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## Abbreviations

|           |                                                                                                                                                                                          |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A         | Austria                                                                                                                                                                                  |
| ABCP      | Asset Backed Commercial Paper                                                                                                                                                            |
| ABS       | Asset Backed Security                                                                                                                                                                    |
| AMA       | Advanced Measurement Approaches                                                                                                                                                          |
| B         | Belgium                                                                                                                                                                                  |
| Basel I   | Basel Capital Accord                                                                                                                                                                     |
| Basel II  | New Basel Capital Accord                                                                                                                                                                 |
| BCBS      | Basel Committee on Banking Supervision, Committee                                                                                                                                        |
| BIS       | Bank for International Settlements                                                                                                                                                       |
| CBO       | Collateralised Bond Obligation                                                                                                                                                           |
| CDO       | Collateralised Debt Obligation                                                                                                                                                           |
| CDS       | Credit Default Swaps                                                                                                                                                                     |
| CH        | Switzerland                                                                                                                                                                              |
| CLO       | Collateralised Loan Obligation                                                                                                                                                           |
| CLN       | Credit Linked Notes                                                                                                                                                                      |
| CMBS      | Commercial Mortgage Backed Security                                                                                                                                                      |
| Committee | Basel Committee on Banking Supervision, BCBS                                                                                                                                             |
| CP        | Commercial Paper                                                                                                                                                                         |
| D         | Germany                                                                                                                                                                                  |
| DK        | Denmark                                                                                                                                                                                  |
| E         | Spain                                                                                                                                                                                    |
| EEA       | European Economic Area                                                                                                                                                                   |
| EL        | Greece                                                                                                                                                                                   |
| Europe-19 | Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom, Island, Lichtenstein, Norway, Switzerland |
| EU        | European Union                                                                                                                                                                           |
| EU-15     | Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom                                            |

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|             |                                                     |
|-------------|-----------------------------------------------------|
| F           | France                                              |
| FIN         | Finland                                             |
| Fannie Mae  | FNMA, Federal National Mortgage Association         |
| FGI         | Financial Guarantee Insurance                       |
| FHLMC       | Freddie Mac, Federal Home Loan Mortgage Corporation |
| FNMA        | Fannie Mae, Federal National Mortgage Association   |
| Freddie Mac | FHLMC, Federal Home Loan Mortgage Corporation       |
| GSE         | Government Sponsored Entity                         |
| I           | Italy                                               |
| IO          | Interest Only                                       |
| IPO         | Initial Public Offering                             |
| IR          | Ireland                                             |
| IRB         | Internal Ratings-Based Approach                     |
| IS          | Island                                              |
| L           | Luxembourg                                          |
| L/C         | LOC, Letters of Credit                              |
| LI          | Lichtenstein                                        |
| LOC         | L/C, Letters of Credit                              |
| MBS         | Mortgage Backed Security                            |
| NL          | Netherlands                                         |
| NO          | Norway                                              |
| NYSE        | New York Stock Exchange                             |
| P           | Portugal                                            |
| PO          | Principle Only                                      |
| S           | Sweden                                              |
| SBA         | U.S. Small Business Administration                  |
| SIV         | Single Investment Vehicle                           |
| SME         | Small and Medium-sized Enterprise                   |
| SPE         | Single Purpose Entity                               |
| SPV         | Single Purpose Vehicle                              |
| SRP         | Supervisory Review Process                          |
| UK          | United Kingdom                                      |

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## 1 Introduction

The financial sector has changed significantly during recent decades. Higher competitive pressure and a greater concentration of banks have diverse impacts on lending practices. The new Basel Capital Accord, Basel II, is supposed to harmonise international capital requirement standards in banking and to enhance the financial system's security and solidarity. Such changes in the financial environment may have substantial effects on the access to finance of small and medium-sized enterprises (SMEs), which generally tend to face significant problems in accessing equity as well as debt. Many financial institutions issue securitised debt on various asset classes. However, in Continental Europe, where SMEs are of especially great economic importance, securitisation would represent an interesting alternative to traditional finance channels. This paper focuses on such structured finance instruments as a financing alternative, in particular for SMEs.

The following section explains the characteristics of SMEs, in terms of size, corporate governance, and value management. Subsequent, financial issues associated with SMEs are discussed. Section 3 provides an overview of the development and the structure of Basel II and discusses possible effects on SME finance. After a brief outline of equity, debt and hybrid finance alternatives in Section 4, Section 5 focuses on the main topic of this paper, structured finance, describing its development and concept. Finally it elaborates on the benefits and risks associated with securitisation, including its effects on SME financing and on the European economy as a whole. Section 6 concludes.



## 2 Small and Medium-sized enterprises

### 2.1 *SME Definitions*

#### 2.1.1 European Union

On the 1 January 2005, there was a new definition for Small and Medium-sized Enterprises (SME) entered into force by the European Commission (see Table 1). It introduces three different categories of enterprises. An enterprise is by definition “any entity engaged in an economic activity, irrespective of its legal form”.<sup>1</sup>

| Enterprise category | Headcount | Turnover       | or | Balance sheet total |
|---------------------|-----------|----------------|----|---------------------|
| Medium-sized        | < 250     | ≤ € 50 million |    | ≤ € 43 million      |
| Small               | < 50      | ≤ € 10 million |    | ≤ € 10 million      |
| Micro               | < 10      | ≤ € 2 million  |    | ≤ € 2 million       |

**Table 1: New thresholds for SMEs<sup>2</sup>**

For staff and financial calculation, data from the last approved annual accounts must be used. Another important aspect concerning the used data is the autonomy of the SME. An enterprise is only autonomous if it is independent, it is holding less than 25% of capital or voting rights (whichever is higher) in one or more enterprises and/or outsiders do not have 25% or more of capital or voting rights in the enterprise; so called minority partnerships. Enterprises with

<sup>1</sup> see European Commission (2003b) pp.6f.

<sup>2</sup> European Commission (2005).

holdings of up to 50% are partner enterprises. If the stake is more than 50% the enterprises are linked.<sup>3</sup>

### **2.1.2 North America**

The U.S. Small Business Administration (SBA) has established widely used small business size standards - 500 employees for most manufacturing and mining industries, and \$6.5 million in average annual receipts for most nonmanufacturing industries. However, as these are only the primary size standards by industry, there is no single definition in the U.S. due to many exceptions.<sup>4</sup> Page 71 provides a summary of the U.S. small business Size Standards by Industry.

Canada's national statistics agency Statistics Canada defines SMEs "... as enterprises with less than 250 employees and less than \$50 million in total revenue".<sup>5</sup> Industry Canada, Canada's national industry agency, uses similar standards as the EU. A small business is defined as one that has fewer than 100 employees (if goods-producing business) or fewer than 50 employees (if service-based business). A business with fewer than 500 employees is classified as a medium-sized business, while firms with 500 or more employees are classified as large businesses. A micro business is defined as a business with fewer than five employees.<sup>6</sup>

## **2.2 Characteristics of SMEs**

### **2.2.1 Corporate governance and management**

The word "entrepreneur" usually describes a person who plans, founds and runs a business at his own risk. Most SMEs are under the legal form of individual enterprises or partnerships such as private limited companies.

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<sup>3</sup> see European Commission (2003b) pp.11-25.

<sup>4</sup> see U.S. Small Business Administration (2009).

<sup>5</sup> Canada Statistics (2009).

<sup>6</sup> Canada Industry (2008).

