example of a possible and common used internal credit score rating method is the Altman's Z-score (Hull, 2010). The method is focused on the financial stability of business obligors. Five accounting ratios are used to predict default likelihood in the near future. The Z-score is calculated by:

$$Z = 1,2x_1 + 1,4x_2 + 3,3x_3 + 0,6x_4 + 0,999x_5$$
, with

•
$$x_1: \frac{working\ capital}{total\ assets}$$

- $x_2: \frac{retained \ earnings}{total \ assets}$
- earnings before interest and taxes

• $x_5: \frac{sales}{total assets}$

The height of the Z-score determines whether the obligor is likely to default. A Z-score above 3 indicates unlikely probability of default. A Z-score between 2,7 and 3 indicate a small chance of probability. A Z-score between 1,8 and 2,7 indicates a good chance of probability. A Z-score below 1,8 indicate a very high chance of default. However, it is questionable whether it is possible to obtain reliable key financial figures from customers.

5.5.2 Collateral quality

The characteristics and composition of the collateral of the securitized asset pool can have significant impact on the asset correlation and thus the portfolio credit risk of a securitization (Fitch, 2011). Some characteristics are directly related to credit losses, where others are related to the credit loss performance. The collateral quality of the securitized portfolio will therefore be analysed by rating agencies (Fitch, 2011; Moody's, 2011a; and S&P, 2011). To assess the quality of the collateral of the asset portfolio, they examine the following indicators:

- Vehicle mix dollar concentrations by:
 - o Segment
 - \circ Brand
 - o Model
- Original lease term dollar concentration
- Remaining instalments maturity
- Lessee geographic dollar concentration
- Lessee Industry dollar concentrations

The vehicle mix is a collection of characteristics of the collateral that have an impact on the credit risk. The vehicle mix is focussing on the segment, brand and model characteristics of the underlying vehicles (Fitch, 2011; and Moody's, 2011). Brand, model and segment can influence the value of the underlying asset portfolio in the securitization, especially in the case of negative events. For example, bankruptcy or recalls of single manufacturers can have an impact on the value of cars of that particular brand or model. But also political and regulating changes can affect the residual value realization. For example, if political changes make it more expensive to drive in SUV's while the asset pool exists of a large amount of SUV's, this will put pressure on the residual value of the car. Large exposures to single brands, models or segments can lead to an increase in residual value risk and credit risk (Moody's, 2011). Insight into exposures of vehicle mix dollar concentrations can be calculated with the following formulas:



Segment dollar concentration = $\frac{\text{Lease balance of segment } i}{\text{Total lease balance}}$ Brand dollar concentration = $\frac{\text{Lease balance of brand } i}{\text{Total lease balance}}$ Model dollar concentration = $\frac{\text{Lease balance of model } i}{\text{Total lease balance}}$

The lease term of contracts can be divided into the original term and remaining term. The original term is the agreed term of the contract. The remaining term indicates the time that is left of existing contracts. Fitch (2011) has observed that the frequency and severity of defaults increase for longer original term leases. This can be explained by the fact that longer terms make contracts amortizes slower. This increases the loss severity in case of a default. In addition, originators must predict future values or residual values further in the future, which increase the volatility of recovery and residual value realization, and thus affect the amount of credit risk (Fitch, 2011). A good dispersion between original terms can mitigate this risk.

Original term dollar concentration $i = \frac{\text{Lease balance with original term }i}{\text{Total lease balance}}$ (*i* is the number of months).

The remaining term indicates the time that is left of existing contracts. In many securitization transactions, the remaining term distribution can provide much information about the period when contracts expire and will become due. It gives insight in the timing of instalment and final instalment payments. Large final instalments exposures with the same remaining term can negatively influence the cash flow structure. For example, if a large portion of the portfolio expires in the same time and the wholesale market is in a weak condition, this can influence the residual value of the vehicles (Moody's, 2011). In addition, this can result in substantial mismatch between assets receipts and liability payments.

Remaining term dollar concentration $i = \frac{\text{Lease balance with remaining term } i}{\text{Total lease balance}}$ (*i* is the number of months).

Industry concentration and geographical concentration provides insight into the exposures to a single industry or a single region (Fitch, 2011; Moody's, 2011a; and Moody's, 2011b). Geographic concentration of lessees can influence the exposure to regional economic downturns (Fitch, 2011). Higher (than normal) concentrations of lessees in a certain region will result in an additional portfolio risk. Well diversified asset portfolios mitigate the risk of regional economic downturns. Industry concentration of lessees can influence the exposure to industry downturns. Higher (than normal) concentrations of lessees in a certain region will result in an additional portfolio risk. Well diversified asset portfolios mitigate the risk of regional economic downturns. Industry concentrations of lessees can influence the exposure to industry downturns. Higher (than normal) concentrations of lessees operating in the same industry will result in an additional portfolio risk. These indicators can be monitored by:

Geographic dollar concentration = $\frac{\text{Lease balance of regio i}}{\text{Total lease balance}}$ Industry dollar concentration = $\frac{\text{Lease balance of industry type i}}{\text{Total lease balance}}$

5.5.3 State of car industry and market

The state of the car market is determinative for the actual value of the underlying assets in the financial contracts. For credit risk, the LGD is depending on the current market value of the car at time of the default event. The amount of LGD depends on the difference between the actual market value of the car and the book value of the financial contract. In order to properly estimate the LGD, it is important to monitor the development of the market value of the underlying cars. For residual value



risk, the loss or gain is depending on the actual market value compared to the predetermined residual value. An indicator to make this visible is the "loan to value" ratio.

Confidential

5.5.4 Macroeconomic conditions

The macroeconomic conditions can have a significant influence on the performance and quality of the asset portfolio in the future. Economic downturns can have large impact on the value of the underlying collateral, which could increase the amount of credit risk of the securitization. The macroeconomic factors are taken into account by the rating agencies and are dependent on economic growth, interest rates development, inflation rates and consumer confidence, and so on. Macroeconomic conditions are independently incorporated in the credit rating decision.