Especially in small enterprises like family businesses the owners manage the business. It can be observed that most of these SMEs perform highly qualified work, especially the very small ones. However, in many cases, management is rather poor due to the executive management's technical background. Also, as the key decision makers, owner-managers tend to be reluctant to change, transparency and openness. Examples of possible management weaknesses of owner-managers are listed in Table 2.

|                                                   |                                                                      |
|---------------------------------------------------|----------------------------------------------------------------------|
| ▪ Weak leadership and people skills               | ▪ Weak forecasts due to lacking planning activities                  |
| ▪ Personal weaknesses of executive management     | ▪ Inadequate information due to deficient accounting and controlling |
| ▪ Only partial focus on diverse business segments | ▪ Missing succession plan                                            |
| ▪ Insufficient strategic planning                 | ▪ Little information on competition                                  |

**Table 2: Possible weaknesses of owner-managers**

Another characteristic of SMEs is that long term independence tends to be considered as more important than profit. This leads to rather risk-averse behaviour.<sup>7</sup>

### 2.2.2 Value Management

For some time, Value Management was understood as increasing Shareholder Value, the value of an enterprise for the benefit of its owners. Considering the value of total equity being equal the value of the total enterprise, the aim to increase Shareholder Value equals increasing the total value of the enterprise. The underlying principle is that whoever bears the consequences has the right to decide.<sup>8</sup>

One may argue that executive management should care about more than profitability. Especially in Continental Europe, but also in the USA and in Great

<sup>7</sup> see Marx (1993) pp.5-8,18-45; Janßen (2003) pp.90-92.

<sup>8</sup> see Spremann (2001) pp.27,28.

Britain, executive management has to consider interests of competing groups of stakeholders.<sup>9</sup> This approach, the Stakeholder Value approach, is the predecessor of the Shareholder Value approach, from a historical point of view. Ralph Cordiner<sup>10</sup> claimed already in the 1950s that top management of public companies is responsible to a variety of stakeholders beyond shareholders, such as customers, employees and suppliers. However, the supporters of the Stakeholder Value approach failed to develop a way to measure the value owed to each group of stakeholders. Finally, top management had to consider interests of all groups of stakeholders, having eventually no responsibility at all, providing always reasons for bad performance and low return. Even more, customers are actually no stakeholders because they have no interest in the company itself but only in the product or service the company provides.<sup>11</sup>

Family businesses are especially important in Continental Europe. In most cases, the understanding of creating and increasing value is different for family businesses than for large corporations. The family business forms a major part of the family's property. Family members tend to manage the business (see 2.2.1 Corporate governance and management). Unlike portfolio investors, who diversify their investments, family businesses run high risk of total loss. Tradition and reputation are considered as extremely important. Families owning a business care about long-term success, for several generations. Long-term independence is the prime objective, rather than short-term profit. The basic principle of the so-called Family Value is sustainability. Table 3 provides an overview of the three enterprise models and the interests of involved parties.<sup>12</sup>

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<sup>9</sup> see Spremann (1996) p.481.

<sup>10</sup> Former CEO of General Electric.

<sup>11</sup> see Malik (2004) p.63, Reichheld, Teal (1996) p.161.

<sup>12</sup> see Spremann (2001) pp.48-50.

| Shareholder Value         | Stakeholder Value    | Family Value             |
|---------------------------|----------------------|--------------------------|
| - Market-driven behaviour | - Continuity         | - Sustainability         |
| - No limitations          | - Striving for value | - Long-term independence |
|                           | - Outperformance     |                          |

**Table 3: Most important sources of security for the involved parties<sup>13</sup>**

One may argue that the purpose of an enterprise is valorisation. However, increasing in value can never be neither aim nor purpose of an enterprise. Being valuable is simply not a purpose. Purpose or aim may be competitiveness in a certain market. Hence, the purpose of an enterprise would be satisfying the customer, rather than employees or shareholders. Therefore, the purpose is increasing the Customer Value. In that sense, the aim of shareholders is not necessarily equal the aim of the enterprise. Furthermore, not all investors are entrepreneurs. However, each entrepreneur is certainly an investor, but only few investors are entrepreneurs. An investor acts time-oriented. He is only interested in return and may sell his shares in difficult times. The entrepreneur on the other side is interested in the competitiveness of the enterprise and struggles through hard time. He cares for the enterprise. His motives may be divers. In order to trade, an investor needs stock markets while an entrepreneur does not.<sup>14</sup>

## **2.3 Financial issues associated with SMEs**

### **2.3.1 Structure of financial environment**

Progress in information and communication technologies, deregulation and globalisation have been changing the financial sector continuously, over the last decades. These changes may have both positive and negative effects on

<sup>13</sup> Spremann (2001) p.50.

<sup>14</sup> see Malik (2004) pp.63-68.

SMEs. On the positive side, higher cost effectiveness may lead to decreasing charges and interest rates, a broader range of financial products may facilitate SMEs' access to finance, and increasing use of electronic banking services leaves human resources for a more client-based approach rather than a product-based approach. On the other hand, the mergers and acquisitions process may lead to a reduction in the number of banks available in their region, a reduction of the total credit amount attributed to SMEs, and a weakening negotiation power due to the increasing relative difference between the size of the SME and the size of the bank.

Basically, there exist two financing systems in Europe: a bank-based system, as in Germany and Austria, and a market-based financial system as in the United Kingdom. In a bank-based financial system banks play the most important role as finance provider because bank loans are the preferred source funding. Market-based financial systems rely on competitive markets. Among other forms of finance, equities and bonds are more important than bank loans. Despite a varying importance of bank borrowing, the majority of European SMEs depend on bank financing, revealing a lack of alternative funding sources.<sup>15</sup>

### 2.3.2 Funding

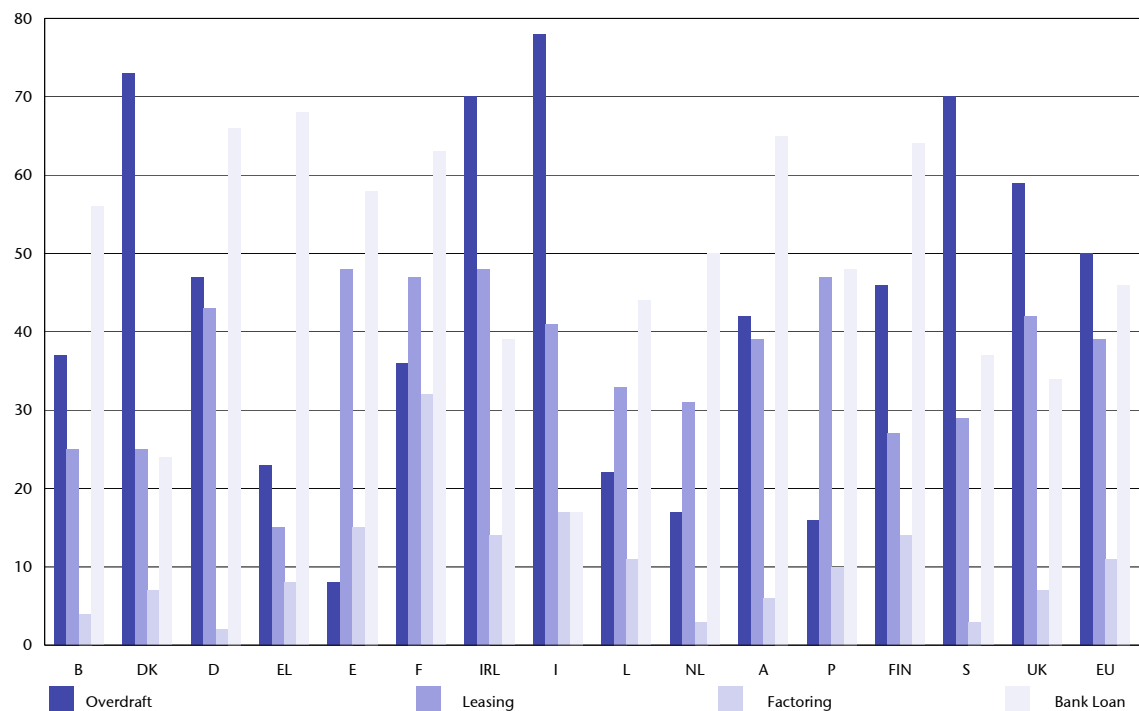
SMEs and large companies face basically the same problem in financing, i.e. the funding and provision of capital. However, large companies are able to invest smoothly over time, due to their size. SMEs on the other hand, face financing problems, as investments may be larger relative to their size. In other words, large companies have many small investments over time, while small companies have few but large investments compared to their size.

Another problematic characteristic of SMEs are frequently too large inventories. These are usually caused by poor logistics. Furthermore, SMEs tend to be more dependent on single customers. Reasons are insufficient cash reserves and the risk of bad debt of large customers.

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<sup>15</sup> see European Commission (2003) pp.13,19.

Traditionally, SMEs have close relationships to their main banks. This long-term cooperation is based on deep trust and may lead to a kind of dependence of the entrepreneur. The smaller the enterprise, the worse tends to be the rating, the higher is the default risk, the more expensive gets the funding, and the stronger is the dependence. If banks are reluctant to lend, small companies tend to face bigger troubles.<sup>16</sup>



**Figure 1: Percentage of SMEs using debt financing in EU-15, by country<sup>17</sup>**

Most European SMEs still rely on a traditional relationship to one single bank despite growing importance of alternative ways of funding. The prime focus tends to lie on short-term financing. Trade credit is one of the most favourite

<sup>16</sup> see Marx (1993) pp.64-66.

<sup>17</sup> European Commission (2003) p.20.

The survey was conducted among independent medium-sized enterprises (50-250 employees). Source: Grant Thornton, The European Business Survey, London, 2001.

forms of short-term financing. Compared to large corporations, SMEs face a competitive disadvantage due to higher interest rates and bank charges.<sup>18</sup>

Figure 1 gives an indication of the different types of debt finance used by SMEs. The majority of SMEs use mainly bank finance and leasing. Factoring seems to be important only in France.

There are various relevant ratios and performance indicators. Nevertheless, the most important ratio to banks when lending to companies is the equity ratio<sup>19</sup>. Studies show that European SMEs have on average weaker equity ratios than larger companies.<sup>20</sup>

|             | Manufacturing |        | Retail Trade |        | Transportation, Communication |        |
|-------------|---------------|--------|--------------|--------|-------------------------------|--------|
|             | Small         | Medium | Small        | Medium | Small                         | Medium |
| Austria     | 19.69*        | 33.08  | 5.34*        | 31.48  | 8.14*                         | 41.95  |
| Belgium     | 38.40         | 36.41  | 29.33        | 27.13  | 32.80                         | 34.62  |
| Denmark     | 29.61         | 35.93  | 26.21        | 34.15  | 26.80                         | 24.45  |
| France      | 36.90         | 36.88  | 35.81        | 31.05  | 28.99                         | 27.04  |
| Finland     | 38.75         | 43.61  | 31.64        | 39.59  | 31.47                         | 40.19  |
| Germany*    | 20.57         | 27.95  | 11.00        | 13.13  | n.a.                          | n.a.   |
| Italy       | 27.92         | 26.83  | 24.95        | 20.77  | 39.68                         | 26.93  |
| Netherlands | 34.45         | 34.94  | 35.95        | 30.11  | 30.44                         | 26.67  |
| Portugal    | 34.28         | 38.45  | 31.99        | 30.91  | 20.98                         | 27.94  |
| Spain       | 42.68         | 45.26  | 40.34        | 43.21  | 44.66                         | 68.04  |
| Sweden      | 32.33         | 31.35  | 28.35        | 23.79  | 21.98                         | 14.21  |

\* Data refers to 1999.  
n. a. = no data available.

**Figure 2: Equity ratio by sector, enterprise size, and country<sup>21</sup>**

Figure 2 provides an overview on SMEs' equity ratios by sector, size and country. Among SMEs, there seems to be no clear link between the equity ratio and firm size. Differences in the equity ratio by country may be explained by different taxation systems, financial systems, legal framework conditions, and financing traditions. Differences by sector may be primarily caused by different capital demands. In general, SMEs show lower equity ratios than larger enterprises and a higher demand for external finance. The density of

<sup>18</sup> see European Commission (2003a) p.5.

<sup>19</sup> Equity ratio = equity as a percentage of total capital.

<sup>20</sup> see Marx (1993) pp.67-70.

<sup>21</sup> European Commission (2003) p.21.

investments<sup>22</sup> of large enterprises is generally higher than of SMEs. Larger enterprises seem to be rather able to own the fixed assets, such as buildings and office equipment, instead of renting or leasing them. And, SMEs have a relatively higher need for working capital requirements. Furthermore, SMEs tend to be more indebted than large enterprises.

SMEs heavily rely on bank lending. Table 20 on page 73 shows that some 40 % of European SMEs have credit lines with only one single bank. Even more, more than half of SMEs having credit lines concentrate them in one single bank. The smaller the enterprise, the closer tends to the bank relationship. Micro enterprises usually have credit lines only with one single bank (see Table 21 on page 73). Also, the attributes of credits indicate SMEs' bank financing. More than half seem to have bank liabilities of more than € 100 000. As Table 22 on page 74 shows, the majority of SMEs' largest bank loans have a maturity period of over three years. Compared to lending to larger enterprises, lending to SMEs is more often a matter of collateral. Therefore, insufficient guarantee collateral is a major reason for banks refusing to grant additional loans to requiring small enterprises. However, Table 24 on page 75 shows that unsatisfying business performance and insufficient information provided are more significant reasons for medium sized enterprises not to receive required credit.

Most SMEs seem to be satisfied with services banks provide. Dissatisfaction has its root cause in poor service, high bank charges, high interest rates and unsuitable solutions. Figure 13 on page 74 provides an overview of various reasons for dissatisfaction, broken down by enterprise size. Normally, SMEs do not switch banks. It is considered as complex and brings little financial benefit. If SMEs decide to change banks, the main reasons are more favourable conditions and better service (see Table 23 on page 75).<sup>23</sup>

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<sup>22</sup> Ratio of fixed assets to total assets.

<sup>23</sup> see European Commission (2003) pp.21-28.



### 3 The Basel Capital Accord

#### 3.1 *Development of the Basel Accord*

Established on 17 May 1930, the Bank for International Settlements (BIS) is the world's oldest financial organisation and fosters international monetary and financial cooperation. Based in Basel, Switzerland, the BIS serves as a bank for central banks. Currently, the BIS has 55 member central banks and 560 staff from 49 countries.<sup>24</sup>

The most important committees are the Markets Committee, the Committee on the Global Financial System, the Committee on Banking Supervision, and Committee on Payment and Settlement Systems.<sup>25</sup>

The Basel Committee on Banking Supervision (BCBS), hereafter the Committee, was established by the central bank Governors of the Group of Ten<sup>26</sup> countries at the end of 1974. Current members are Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, United Kingdom and United States.

The Committee has no formal supranational supervisory authority. Therefore, the Committee's conclusions do not have any legal force. Rather more, it formulates supervisory standards and guidelines, which are expected to be implemented by individual authorities in order to fit their own national systems.

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<sup>24</sup> Algeria, Argentina, Australia, Austria, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, Chile, China, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong SAR, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, the Republic of Macedonia, Malaysia, Mexico, the Netherlands, New Zealand, Norway, the Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, the United Kingdom and the United States, plus the European Central Bank; Bank for International Settlements (2008).

<sup>25</sup> see Bank for International Settlements (2008).

<sup>26</sup> Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, United Kingdom and United States; Bank for International Settlements (2008).

One important objective has been a thoroughly international supervision, based on two principles:

- that no foreign banking establishment should escape supervision
- that supervision should be adequate.

Over the last few years, the Committee has promoted solid supervisory standards worldwide and developed together with many non-G-10 supervisory authorities the „*Core Principles for Effective Banking Supervision*“ and the „*Core Principles Methodology*“.<sup>27</sup>

In order to harmonise international capital requirement standards in banking, the Basel Committee on Banking Supervision created the Basel Accord, Basel I, in 1988. Primarily focusing on credit risk, Basel I set the minimum capital requirements at 8% of the banks' standardised risk-weighted assets. Since 1996, the risk of market prices has been considered in Basel I, due to the increasing importance of international trade. Initially, Basel I targeted only at international banks. In the meantime, however, it is respected and implemented worldwide.