5.6 Other rating drivers

In addition to credit risk and residual value risk, rating agencies have identified a number of other key rating drivers that may influence the quality and credit rating of car related ABS transactions (Fabozzi & Choudhry, Fitch, 2011; Moody's, 2011; and S&P, 2011):

- Structural issues
- Liquidity risk
- Interest rate risk
- Counterparty risk
- Operational risk
- Legal issues

In this study we pay limited attention to these risks. Nevertheless, it is good to understand what other risks are involved besides the two key risks in the securitization of car financings. They may be decisive whether the securitization transaction will be a feasible funding strategy.

5.6.1 Structural issues

A number of structural characteristics of the securitization transaction can have a direct or indirect influence on the interest expense rate of a securitization transaction (Fitch, 2011; and Moody's, 2011). Rating agencies consider the transaction liability structure, liquidity risk and interest rate risk. These factors are taken into consideration in the stress tests used by the rating agencies to determine the final credit rating.

Transaction liability structure

An important task in securitization transaction is the alignment of assets and liabilities of the issuing entity (the SPV). This is strongly dependent on the repayment structure of cash payments to investors (e.g. the difference between pay-through and pass-through repayment structures). The repayment structure is the way in which the receipts and payments of the securitization transaction are structured and timed and is an important aspect of the transaction structuring. According to Fabozzi & Choudhry

²³ Auto telex is a common used car market and trading value tool.



(2004), it is important to match the cash flows generated by the asset pool with the cash flow required for the repayment of interest and principal on securities issued.

During the term of the securitization transaction, receipts must be able to cover the amount to be paid on issued securities. In addition, receipts from the asset pool are distributed throughout a period, while payments on securities are usually made once a period. A best possible match must be made between receipt and payments in order to reduce the risk of structural mismatch between receipts and payments of the issuer. Also the height and choice between fixed and variable interest rates of receipts and receivables may pose risk to the liquidity of the securitization. Besides that, the classification and size of different tranches are decisive for the risk profile of tranches. The latter one is already explained in Section 2.6.1. Other credit enhancements can also be used to reduce structural risk in the securitization transaction.

In most auto lease securitization transaction, the originator (operating as servicer) may collect the debtor payments and disposals of returned off lease vehicles into its own bank accounts before transferring it to the accounts of the SPV (Fitch, 2011). Commingling refers to the number of days that the collections are stored on the account of the originator before transferring it to the accounts of the SPV (Fitch, 2011). To keep the structural risk of commingling as low as possible the number of days that the collections are hold by the originator should be as low as possible. As the commingling increases, the risk increase and more credit enhancement will be required by rating agencies (Fabozzi & Choudhry, 2004; and Fitch, 2011).

Liquidity risk

In the case of car lease securitization a mismatch can occur in the timing of receipts and payments as well as in different interest rates of receipts and payments. The timing of receivables and payments may pose a risk to the liquidity of the securitization transaction. Liquidity risk in securitization transactions is the inability of the issuer to meet its obligations and make cash payments as they become due (Comptroller, 1997). In a securitization transaction, the obligations and cash payments to investors are fairly predictable. However, cash receipts generated by the asset pool are less certain and predictable, since they are affected by delinquencies and defaults. It may be possible that part of the cash receipts are received to late or incomplete in order to make cash payments to investors. Adequate and efficient planning of the payment structure can improve the liquidity of the securitization transaction. The issuance of securities is used to finance the asset portfolio of the SPV. This means that the SPV has the obligation to repay investors plus an interest amount. Such payments must be generated by the asset pool. It is therefore necessary to receive the receipts in time.

Interest rate risk

Interest rate risk is the risk of a loss derived by a change in the variable interest rate. ABS transaction securities are fixed-income securities. The interest rates on assets in the securitized portfolio are often fixed interest rates. The interest price of ABS securities may fluctuate on general economic interest rate changes. Investors are keen to be covered against the risk that their investments will decrease in value by changing global interest rates, and therefore ask a variable rate depending on EURIBOR or LIBOR rates²⁴. In some cases, the investor would prefer to receive a fixed rate for portfolio purposes. However, generally, investors prefer to receive a floating rate on ABS to be covered against the interest rate risks (Fabozzi & Choudhry, 2004).

²⁴ Interbanking lending rates which are daily fluctuating.



We have already introduced how the cash flows are generated by the customers through lease contracts. The contractual rates of these lease contracts are fixed and determined by using an internal revenue model. When these contracts are securitized in an SPV, the SPV will receive an interest cash flow from the asset portfolio based on a fixed weighted average interest rate. The simplest way to convert the revenues to investors is to issue securities with a fixed interest rate. In that case, the interest rate risk is with the investors and will therefore demand a higher interest rate. When a floating interest rate is used on the issued securities, the issuer (SPV) is exposed to interest rate risk. To hedge against this risk, the issuer must enter into an interest rate swap (IRS). This has consequences for the structure of the securitization transaction. The SPV has to enter into an interest rate swap with a swap counterparty in order to convert the receiving fixed interest income into a floating interest cash flow. This is displayed in Figure 25. A premium will be paid to the swap counterparty in return for the swap structure.



Figure 25: Interest rate swap structure (example)

In order to attract the most investors, it is useful to issue floating-rate notes. This indeed means that the issuer in the securitization transaction of BFM/C4L will be exposed to interest rate risk and an IRS structure as displayed in Figure 25 must be used to cover the issuer against interest rate risk.