However, Basel I considered the bank's economical risks only roughly. New financial instruments such as credit derivatives and asset securitisation are almost entirely ignored. Furthermore, Basel I only took into account credit and market risk as basis for the capital requirement.<sup>28</sup>

### **3.2 Basel II**

Based on Basel I, the aim of the new Basel Accord, Basel II, is to enhance the financial system's security and solidarity. Therefore, capital requirements are more dependent on the underlying risks and new developments in financial markets and risk management are considered. Additional focus lies on increased banking supervision and stronger market discipline.<sup>29</sup>

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<sup>27</sup> see Bank for International Settlements (2008).

<sup>28</sup> see Deutsche Bundesbank (2001) pp.16,17.

<sup>29</sup> see Deutsche Bundesbank (2007).

In 1999, the Committee revised the Basel I with the following objectives:

- to bring capital requirements closer to the actual risk profile of banks
- to cover banking risks with requirements which create incentives for advanced implementation and
- to allow banks to use in-house methods.<sup>30</sup>

Three consultative papers on Basel II were published from 1999 until 2003 in a two-year rhythm. In 2004 Basel II was finally published and entered into force at the end of 2006. Table 4 lists the chronology of the Basel Accords.

| Month   | Year | Item                                                                                                          |
|---------|------|---------------------------------------------------------------------------------------------------------------|
| July    | 1988 | Publication of Basel Accord (Basel I)                                                                         |
| End     | 1992 | Entry into force of Basel I                                                                                   |
| January | 1996 | Basel market risk paper                                                                                       |
| June    | 1999 | First consultative paper on revising the Capital Accord (Basel II)                                            |
| January | 2001 | Second consultative paper on Basel II                                                                         |
| May     | 2003 | Third consultative paper on Basel II                                                                          |
| June    | 2004 | Publication of the Framework for the new Basel Capital Accord (Basel II)                                      |
| July    | 2005 | Extension of the Framework by trading book aspects and the treatment of double default effects for guarantees |
| End     | 2006 | Entry into force of Basel II                                                                                  |

**Table 4: Chronology of Basel Accords<sup>31</sup>**

<sup>30</sup> see Oesterreichische Nationalbank (2008).

<sup>31</sup> Deutsche Bundesbank (2007).

With Basel II, the Committee aimed at a more qualitative banking supervision because risk-adequate capital cannot, despite its importance, sufficiently guarantee solvency of banks and stability of the banking system. That is why Basel II consists of three complementing pillars: the minimum capital requirements, the supervisory review, and the market discipline (see Figure 3).<sup>32</sup>

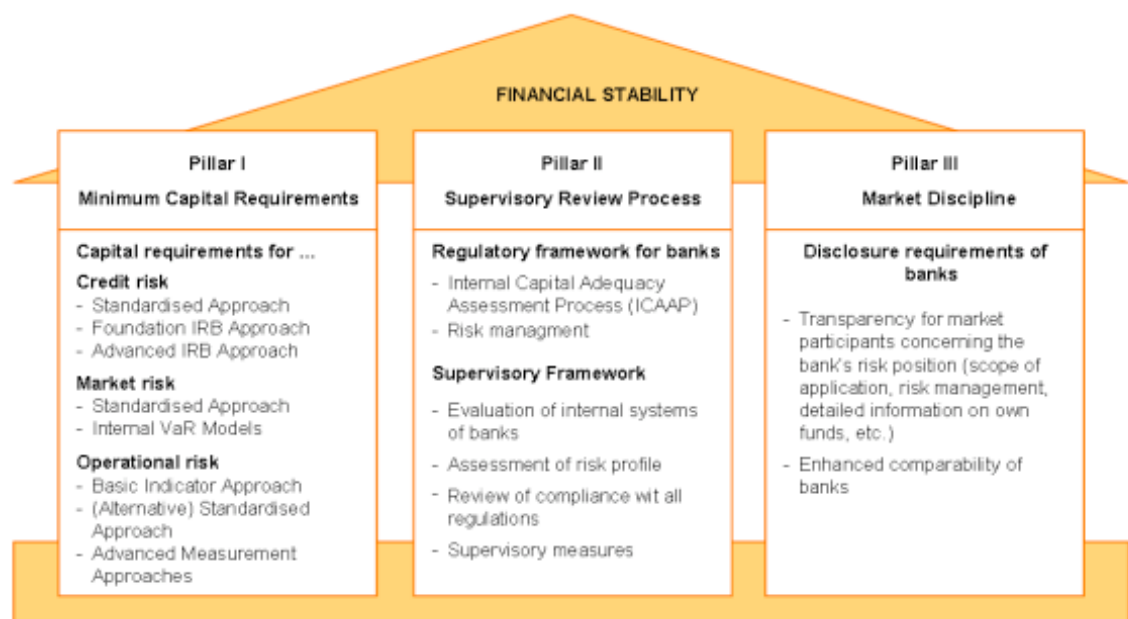


Figure 3: Architecture of Basel II – The Three-Pillar Model<sup>33</sup>

### 3.2.1 Pillar 1: Minimum capital requirements<sup>34</sup>

The minimum capital requirements include credit market, market risk and operational risk. Three risk measurement methods can be applied for calculating the capital ratio<sup>35</sup>: the basic, the standardised approaches as well as more advanced and more risk-sensitive approaches that are based on internal

<sup>32</sup> see Deutsche Bank (2001) p.17.

<sup>33</sup> Oesterreichische Finanzmarktaufsicht (2008).

<sup>34</sup> see Basel Committee on Banking Supervision (2004) pp.12-136.

<sup>35</sup> also capital coefficient.

ratings. The capital ratio is supposed 8% at least and is calculated the following way:

$$\frac{\text{Capital}}{\text{Sum of all risk - weighted assets}} \geq 8\%$$

with

$$\begin{aligned} \text{Sum of all risk - weighted assets} = & \text{Sum of credit risk - weighted assets} + \\ & + (\text{capital charges for market risk} + \text{operational risk}) \times 12.5 \end{aligned}$$

Basel II offers two approaches for measuring credit risk: the Standardised Approach, which is supported by external credit assessments, and the more sophisticated and more risk sensitive Internal Ratings-Based approach (IRB), which is subject to the explicit approval of the bank's supervisor. The Standard Approach, which is fairly similar to Basel I, considers SME loans the same way as loans of retail customers.

Operational risk, as defined in Basel II, is "...the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events". It includes legal risk, but excludes strategic and reputational risk. Three methods for calculating operational risk capital charges: (i) the Basic Indicator Approach; (ii) the Standardised Approach; and (iii) Advanced Measurement Approaches (AMA). Similar to credit risk measurements, the more advanced methods are also more risk sensitive. Continuous evolution on risk management methods are expected, especially related to AMA, which is supposed to be applied in particular by international banks with high operational risk. The simpler approaches on the other hand, i.e. the Basic Indicator Approach and the Standardised Approach, are meant for banks with lower operational risk.

### 3.2.2 Pillar 2: Supervisory review<sup>36</sup>

The aim of the Supervisory Review Process (SRP), which is a qualitative approach, is to ensure that banks have adequate capital to support all the risks in their business and encourage continuous development and use of risk management techniques in monitoring and managing institute-specific risks. The three main areas are described in Table 5.

| Main areas of Pillar 2                                                              | Examples                                                            |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Risks considered under Pillar 1 that are not fully captured by the Pillar 1 process | Credit concentration risk                                           |
| Factors not taken into account by the Pillar 1 process                              | Interest rate risk in the banking book, business and strategic risk |
| Factors external to the bank                                                        | Business cycle effects                                              |

**Table 5: Main areas Pillar 2 of Basel II**

In addition, Pillar 2 enables supervisors to assess compliance with the minimum standards and disclosure requirements of the more advanced methods in Pillar 1.

### 3.2.3 Pillar 3: Market discipline<sup>37</sup>

The area of discretion, which internal rating assessments provide, enhanced disclosure requirements and transparency requirements are designed to support the first two pillars. Pillar 3 requirements cover the application of the capital rules, the amount and structure of capital, and quantitative and qualitative capturing of risks. The adjustment of disclosure requirements with

<sup>36</sup> see Basel Committee on Banking Supervision (2004) pp.158-174.

<sup>37</sup> see Basel Committee on Banking Supervision (2004) pp.175-190.

national accounting rules is considered as highly important in order to avoid conflicts.

### **3.3 *Effects of Basel II on SMEs***

Possible negative effects on SMEs caused serious concerns during the development of Basel II. After all, SMEs are considered are enormously important to economical growth, employment and investment. The main concern, Basel II leads to an inappropriate increase of financing cost of SMEs, would result in significantly rising capital requirements. Several exemptions were introduced to counteract such negative effects, e.g. the effect of diversification in loan portfolios.

Depending on the applied approach, the Standardised Approach or the IRB. cost of unsecured loans without external rating do not increase. Small enterprises may even benefit from the recognised effect of diversification of loans. However, credit spreads may increase as a result of improved rating systems. In general, credit ratings will get increasingly important.<sup>38</sup>

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<sup>38</sup> Taistra (2003) pp.16-21.



## 4 Financing alternatives

According to Merton and Miller, Nobel Prize winners, the development of companies is absolutely independent from its capital structure. In reality, the two extreme categories of financial instruments i.e. equity and debt differ dramatically in terms of interests, incentives and rights of the respective investor as well as the degree of information provided. Thus, financial instruments are also used to balance interests and risks related to business financing. Table 25 on page 77 provides an overview of the main distinctive features of equity, debt and hybrid capital.

| Phase                                             | Comment                                                 |
|---------------------------------------------------|---------------------------------------------------------|
| 0. Seed                                           | Development of ideas, pre-production, preparation phase |
| 1. Start-Up                                       | Foundation of enterprise                                |
| 2. Early Stage<br>(⇒ Early Stage-financing)       | Development of product prototype                        |
| 3. Second Stage                                   | Achieving market leadership in relevant market segment  |
| 4. Third Stage                                    | Expansion, up-scaling                                   |
| 5. Fourth Stage or Bridge<br>(⇒ Bridge-financing) | Pre-IPO, preparation of going public                    |
| 6. IPO                                            | Consolidation and saturation                            |
| 7. Post-IPO-Phase                                 | Internationalisation and acquisitions                   |

**Table 6: Phases of growth financing<sup>39</sup>**

Technology-based one-product-businesses, competing in a dynamic growth market typically, run through the same phases, described in Table 6.<sup>40</sup>

<sup>39</sup> Grabherr (2001) p.33.

Figure 4 provides an overview of SME development and suitable financial instruments per stage.

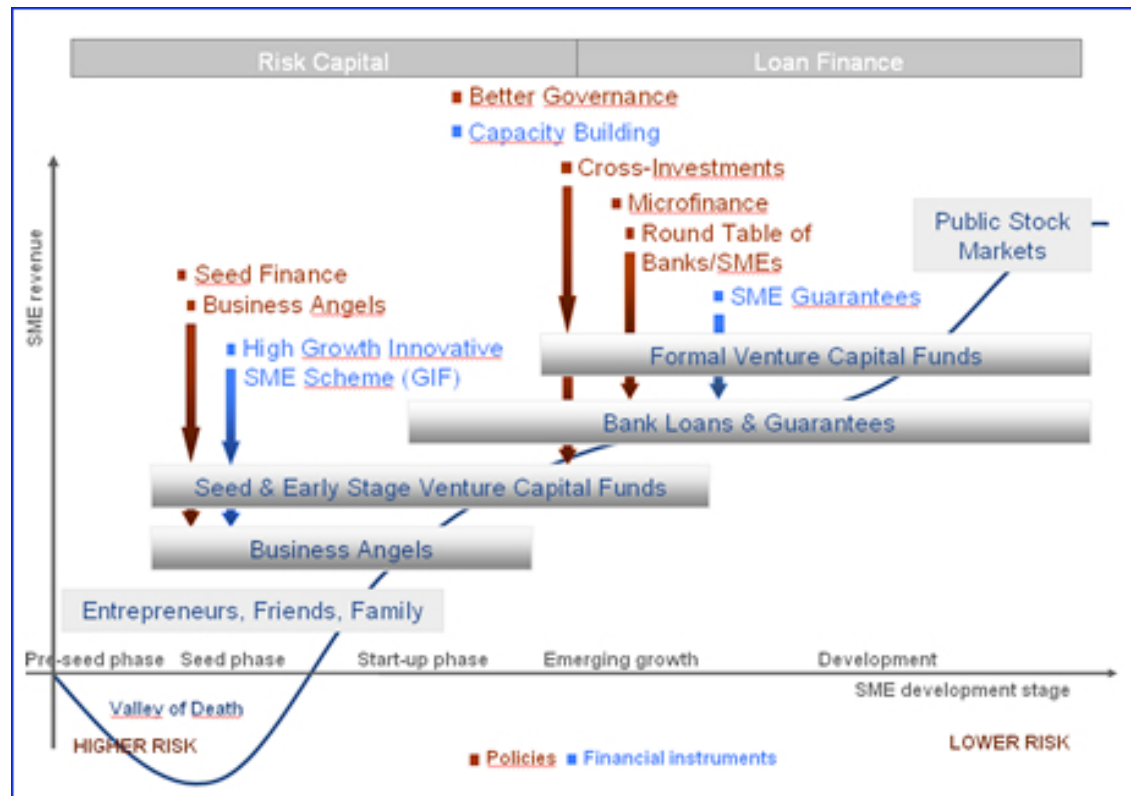


Figure 4: SME development stages<sup>41</sup>

## 4.1 Equity

Equity owners are the ultimate owners of the company and participate in the profits of the company via dividends. Equity capital can be created by issuing new shares or by retaining profits.<sup>42</sup>

<sup>40</sup> see Grabherr (2001) pp.31-36.

<sup>41</sup> see European Commission (2009).

<sup>42</sup> see Coyle (2002) p.3.

### 4.1.1 Private equity

The most important source of capital through equity financing is retained profits. This financing method keeps the entrepreneur independent from other investors. And, it prevents creditors getting confidential information on the company's financial situation via credit assessments. Another benefit of retained profits is the opportunity of strengthening the equity ratio.<sup>43</sup>

### 4.1.2 Venture capital

Venture capital has got more and more important during the last two decades. Many well-known companies like Apple Computers, Intel, Lotus and Microsoft grew with venture capital.<sup>44</sup> Typically, the venture capital industry applies a limited partnership as organisational form. In such a partnership, venture capitalists manage the fund while investors are limited partners and cannot get involved in the day-to-day business. Such a partnership is usually predetermined to ten to thirteen years.<sup>45</sup>

In Europe, debt is still much more relevant than venture capital. One reason may be that entrepreneurs are reluctant to admit investors having a say in running the business.<sup>46</sup>

### 4.1.3 IPO

Traditionally, SMEs do not have direct access to organised capital markets. This makes strengthening the equity ratio complicated. The only way is going public, an Initial Public Offering (IPO), which requires, however, a change of the legal form of the company.<sup>47</sup>

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<sup>43</sup> see Marx (1993) p.70.

<sup>44</sup> see Gompers, Lerner (2006) p.1.

<sup>45</sup> see Gompers, Lerner (2006) pp.10,14.

<sup>46</sup> see Steiner, Starbatty (2003) p.33.

<sup>47</sup> see Marx (1993) pp.71,72.

## **4.2 Debt**

Debt capital is borrowed money. The borrowed capital has to be repaid, maybe at a premium. In addition, interests on the capital have to be paid to the lender.<sup>48</sup> Debt instruments include loans, factoring, leasing, bonds and commercial papers.