5.6.2 Operational risk

Operational risk is the risk of losses caused by inadequate or failed internal processes, people and systems or from external events (Hull, 2010). As already mentioned in Section 2.3, securitizations have to deal with a number of transaction participant. Thereby, the performance of a car lease securitization is depending on the quality, stability and financial conditions of these transaction participants (Fitch, 2011). All parties involved in the securitization transaction shall be taken into consideration by the rating agencies in order to determine the operational risk involved in the securitization transaction. In particular, the originator and servicer of the securitization transaction are extensively analysed. Other transaction participants are less extensively analysed by the rating agencies than the originator/servicer. The quality of other transaction participants is often considered based on their credit rating. This process is often referred as due diligence. Due diligence in securitization is the investigation and evaluation of a company's business and opportunities (Bing, 1996). This enables them to get insight and improve the transparency and information of originators.

The servicer is responsible for the operational performance of securitization transaction and the underlying asset portfolio. Rating agencies consider three main factors in their analysis of the originator/ servicer (Fitch, 2011):

- Corporate performance; operational and financial stability
- Quality and capabilities of the underwriting process
- > Quality and capabilities of the servicing operations



Rating agencies have recognized that the performance of car lease securitization transactions is partly dependent of the corporate performance of the servicer/ originator (Fitch, 2010). The corporate performance is tested based on operational & financial stability and motivation of the originator for the issuance of securitization. Originators/ servicers must clearly define a corporate overview of their business processes, strategy, history and competitive position in the market, in order to make its business easily understandable. Poor operational or financial strength can lead to a capped credit rating (Fitch, 2010). It is therefore very important to make the company and its business understandable.

The company must have the capabilities to perform a securitization and must be financially sound. There is a special focus on the corporate capabilities of origination and underwriting. These capabilities and quality of the origination process and underwriting process are reviewed in order to determine whether the selected portfolio is established in a proper way. This is preliminary based on the underwriting channels, residual value setting policy and early terminations handling. Besides underwriting capabilities, the originator/servicer must be capable of servicing the asset portfolio in a proper way. In particular, credit rating agencies are focused on the ability to manage the remarketing of returned or defaulted cars.

5.6.3 Legal & tax issues

Legal risks in auto lease securitizations can affect the cost-effectiveness of the securitization process (IFC, 2004). Legal risk is the risk of legal aspects on the securitization transaction, especially focussing on the isolation of the asset portfolio and the bankruptcy remoteness of the issuer (SPV). The transparency of the legal aspects and characteristics of the securitization transaction is decisive for the pricing and rating of the securitization. Legal issues in the structure of a securitization transaction can have significant impact on the credit and residual risk of a securitization. On contract level there are legal issues of contract structures and transaction documents. On a higher level, it involves the legal isolation of the assets from the originator, the legal transfer of the assets to the issuing vehicle, and tax status of the vehicle.

A number of structural characteristics and parties are involved in a securitization transaction through various agreements. These agreements must be structured and documented correctly in order to avoid problems in the future. The list below summarizes the main requirements for a legal feasible securitization transaction (based on IFC, 2004).

- The assets should be capable of being transferred (IFC, 2004).
- The legal settlement in the event of default (Fitch, 2011).
- The legal settlement of clauses (Fitch, 2011).
- The ability to achieve a true sale transaction (IFC, 2004). The focus of rating agencies is on the legal isolation of the asset portfolio, in order to prevent the SPV for bankruptcy and insolvency of transaction participants, namely the originator of the asset pool (Fitch, 2011). The transfer and sale of assets must be irreversible. To achieve that, agreed limited recourse provision and covenants between parties in the securitization should be enforceable (IFC, 2004). Moreover, credit enhancement agreements should be enforceable to ensure the bankruptcy remoteness of the issuer (SPV).
- It must be possible to securitize the assets, without notifying the obligors (IFC, 2004).
- The issuer should be able to enforce ownership rights on the securitized asset portfolio and, if necessary, should be able to appoint a back-up servicer (IFC, 2004).
- A portfolio with less standardized contracts with a lot of variations increases the legal organizational effort of a securitization transaction (Fabozzi & Choudhry, 2004). Exceptions



in financial contracts increase the legal risk of the asset portfolio. The greater the number of exceptions, the more expensive it is to make the contracts legally covered.

The analysis of legal issues is partly based on the transaction legal counsel. A legal counsel provides opinions to certain matters including the bankruptcy remoteness and enforceability of the issuer of the securitization (Fabozzi & Choudhry, 2004).

Confidential

Another important issue is the tax consequence of a securitization transaction. A key aspect of the securitization structure is to define the relation between both the originator and issuer in terms of tax consequence (IFC, 2004). It is important that the structure is arranged tax neutral to ensure that the securitization transaction does not lead to much additional tax liabilities arising from the securitization transaction, which would not occur without the transaction. In most cases, some tax costs will arise in securitization transaction. However, it is essential to know them with certainty in advance of the transaction in order to make a decision whether the cost can be considered as acceptable regarding to the overall benefits of the transaction (ICF, 2004). Unexpected tax charges can be eliminated by investigating the tax neutrality in the pre-securitization phase.

5.7 Conclusion

In this chapter we have identified the key rating drivers that influence the cost-effectiveness of a car lease securitization transaction. Rating agencies assess a securitization transaction based on the rating drivers of the transaction. These two main key rating drivers for the car lease securitization transaction of BFM are credit risk and residual value risk.

- Credit risk: the risk that the obligor will default on its obligation to make periodically payments under an agreed contract, resulting in a loss
- Residual value risk: the risk that the value of the leased car at the end of the lease contract is lower than the predetermined expected residual value at start date

On the basis of a number of variables that determine the level of credit risk and residual value risk, a credit rating is derived from their rating models. The main variables are the probability of default, recovery rate, asset correlation, turn-in rate and residual value realization rate. These variables are estimated on the basis of the (data) input of the originator. Historical performance data of the portfolio and influencing factors are used by the rating agencies to estimate the variables. These can be measured by a number of indicators.

Confidential

of historical performance data. In order to perform a cost-effective securitization transaction, it is necessary to organise and define a large number of input and/or indicators that are determinative for the quality of the securitization transaction. The framework in Figure 26 can be used to get control of the quantifying variables and influencing factors & indicators that are used to determine the portfolio credit risk and residual value risk. These are the two key rating drivers.