### **4.2.1 Bank loans**

Due to their relatively small size, SMEs face constraints in borrowing. After all, only certain forms of financing are available to SMEs. Therefore, the traditional bank loan is of greater importance the smaller the enterprise. What is more, the higher default risk compared to large companies results in higher charges.<sup>49</sup>

The credit crunch caused by the recent economic and financial crisis increasingly hits SMEs.<sup>50</sup> In addition, since Basel II, large banks even aim at reducing lending to SMEs. That is why alternative forms of financing get more and more important in order to reduce the dependence on the main bank.<sup>51</sup>

### **4.2.2 Factoring**

Similar to Asset Backed Securities (ABS)<sup>52</sup>, Factoring is basically selling receivables. Unlike ABS however, Factoring requires smaller volumes because no cost of capital market transaction occur. That is why Factoring has been of great importance to SMEs. Since single receivables are rated rather than the seller, the credit rating of the eventual debtor is relevant for the result of the rating. Factoring does not extend financial resources. It is only a short-term financing alternative as merely outstanding receivables are made to cash at an early stage.<sup>53</sup> And, Factoring is not appropriate for all industries. The

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<sup>48</sup> see Coyle (2002) pp.2,3.

<sup>49</sup> see Marx (1993) pp.74-76.

<sup>50</sup> see European Commission (2008) pp.8,9.

<sup>51</sup> see Steiner, Starbatty (2003) p.19.

<sup>52</sup> see Part 5 of this paper.

<sup>53</sup> see Steiner, Starbatty (2003) pp.30-32.

construction business, for instance, finances long-term projects, for which other financing forms are more appropriate.<sup>54</sup>

### 4.2.3 Leasing

Leasing has become an important alternative to the traditional bank loan. It is a bit comparable to renting. The main difference is that, depending on the agreed contract conditions, the lessee becomes the owner of the leased item at the end of the leasing period. One advantage of leasing is, besides its flexibility, the fact that leased items are booked as liabilities. Debt financed purchases are booked as assets. Hence, leasing has positive effects on the balance sheets compared to loan-based investments.<sup>55</sup> In addition, it does not tie up capital. However, leasing is usually more expensive than loans.<sup>56</sup>

### 4.2.4 Bonds

The capital market as funding source is particularly relevant in Anglo-Saxon countries. In other European countries, such as Germany and Austria, bank loans are much more common due to the traditionally close entrepreneur-bank relationship. Bonds and loans differ *inter alia* in the fact that the bank organises and places the issue rather than being the contractual partner.

External ratings are enormously important to companies issuing on capital markets. Failed issues would cause significant costs and would damage the issuers' reputation. Bonds are, due to high cost and large volumes required, primarily suitable for large companies.<sup>57</sup>

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<sup>54</sup> see Gaubatz (2003) pp.301,302.

<sup>55</sup> see Steiner, Starbatty (2003) pp.28-30.

<sup>56</sup> see Marx (1993) p.78, European Commission (2003a) p.8.

<sup>57</sup> see Steiner, Starbatty (2003) pp.22-24.

#### **4.2.5 Commercial Paper programmes**

Commercial Paper (CP) programmes are a series of corporate bonds, which are issued little by little. Contract conditions are agreed on in a framework contract and are adjusted to current market conditions. The total programme runs usually two to seven years. SMEs rarely use CP programmes due to high cost related and large volumes required.<sup>58</sup>

### **4.3 Hybrid financing**

Hybrid financial instruments combine features of both, equity and debt. Hybrid securities enable companies to raise capital at reasonable cost and provide at the same time investors with a supplement to debt and equity to their investment portfolios.<sup>59</sup>

#### **4.3.1 Participation certificates**

Participation certificates are basically non-voting shares and represent a proportional ownership of participating capital. This type of investment guarantees a share in the issuer's profit, but no voting rights. In addition, holders participate in any liquidation of the company and have the right to subscribe for new shares. Participation certificates allow the issuer access to non-voting, low-par-value equity capital, which is publicly tradable after the initial offering.<sup>60</sup>

#### **4.3.2 Silent partnerships**

Silent partnerships are very typical for the German market. It is a debt-like financing instrument that "...can be explained by return requirements and the anticipated proportion of buy-backs, underlining the role of public-private

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<sup>58</sup> see Steiner, Starbatty (2003) pp.24-26.

<sup>59</sup> see Coyle (2002) pp.2,4.

<sup>60</sup> see Swiss Exchange (2009), Deutsche Börse (2009).

partnership agencies in Germany”.<sup>61</sup> So-called typical silent partners participate in the company’s profits, but have limited control rights. Typical silent partnerships are considered as liability position. On the other hand, atypical partners also participate in the company growth and the company liquidation. That is why it represents an equity position.<sup>62</sup>

### 4.3.3 Convertible bonds

Convertible bonds are unsecured fixed-interest bonds. Holders of convertible bonds have the option to exchange their bonds for common stock of the same corporation at a preordained price. The ratio of exchange, i.e. stocks for bonds, is called conversion ratio. While issuers benefit from lower interest rates, investors appreciate the combination of bond-like attributes and growing potential of stocks.<sup>63</sup>

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<sup>61</sup> see Bascha, Walz (2001) pp.5,13.

<sup>62</sup> see Müller (2008) p.154 footnote 613.

<sup>63</sup> See Haugen (2001) p.11, Coyle (2002) p.8, Kimes (2009).



## 5 Structured finance

### 5.1 *Development of asset securitisation*

#### 5.1.1 Definition of securitisation

With securitisation, one party can transfer risk, e.g. credit risk, to another party, the investor. In most cases so-called Asset Backed Securities (ABS) are used for this transaction. Its cash flows and credit rating depend entirely on its securitised assets.<sup>64</sup>

Securitisation can be simply defined as packaging individual debt instruments and converting the package into tradable securities.<sup>65</sup> Asset securitisation or “Asset Based Finance” respectively, is basically selling bundled debt on the capital markets rather than holding them until the due date. The resulting cash flow is used for refinancing the own business.<sup>66</sup>

Focusing on the substance rather than on the process, securitisation “consists of the use of superior knowledge about the expected financial behaviour of particular assets, as opposed to knowledge about the expected financial behaviour of the originator of the chosen assets, with the help of a structure to finance the assets more efficiently”.<sup>67</sup>

In many countries, the term “Structured Finance” is a synonym for asset securitisation, as well as for rating agencies. However, swaps, futures and any kind of ‘Taylor Made’ finance can be called structured finance.<sup>68</sup>

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<sup>64</sup> see GBRW (2004) p1.

<sup>65</sup> see Kendall (1996) pp.1f.

<sup>66</sup> see Bertl (2004) p.1.

<sup>67</sup> see Kravitt (1996) p.1.

<sup>68</sup> see Bär (1997) p.37 footnote 45.

Today, many different variations of ABS exist. The following three steps however, are common to all:

- Transfer of assets from the original owner to a Special Purpose Vehicle (SPV).
- Emission of securities by this SPV.
- (Almost) exclusive dependency of servicing the securities from an economical perspective through the transferred assets.<sup>69</sup>

Basically, all kind of assets may be used for securitisation. Depending on the underlying asset, three main types of ABS exist, as described in Table 7: Mortgage Backed Securities (MBS), Collateralised Debt Obligations (CDO), and ABS in a narrower sense.

| <b>MBS</b>                                                                     | <b>CDO</b>                                                  | <b>ABS (narrower sense)</b>                    |
|--------------------------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------|
| <b>RMBS</b> (Residential Mortgage Backed Securities):<br>residential mortgages | <b>CLO</b> (Collateralised Loan Obligations): loans         | Credit card receivables<br>Leasing receivables |
| <b>CMBS</b> (Commercial Mortgage Backed Securities):<br>commercial mortgages   | <b>CBO</b> (Collateralised Bond Obligation): tradable loans | Trade receivables<br>Consumer receivables      |

**Table 7: Types of ABS and used assets**<sup>70</sup>

Mortgage Backed Securities (MBS) are debt obligations representing pools of mortgage loans, usually on residential property.<sup>71</sup> There are two broad types of real estate property used: residential and nonresidential properties. Residential property includes houses accommodation up to four families. Nonresidential properties include commercial properties such as office buildings.<sup>72</sup>

<sup>69</sup> see Bertl (2004) pp.5,6.

<sup>70</sup> see Thonabauer, Noesslinger (2004) p.13.

<sup>71</sup> see U.S. Securities and Exchange Commission.

<sup>72</sup> see Fabozzi (2001) p.3.

Collateralised Debt Obligations (CDO) issue debt and equity. Like a company, CDO invests the raised money in financial assets like corporate loans and MBS.<sup>73</sup> However, CDO tend to invest in several assets making categorising difficult. That leads to various definitions. Collateralised Loan Obligations (CLO) and Collateralised Bond Obligations (CBO) are very similar. Both issue debt and equity backed by loans exclusively in the case of CLO and high-yield assets such as high-yield corporate bonds, emerging markets bonds in the case of CBO, and bank loans.<sup>74</sup>

### 5.1.2 Origins and development

Emerging in the financial markets since the 1930s, securitisation has been significantly influencing the way of meeting borrowing needs of both, consumers and businesses.<sup>75</sup> The New Deal, a framework for financial expansion, was a response to growing concerns regarding the expansion of speculative and consumptive credit over the course of the 1920s. It introduced a barrier between financial markets and deposits through a separation of commercial and investment banking. Moreover, caps on interest payments were introduced, and a federal system of securities markets regulation and the thrift industry were created. The New Deal period also laid the foundations for the rise of institutional investors like insurance companies and pension funds.<sup>76</sup> During the pre-deregulation, the cartel era of 1933 until 1980 in America was characterised by very costly and highly structured ways of doing business. At that time securitisation was rather seen as "...the substitution of more efficient public capital markets for less efficient, higher cost, financial intermediaries in the funding of debt instruments"<sup>77</sup>.

Deregulation and a severe shortage of funds in the late 1970s and 1980s, and the increasing use of pension fund and other managed accounts nourished a

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<sup>73</sup> see Lucas, Goodman, Fabozzi (2006) pp.3,4.

<sup>74</sup> see Dunlevy, Devito (1998) p.241, Thompson (1998) p.237, Tavakoli pp.27,28.

<sup>75</sup> see Kendall (1996) p.1.

<sup>76</sup> see Konings (2009) pp.82-84.

<sup>77</sup> John Reed, former Chairman and CEO of Citicorp, Citibank, and post-merger, Citigroup, and former Chairman of the New York Stock Exchange (NYSE).

wide range of new financial products.<sup>78</sup> The neoliberal and monetarist transformation of American finance during the late 1970s and early 1980s was characterised by a deregulation process nourishing new financial innovations.<sup>79</sup> In the 80's, tradable securities such as syndicated credits replaced more and more the traditional credit business. The term 'Securitisation' refers to this trend. However, in the meantime, it refers in a narrower definition to an innovative financing form, the 'Asset Securitisation'. Today, the main instruments are ABS and MBS.<sup>80</sup>

Several forces, listed in Table 8, gave impetus to securitisation getting global, starting with the United Kingdom at first, following continental Europe and other international markets.

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Issuer demand

- Basel Accords (capital adequacy ratios)
- Balance sheet/Liquidity management
- Efficient funding mechanism

Investor demand

- High-quality assets with attractive returns

Profit opportunity for Wall Street firms

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**Table 8: Global securitisation impetus<sup>81</sup>**

The international banking community established the Basel Accords, which went into force in 1992 (see The Basel Capital Accord). At that time capital was in short supply. Securitisation offered an opportunity to regulated financial institutions to manage their balance sheets and liquidity to the new standards, serving as an efficient way of funding. At the same time, ABS offered attractive

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<sup>78</sup> see Kendall (1996) pp.1-16.

<sup>79</sup> see Konings (2009) pp.90,91.

<sup>80</sup> see Bär (1997) pp.21-27.

<sup>81</sup> Myerberg (1996) p.140.

returns to investors seeking high-quality assets. Finally, securitisation was a profit opportunity to Wall Street firms.<sup>82</sup>

In most countries, the securitisation market developed through MBS. In the meantime, the types of assets that are securitized are broadened.<sup>83</sup> Following the success of MBS, several other ABS market segments evolved (see Table 9), based on assets such as leasing contracts, automobile credits and credit cards.<sup>84</sup>

|                                                 |                                          |
|-------------------------------------------------|------------------------------------------|
| ▪ Aircraft Leases                               | ▪ Mortgages (Residential and Commercial) |
| ▪ Auto Loans (Prime and Sub-prime)              | ▪ Railcar Leases                         |
| ▪ Auto Leases                                   | ▪ Real Estate                            |
| ▪ Boat Loans                                    | ▪ Recreational Vehicle Loans             |
| ▪ Credit Card Receivables                       | ▪ Royalty Streams                        |
| ▪ Equipment Leases                              | ▪ Stranded Utility Costs                 |
| ▪ Home Equity Loans                             | ▪ Trade Receivables                      |
| ▪ Manufactured Housing Contracts                | ▪ Train Wagon Leases                     |
| ▪ Marine Shipping Containers and Chassis Leases | ▪ Truck Loans                            |

**Table 9: Examples of securitised assets<sup>85</sup>**

Although first American securitisations took place already in the 1970s, started to evolve only in the early 1990s.<sup>86</sup> The evolvement of the securitisation market in Europe and the USA is different from a regulations perspective. Only the United Kingdom is to some extent similar to the United States, which can be explained by the tradition of common law. Securitisation may evolve freely as long as law does not prohibit any new developments. In Continental Europe, civil law traditions require passing new laws to allow the securitisation market to develop. Therefore, the market catches up constantly depending on the

<sup>82</sup> see Myerbeg (1996) pp.139-151.

<sup>83</sup> see PricewaterhouseCoopers (2007) p.4.

<sup>84</sup> see Bertl (2004) pp.51-58

<sup>85</sup> PricewaterhouseCoopers (2004) p.4.

<sup>86</sup> see GBRW (2004) p.1.

regulators. Conversely, the market flourishes and regulators have to catch up.<sup>87</sup>  
88

### 5.1.3 Market situation

#### 5.1.3.1 Market volumes and shares

Until the subprime crisis, securitisation had been the largest growing contribution to global capital markets. The European market, for instance, grew by 40% in 2006 and reached a new high of nearly € 460 billion. This trend was supported by economic recovery, lower levels of credit defaults and consequently higher investor confidence in the market. The main growth drivers were RMBS, CDO and CMBS.<sup>89</sup>

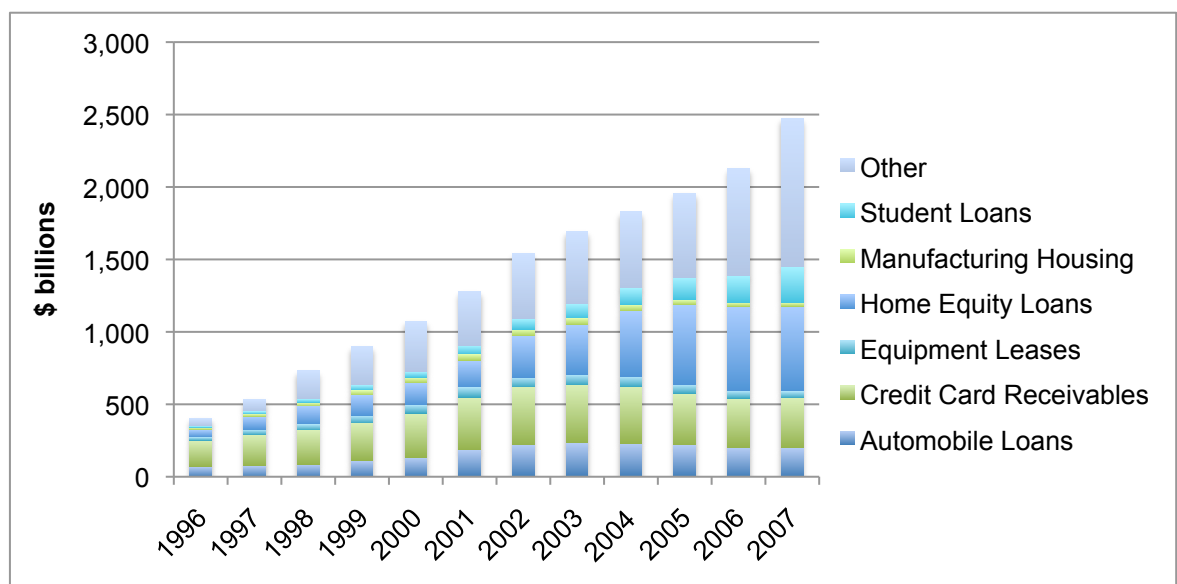


Figure 5: ABS outstanding<sup>90</sup>

<sup>87</sup> see Kravitt (1996) pp.3-7.