Key rating drivers	Quantified by	Influencing factors	Indicators/ input
Credit risk & residual value risk	 PD LGD (= (1-recovery rate)* EAD) Maturity Asset and default correlation Turn in rates Residual value realization rate 	Historical performance	 Default rate Delinquency rate Recovery rate LGD rate Turn-in rates Residual value realization rate
		Obligor profile	 Lessee dollar concentration (customers and end customer) Credit score Financial key Figures
		Collateral quality	 Vehicle mix dollar concentration Segment Brand Model Lease term dollar concentration Original term Remaining term Geographic and industry dollar concentration
		Industrial conditions	Financing value to market value ratio
		Macroeconomic conditions	Economic growth, interest rates, inflation rates, consumer confidence, and so on

Figure 26: Key rating driver quantification framework

Historical performance is a key input to determine expected future pool performances under various scenarios, in particular payment behaviour of obligors. Rating agencies try to estimate a full probability distribution of the expected credit loss of the pool and its variance, based on the estimates



Obligor profile and collateral quality are determinative for the financial health of obligors and quality of the collateral in the asset portfolio. The composition of these factors is in control of the finance company, and should be defined and organized well in order to get insight and control on the quality of the portfolio.

Rating agencies are focussed on the two key rating drivers. However, other rating drivers should not be underestimated. They can reduce the credit rating and increase the interest price if they are not properly investigated by the originator or sponsor of the transaction. For completeness, we have also created a framework (displayed in Figure 27) of the other rating drivers that can be used for control and organization of the securitization transaction of BFM. These drivers are particularly interesting for

Confidential

Other rating	Influencing factors	Indicators/ input				
drivers						
		Repayment structure				
Structural	Transaction liability structure	Commingling				
		 Credit enhancement 				
issues	Liquidity risk	Asset-liability mismatch				
	Interest rate risk	Portfolio-funding interest rate				
		mismatch				
		Financial key figures				
	Corporate performance; operational	Business processes				
	and financial stability	Business strategy				
		➢ History				
Operational		 Competitive position 				
risk	Quality and capabilities of the	 Origination process 				
	origination and underwriting process	 Underwriting process 				
	Quality and capabilities of the	 Servicing process 				
	servicing operations	Residual value setting policy				
		 Early termination process 				
		Legal settlement of defaults				
	Contract structure and transaction	Legal settlement of clauses				
	documentation	 Transferability of assets 				
		 Level of standardization of contracts 				
Legal & tax		 Ability to achieve a true sale 				
issues		transaction				
	Legal isolation of asset portfolio	 Ability to enforce ownership rights by 				
		issuer				
		 Legal transaction counsel 				

Figure 27: Framework of other rating drivers

Confidential

This chapter has provided an answer to research question (4): What are the key rating drivers that influence the cost-effectiveness of the car financing securitization program and how do you control them?

Chapter 6: Conclusion, recommendations & discussion

This chapter contains the final conclusions of the research project, discussion of the reliability of the results and recommendations for further steps. The first section outlines the conclusions by answering the problem statement of the research. This section is followed by the recommendations for possible further steps in applying securitization as a funding solution. This chapter ends with a discussion on the strong & weak points of the study and the final value of the research.

6.1 Conclusion

In this research we have investigated the possibilities of performing a securitization program as a funding solution for the capital shortage problem of the finance company. Capital shortage can possible limit the growth of the car financing asset portfolio of the finance company in the foreseeable future. The main motivation for introducing a securitization funding strategy is raising capital to

Confidential

In the beginning of this research project we have defined the following problem statement: "*How can securitization of car financing contracts be organized in order to raise capital in a cost-effective way and what adjustments should be made in order to introduce a securitization funding strategy*?" The research has shown that the organization and structuring of a securitization turned out to be very complex and transaction specific. There are a large number of organizational aspects that should be considered when introducing a securitization funding strategy. We answer the research question by mentioning the main important organizational characteristics for the securitization of the asset portfolio of BFM, based on the findings in this research.

Portfolio composition and transfer to SPV

The organization of a securitization transaction starts with the identification of the asset portfolio of BFM. The portfolio must meet a number of requirements in order to raise cost-effective capital through a securitization funding strategy. The main requirements that the assets must meet are being regular & predictable cash flow generating assets and must be transferable. This is a prerequisite for the securitization of the asset portfolio, because the assurance of the future generated cash flow by the asset pool is determinative for the risk of repayment of investors in securities. In addition, the contracts must be *standardized* in order to reduce the legal issues when transferring the asset portfolio in a securitization transaction. Too many exceptions to standardized contracts will increase the legal risk and complexity of the securitization transaction, making it less cost-effective. Diversification of the asset portfolio is the basis of obtaining a high credit rating on the securitization transaction. It is important to have a well-diversified portfolio on a number the following aspects: Lessee dollar concentration, vehicle mix dollar concentrations, original lease term dollar concentration, remaining instalments maturity, lessee geographic dollar concentration and lessee Industry dollar concentrations. The credit rating and cost-effective deal size is depending on the degree of diversification on these aspects. Ultimately, the assets that qualify for securitization must also meet the following eligibility criteria:

The first lease payment must be made (1 month seasoning)



- ▶ No receivables more than 30 days or 60 days past (delinquent)
- > No lessee can be in a bankruptcy procedure
- > Contracts must contain legal settlements for clauses and event of defaults

The organization of the securitization transaction will require the introduction of an SPV. The SPV is used to organize the securitization transaction as *bankruptcy remote* as possible. The bankruptcy remote feature is used to separate the SPV entity from BFM in case the finance company enters into a bankruptcy procedure. This ensures that creditors (of BFM) can have no possible claim against the SPV, in case of bankruptcy of the finance company, due to the isolation of the asset portfolio from the originators balance sheet. This can be achieved by a *true sale* of the asset portfolio, in which the SPV becomes the legal owner of the assets. The issuer (SPV) should be able to enforce ownership rights on the securitized asset portfolio.

Confidential

The process of transferring the legal title of the car can be time-consuming and costly. This can be improved by *adding a titling trust* in the organization of a securitization transaction. A titling trust can be used to hold the vehicle title and leases from the beginning of the underwritten lease contract. BFM will not be listed on any title, but has an *undivided beneficial interest (UTI)* in all leases and related vehicles. BFM will be contractually engaged as a servicer of the titling trust. When a securitization actually takes place, the titling trust will issue certificates that represent a *special unit of beneficial interest (SUBI)* on the assets to be securitized, which are sold as a true sale to the securitization trust or SPV. No transfer of titles is needed and the vehicle ownership and lease contracts remain with the titling trust. Only the SUBI certificates and the associated rights are transferred to the securitization SPV.

Choice of asset backed securitization structure

The choice of the securitization structure determines how the securitization transaction should be organized. We have investigated four main true sale securitization structures that are suitable for the asset portfolio of BFM: *Master trust structure, grantor trust structure, owner trust structure and ABCP conduit structure*. An assessment model is used to determine which structure best suits the case of BFM. This is based on three criteria:

- flexibility
- certainty

75 Master Thesis Vincent Bakker 21-03-2014



• cost-effective deal size

Confidential

Organization and control of (key) rating drivers

For the use of a securitization as a funding strategy, it is important to *understand and get control* on the rating drivers that determine the quality and interest on issued commercial paper or securities of the securitization transaction. Insight and control of rating drivers assist in organizing various processes to be well prepared for the implementation of a securitization funding strategy. We have investigated the key rating drivers examined by credit rating agencies. The two key rating drivers are *credit risk* and *residual value risk*

Credit rating agencies use the level of credit risk and residual value risk to determine a loss distribution and credit worthiness of the securitized portfolio of car financing assets, depending on the variables probability of default, recovery rates, loss given default, asset maturity & correlation, turn-in rates and residual value realization rates. They determine these variables on the basis of historical portfolio performance and influencing factors. These influencing factors are obligor profile, collateral



The basis for credit loss analysis and estimation are the historical portfolio performance data, derived from the portfolio loss data and the static pool loss data. Portfolio loss data is simply the losses that occur in each period as a percentage of that periods' outstanding portfolio balance, which composition is changing over time and can be calculated by the conditional default rate (CDR). This provides insight in the proportion of leases in the portfolio that has gone into default as percentage of the total value of the portfolio. A static pool loss data is an isolated static subsets of originated contracts and used for a detailed tracking of its performance of the contracts over time and can be calculated by the cumulative default rate (CDX). This provides insight in the development of defaults per month on an annualized basis.

Next to the key rating drivers, a number of other rating drivers may be decisive for the costeffectiveness of the securitization transaction. These are structural, legal and tax issues, and operational risk. Therein, it is important to define business processes, origination, underwriting and servicing structure.

Confidential

6.2 Recommendations





6.3 Discussion

Although our findings seem to be convincing, we must make conclusions with some caution. Securitization turned out to be a complex playing field of structured finance, in which many issues play a role in the process. Moreover, every securitization transaction differs from one other, making it difficult to work from a basic concept. Legal issues, financial issues, structural issues, risk issues, counterparty issues, accounting issues and more should be considered in detail when introducing a securitization funding strategy. The complexity of securitization is also reflected in the literature. Some papers discuss all aspects, but are often too general and do not provide in depth research. Frequently, studies are focussed on one or a few aspects of securitization to go into detail. Moreover, we found out that the consistency between various studies in the literature is rather weak. Many aspects of securitization are interpreted and defined differently in various papers. We have chosen to define securitization as a generic term in order to gain knowledge about securitization in general in Chapter 2. Subsequently, we have focussed on structural issues, financial issues and risk issues in detail, which lies in the extension of our expertise on financial and risk issues. However, we did not pay much attention to the legal structuring, accounting & tax issues and other relevant issues. These issues may be of serious concern for introducing a securitization funding strategy.

Initially, we focused on self-contained securitization programs (master trust, owner trust and grantor trust securitization structures), in which capital is raised from capital markets solely based on the asset portfolio of the finance company. In particular, the theoretical section (Chapter 2) is primarily based on these structures. However, we found out that the large cost-effective deal size is a major constraint of self-contained securitization programs. As we continued the research, we have searched for alternative securitization solutions. We found out that it might be more interesting to participate in a multi-seller asset-backed commercial paper securitization program of a large bank.

In this study, we have made statements about the expected development of the portfolio of the finance company. Although we have discussed this carefully with the management, it is questionable whether the prediction is valuable and reliable. Descending or ascending markets may slow or accelerate the growth of the portfolio. However, a strong point of this research is that the assessment model and rating driver framework can be applied to multiple scenarios of future developments. The various structural options can be re-weighted when the expected portfolio development or motivation for securitization will change.

A point of discussion is the added value and reliability of the calculated cost-effective deal size. The cost-effective deal size model is depending on a large number of input parameters. A part of these parameters are set based on the actual value from the market or finance company. However, some parameters are estimated based on assumptions. This applies in particular to the estimation of the costs of securitization. It turned out that it is difficult to accurately estimate these costs in this early presecuritization phase for a specific car-related financing securitization transaction. We have estimated the costs of securitization based on the basis of expert's opinions. However, it is questionable whether they are a good estimation, because it is limitary verifiable by literature studies. Moreover, banks and securitization sponsors are reluctant to disclose their own fees. We are not able to say with certainty that this is the true cost-effective deal-size for BFM.

Bovenij

Reference list

- Altman, E.I., (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 23, 589-609.
- Brealey, R. A., Myers, S. C., & Allen, F. (2008) *Principles of corporate finance*. New York, The McGraw-Hill Companies Inc.
- Caprio, G., Demirgüc-Kunt, A., & Kane, E., J. (2008). The 2007 meltdown in structured securitization. *The world bank, development research group*.
- Carey, M., & Stulz, R. M. (2007). The risks of financial institutions. *Chicago: The university of Chicago press*.
- Covitz, D. M., Liang, N., & Suarez, A. S. (2009). The evolution of a financial crisis: Panic in the assets-backed commercial paper market. *Finance and economics discussion series (FEDS)*.
- De Backer, A., (2009). Effectisering, juridische technieken en beleggersbescherming. Faculteit rechtsgeleerdheid, Universiteit Gent.
- De Coninck, M., (2009). Effectisering en het risicoprofiel van banken. Faculteit economie en bedrijfskunde, Universiteit Gent.
- DeMarzo, P., M., (2005). The pooling and tranching of securities: a model of informed intermediation. *Review of Financial Studies*, 18, 1-35
- Doff, R., (2005). Economic capital voor verzekeraars. MAB, pp. 582-589
- Fabozzi, F. J., & Choudhry, M. (2004). *The handbook of: European structured financial products*.Hoboken, New Jersey: John Wiley & Sons.
- Fabozzi, F. J., Davis, H. A., & Choudhry, M. (2006). *Introduction to structured finance*. Hoboken, New Jersey: John Wiley & Sons.
- Fabozzi, F. J., & Kothari, V. (2007). Securitization: The tool of financial transformation. Working paper, *Yale international center for finance*. [http://ssrn.com/abstract=997079]
- Feng, X., & Long, Z. (2010). Auto loan-backed securitization in China. Advanced computer control (ICACC), 4, 368-370
- Haan de, J., Amtenbrink, F., (2011). Credit Rating Agencies. De Nederlandsche Bank (DNB), working paper.
- Hull, J. C., (2010). Risk management and financial institutions. Boston: Pearson

80 Master Thesis Vincent Bakker 21-03-2014



Gangwani, S. (1998). Speaking of securitization. New York: Deloitte & Touche. Vol 3

- Gorton, G. B., & Souleles, N. S. (2007). Special purpose vehicles and securitization. In Carey, M. & Stulz, R. M. (eds.), *The risks of financial institutions* (pp. 549-602). Chicago: University of Chicago Press. [http://papers.nber.org/books/care06-1]
- Groeneveld, E., (2008). Onderzoek naar de mogelijkheden voor CMBS na de subprime crisis. Amsterdam School of Real Estate.
- Gupta, R. R., Edwards, E., Petu, D., Amador, I., Sancartier, J., & Bella, J. (2007). *Rating U.S. auto lease-backed securitizations: An update.* Fitch Ratings.
- Jobst, A. (2005). Asset securitization as a risk management funding tool: what does it hold in store for SMEs? *International Monetary Fund (IMF)*.
- Kacperczyk, M., & Schnabl, P., (2010). When safe proved risky: Commercial paper during the financial crisis of 2007-2009. *Journal of economic perspectives*, 24, 29-50
- Kane, G., D. (1997). The problem of how to account for asset securitization transactions. *Journal of accounting education*, 15, 39-51
- Klee, N. K., & Butler, C. B., (2002). Asset-backed securitization, special purpose vehicle and other securitization issues. *Uniform Commercial Code Law Journal*, 35(2), 23-68.
- Litwin, S. M., & Levy, W. A. (2000). New developments in equipment and auto lease financing: securitization, leveraged leasing and titling trusts. In (2nd ed.), *Equipment leasing leveraged leasing*. Aspen: Aspen: Aspen Law & Business.
- Malamud, S., Rui, H., & Whinston, A. B. (2013). Optimal incentives and securitization of defaultable assets. *Journal of financial economics*, 107, 111-135
- Mansini, R., & Speranza, M.G. (2002). A multidimensional knapsack model for asset-backed securitization. *Journal of the operational research society*, *53*, 822-832.
- Martínez-Solano, P., Yagüe-Guirao, J.,& López-Martínez, F. (2009). Asset securitization: effects on value of banking institutions. *The European journal of finance, 15, 119-136*
- Pirotte, P., Schmit, M., Vaessen, C. (2004). Credit risk mitigation evidence in auto leases: LGD and residual value risk. *Solvay business school.*
- Sabarwal, T. (2006). Common structures of asset-backed securities and their risks. *Journal of Corporate ownership & control*, 4, 258-265.



- Sarkisyan, A., & Casu, B. (2013). Retained interest in securitisations and implications for bank solvency. European Central Bank, working paper www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1538.pdf
- Schmit, M. (2004). Credit risk in the leasing industry. Journal of banking & finance, 28, 811-833
- Segoviano, M., Jones, B., Lindner, P., & Blankenheim, J. (2013). Securitization: lessons learned and the road ahead. International Monetary Fund, working paper
- Sullivan, D. (1998). Note: Why does tax law restrict short-term trading activity for asset securitisation. *Virginia tax reviews*, 17, 610-655.
- Tavakoli, M. T. (2008). *Structured finance and collateralized debt obligations* (2nd ed.). Hoboken, New Jersey: John Wiley & Sons.
- Vink, D. (2009). Securitizatie: Hoe nu verder. *Magazine for accountancy and business economics*, 215-223.
- Vink, D., & Thibeault, A. E. (2009). Securitizatie: een vergelijkende empirische analyse tussen hoofdcategorieën ABS, MBS en CDO. *Kwartaalschrift Economie*, *4*, 415-447.
- Vink, D., & Thibeault, A. E. (2010). Securitization back to basics replacing humpty-dumpty. *The financial executive*, 48, 16-21.
- Zhang, J., Zhu, F., & Lee, J. (2008). Asset correlation, realized default correlation, and portfolio credit risk. Moody's KMV

Additional references

- Bank for International Settlements (BIS), (2008). Credit Risk Transfer. Basel committee on banking supervision.
- Bank for International Settlements (BIS), (2009). Report on special purpose entities. Basel committee on banking supervision.
- Bank for International Settlements (BIS), (2011). Report on asset securitisation incentives. Basel committee on banking supervision.
- Black Rock, (2011). Understanding ABCP: A primer. Blackrock



- Committee of European Banking Supervisors (CEBS), 2010. Guidelines to article 122a of the capital requirements directive. https://www.eba.europa.eu/documents/10180/106202/Guidelines.pdf
- De Nederlandsche Bank (DNB), (2005). Statistisch bulletin juni 2005. Amsterdam: De Nederlandsche Bank N.V.
- Bank for International Settlements (BIS), (2008). Credit Risk Transfer. Basel committee on banking supervision.
- De Nederlandsche Bank (DNB), (2009). De invloed van securitisaties op de statistieken. *Statistisch bulletin juni 2005*. Amsterdam: De Nederlandsche Bank N.V.

European Central Banks (ECB), (2007). The use of portfolio credit risk models in central banks.

Fabozzi, F. J. (2000) Investing in asset-backed securities. Pennsylvania, FJF

Global Credit Rating Co (GCRC) (2013). Global asset backed commercial paper (ABCP) criteria.

Johnson, J.W., & MacIvor, A. (2012). Taxation of financial asset securitization investment trusts

Price Waterhouse Coopers (PWC), (2006). Structuring securitisation transactions in the Netherlands

Telpner, J. (2003). A securitisation primer for first time issuers. *Greenberg traurig, Global securitisation and structured finance*

- Universiteit Twente (2012). *Master thesis syllabus Industrial Engineering and Management (8th ed.)*. University of Twente, Enschede, the Netherlands
- Vereniging Nederlandse Autoleasemaatschappijen (2012). *vehicle leasing market in Figures 2012*. Vereniging Nederlandse Autoleasemaatschappijen (VNA).

Wang, S., (2007). True sale securitization: Germany and China. VDM. Master thesis

Credit rating agency reports and requirements

DBRS, (2013). Asset-backed commercial paper criteria report: U.S. European ABCP conduits

DBRS, (2010). Rating U.S. auto lease securitizations

Fitch Ratings (Fitch), (2012). Global rating criteria for asset-backed commercial paper.

Fitch Ratings (Fitch), (2011). Criteria for rating U.S. auto lease ABS.



Fitch Ratings (Fitch), (2006). European consumer ABS rating criteria

Fitch Ratings (Fitch), (2001). Asset-backed commercial paper explained.

International Finance corporation (IFC), (2004). Securitization key legal and regulatory issues.

- Mezzanotte, C. J. (2013). Rating European consumer and commercial asset-backed securitisation. DBRS ratings bureau.
- Standard's & Poor (S&P), (2011). ABS: revised general methodology and assumptions for rating U.S. ABS auto lease securitizations.

Standard's & Poor (S&P), (2012). Special report auto ABS.

- Standard's & Poor (S&P), (2012b). Solvency II could push European insurers away from securitizations.
- Standard's & Poor (S&P), (2013). European auto ABS index report Q2 2013: Performance still reflects Europe's economic recovery.

Moody's investor service (Moody's), (2003). The fundamentals of asset-backed commercial paper.

Moody's investor service (Moody's), (2011a). Moody's approach to rating auto lease securitizations. Rating methodology

Moody's investor service (Moody's), (2011b). Moody's approach to rating fleet lease-backed ABS.



Appendices



Appendix 1: Simplified organization structure

Figure 28: Organization structure of the Bovemij Verzekeringsgroep (BVG)

All business units are 100% owned by their parent company, unless otherwise stated.

- BOVAG is for 83,12% owner of the Bovemij Verzekeringsgroep and is an inter-branch organisation of entrepreneurs who are dealing with mobility, existing of circa 11.000 affiliated entrepreneurs.
- Stichting Administratiekantoor Bovemij Verzekeringsgroep (STAK) are (circa 260) shareholders of the Bovemij Verzekeringsgroep N.V. for 16.88%.

Appendix 2: Different lease types

Car fleet management: The leasing company is responsible for the management of cars owned by the customer.

Financial lease: type of lease in which the lessor stays the legal owner of the leased equipment. The lessee is the economic owner and responsible for the insurance, maintenance and enjoyment of the equipment. The customer bears the risk of residual value losses.

Net operational lease: type of lease in which the lessor is the legal and economic owner of the equipment and only includes depreciation and interest. Maintenance, winter tires, etc. are costs for lessee.

Operational lease close end: type of lease in which the lessor is the legal and economic owner of the equipment. The lessor is responsible for maintenance of the equipment. In a closed end operational lease, the leasing company bears the risk of residual value losses.

Operational lease open end: type of lease in which the lessor is the legal and economic owner of the equipment. The lessor is responsible for maintenance of the equipment. In an open end operational lease, positive residue of lease fees, depreciation and maintenance costs during the contract term, are divided between customer and leasing company.



Hire purchase: type of lease with a credit shape that is different from leasing. It is a credit shape in which is some equipment is hired for an agreed period, in which the equipment is transferred to the lessee after the last payment is made. It is comparable to financial lease.

Appendix 3: Funding and portfolio

Confidential

Appendix 4: Synthetic securitization

The legal form of synthetic securitizations differs from the true sale ABS. A synthetic structure is focussed on transferring the credit risk, instead of selling the assets itself. This is done through entering into a credit default swap (CDS) with an SPV (DNB, 2009). In case of a default in the asset portfolio, the SPV will guarantee the losses experienced by originator. In exchange, the originator will pay a periodic CDS premium payment to the SPV. In turn, the SPV sells securities (credit linked notes) to investors against an interest rate that is based on the periodic payment of the originator. The proceeds received from investors are used to compensate losses in case of default. This will reduce the returns of investors. On the other hand, investors can profit from a well performing asset portfolio and obtain interest, repayment and premiums after deduction of the compensate losses (DNB, 2009). An example of a synthetic securitization structure is displayed in Figure 30.



Figure 30: Synthetic securitization structure

One of the main objectives of the legal structuring aspects is to isolate the asset portfolio's credit risk from the originator's credit risk. That isolation is needed as a precondition of achieving a higher credit quality on the securitized portfolio (Fabozzi & Choudhry, 2004). In the case of a synthetic structure, the originator buys protection from an SPV to reduce its exposure to credit and interest rate risk.

The most important need and motivation of BFM for securitization is to acquire liquidity or capital to continue business activities. ABS and ABCP structures provide a new source of funding and raise capital by a true sale transaction of its portfolio. In synthetic structures, originators do not sell their asset portfolio and do not raise capital (Fabozzi & Choudhry, 2004). In addition, CDS premiums have to be paid to the SPV. Synthetic structures do not have the potential to provide lower funding costs, instead of ABS and ABCP that do have the potential to lower the funding costs. BFM does not matter whether the assets are placed on- or off balance and thus which structure is chosen based on this motivation. Solely based on the need and motivation for securitization the true sale structures, ABS and ABCP, are suitable securitization structures. Meanwhile, synthetic structures are more relevant for risk transferring instead of source of funding to raise capital. Therefore a synthetic structure will not be an appropriate securitization structure for BFM.

Appendix 5:	Credit	ratings	by	different	rating	agencies
-------------	--------	---------	----	-----------	--------	----------

Sortable Table Key	Moody's	Fitch	S&P
Highest grade credit	Aaa	AAA	AAA
Very high grade credit	Aa1, Aa2, Aa3	AA+, AA, AA-	AA+, AA, AA-
High grade credit	A1, A2, A3	A+, A, A-	A+, A, A-
Good credit grade	Baa1, Baa2, Baa3, Baa4	BBB+, BBB, BBB-	BBB+, BBB, BBB-
Speculative grade credit	Ba1, Ba2, Ba3	BB+, BB, BB-	BB+, BB, BB-
Very speculative credit	B1, B2, B3	B+, B, B-	B+, B, B-
Substantial risks - In default	Caa1, Caa2, Caa3, Ca	CCC, CC, C, RD, D	CCC+, CCC, CCC-, CC, C, D

Figure 31: Comparison table of credit ratings from Moody's, Fitch & S&P²⁵

Appendix 6: Calculation of portfolio growth

Confidential

²⁵ Source: The wall street journal

⁽http://online.wsj.com/news/articles/SB10001424052970203914304576630742911364206?mg=reno64wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10001424052970203914304576630742911364206 .html dd. 20-12-2013)



Appendix 7: Revenue model of BFM





Appendix 8: Cost estimation

The cost estimation is based on experiences of experts in the field of securitization. With interviewing some experts from and provided documents from various parties, we have determined the additional costs of securitization in Figure 32. We have made 3 assumptions for cost that we expect to make (column Jan/Vincent).

Fixed Up-front and Fixed running	costs	involved in a so	ecuriti	zation					
Up-front costs	Estimated cost		DB		ING	Rabobank		Jan/ Vincent	
Revieuw Counsel	€	100.000	€	175.000		€	25.000		
Legal advise fees (incl reporting)	€	375.000				€	375.000		
Accounting and tax advice	€	25.000						€	25.000
Listing fees	€	2.500	€	2.500					
SPV and trust establishment	€	10.000	€	5.000		€	15.000		
Rating agent	€	337.500			€ 500.000	€	175.000		
portfolio audits	€	2.000	€	2.000					
Cash manager	€	5.000	€	5.000					
account bank	€	3.000	€	3.000					
paying agent	€	2.000	€	2.000					
trustee	€	5.000	€	5.000					
Data model	€	50.000						€	50.000
Total	€	917.000							
	€	305.667							
Running costs/ fees (per month)									
SPV administrator	€	10.000	€	20.000				€	-
SPV trustee	€	10.000	€	5.000		€	15.000		
Cash manager	€	5.000	€	5.000					
account bank	€	3.000	€	3.000					
paying agent	€	2.000	€	2.000					
Rating agent	€	10.000						€	10.000
Underwriting	€	20.833			0,25% *vo	lume			
Total fees (per month)	€	60.833							
Per year	€	730.000							

Figure 32: cost estimation based on expert opinions



Appendix 9: Explanation of Excel model of cost-effective deal size

Parameters

The model is depending on a number of parameters that can be adjusted to the situation of BFM. We have separated the parameters into 3 different types:

- Parameters of bank funding
- Parameters of portfolio
- Parameters of securitization

Bank funding parameters explained:

- "IRS": The IRS rate is the variable debt rate (in our example we used the IRS rates of November from http://www.ingcommercialbanking.com/eCache/NLD/27/068.html).
- "Bank Opslag": the interest rate premium on debt to be paid above the variable rate.
- "Eigen inbreng eis": the percentage of equity used for funding.

Portfolio parameters explained:

- "RoE" (return on equity): the interest requirement on equity or equity cost rate.
- "Portfolio volume": the total value of car financings, this is a variable parameter to find the cost-effective deal size.
- "Looptijd": the average contract term in years.
- "Klanten verdeling": the distribution of customers as percentage of portfolio volume.

Securitization parameters explained:

- "Selectie portfolio": the portfolio percentage to securitize.
- "Senior note rates (ABCP)": the expected senior rate on commercial paper of ABCP.
- "Senior note rates (ABS)": the expected senior rate on ABS.

In our calculations, we used the input for the bank funding parameters and portfolio parameters as displayed in Figure 33. These correspond to the current situation of BFM. We assume that no defaults occur. Costs are left out, because these are put through one on one to the customers and do (in theory) not affect the results.