<sup>88</sup> Baums and Wymeersch (1996) provide an overview of the legal and accounting conditions for Austria, Belgium, Denmark, Finland, France, Germany, Great Britain, Greece, Italy, The Netherlands, Norway, Spain, Sweden, and Switzerland.

<sup>89</sup> see PricewaterhouseCoopers (2004) p.4; PricewaterhouseCoopers (2007) p.5.

<sup>90</sup> Sources: Thomson Financial, Bloomberg, SIFMA.

Figure 5 describes the evolution of world wide outstanding ABS during the last ten years, breaking down the key market sectors.

Due to the requirement of a certain level of expertise, there is a concentration in investment and insurance companies, as shown in Table 10.<sup>91</sup>

|                                |     |
|--------------------------------|-----|
| Investment Companies           | 43% |
| Insurance Companies            | 22% |
| Asset Management               | 16% |
| Federal/State/Local Government | 5%  |
| Corporations                   | 4%  |
| Mutual Funds                   | 3%  |
| Pension Funds                  | 2%  |
| Other                          | 5%  |

**Table 10: European securitisation market**

### **5.1.3.2 Subprime crisis**

The American residential mortgage market flourished in the late 1970s due to the strong desire for home ownership and escalating house prices. Freddie Mac and Fannie Mae, so-called government sponsored entities (GSE), set and monitored underwriting standards and offered quasi-government guaranties on high yield products.<sup>92</sup>

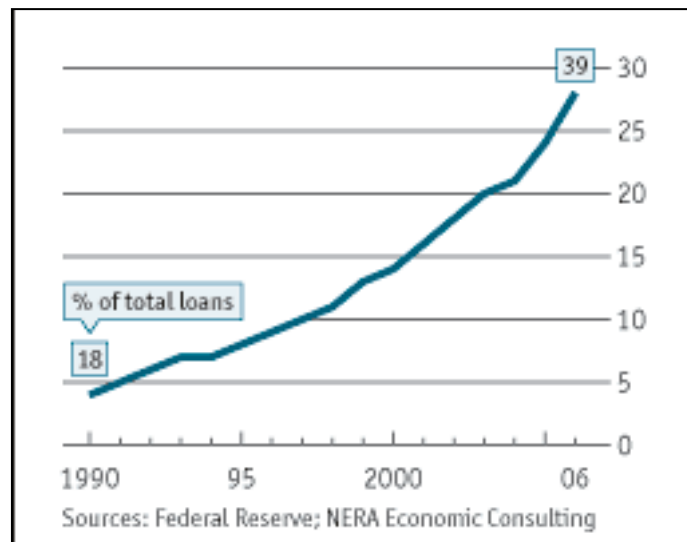
The immense growth in subprime lending was nourished by expectations of rapidly rising house prices and strong investor appetite for higher-yielding securities.<sup>93</sup> At the same time, securitisation gave originators, mainly banks, more balance-sheet flexibility and investors better access to all sorts of credit

<sup>91</sup> see PricewaterhouseCoopers (2004) p.5.

<sup>92</sup> see Kendall (1996) p.6.

<sup>93</sup> see Kiff, Mills (2007) p.7.

risk. By 2006 the volume of outstanding securitised loans had reached \$28 trillion (see Figure 6). 2005, three-fifths of America's mortgages and one-quarter of consumer debt were bundled up and sold on.



**Figure 6: Volume of outstanding securitised loans, \$trn<sup>94</sup>**

ABS structures, which were commonly used by banks but whose popularity heavily suffered during the subprime crisis, are briefly explained in Table 11.<sup>95</sup> Apart from CDO and CLO, CDO squared, also called multisector CDO or CDO<sup>2</sup> emerged in 1999 to satisfy the investors' need to securitise their own structured products portfolios. The collateral of CDO squared may vary, being backed by differently rated tranches of CDO. Structured Investment Vehicles (SIV) emerged in the 1980s and are offshore SPE. Many are incorporated in the Cayman Islands. SIV invest in assets and issue notes at very low funding cost. This way a kind of arbitrage can be achieved. SIV may be set up for various purposes, including for creative accounting.<sup>96</sup>

<sup>94</sup> The Economist (2008a).

<sup>95</sup> see The Economist (2008a).

<sup>96</sup> see Tavakoli (2003) pp.301-303.

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|                                                      |                                                                          |
|------------------------------------------------------|--------------------------------------------------------------------------|
| Collateralised Debt Obligations (CDO)                | repackage ABS                                                            |
| CDO squareds                                         | resliced and repackaged CDOs                                             |
| Collateralised Loan Obligations (CLO)                | repackage corporate loans                                                |
| Structured Investment Vehicles (SIV) and<br>Conduits | used by banks to keep some of their exposure<br>off their balance sheets |

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**Table 11: ABS structures commonly used before the subprime crisis**

In January and February 2007, one started to realise that many 2006 borrowers would default on their loans that year. A few months later, the losses of two Bear Stearns hedge funds were revealed and investors realised the potential threat of these defaults to the structured-credit market. The full impact of the credit crunch seemed to hit in summer 2007. Figure 7 shows the fall of value of ABS, as measured by the ABX index<sup>97</sup>, in 2007.



**Figure 7: Housing subsidence, ABX.HE 7.2 AA index, % of face value<sup>98</sup>**

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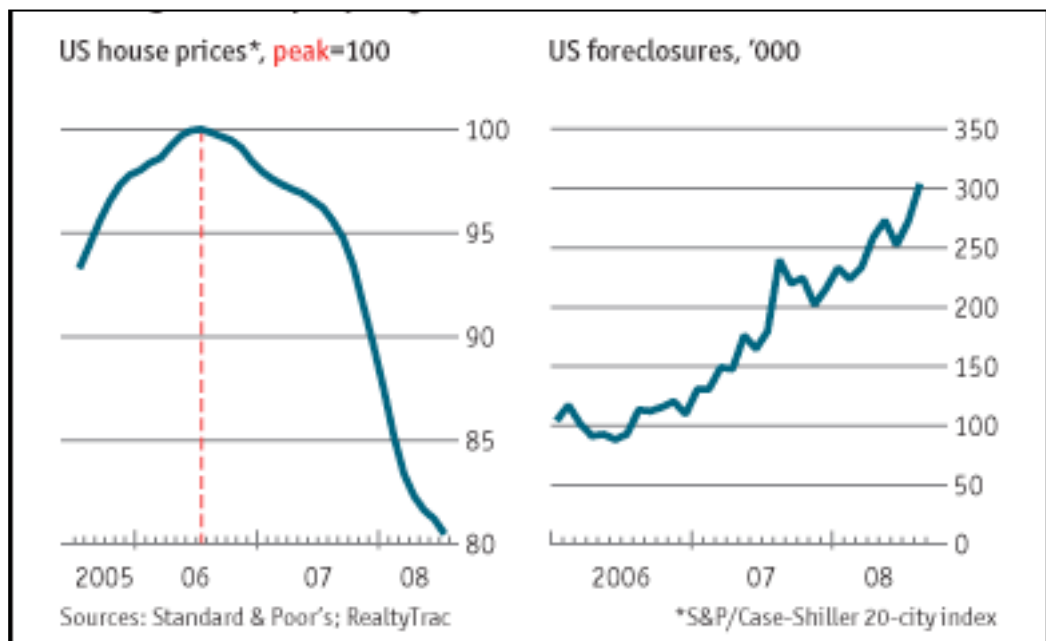
<sup>97</sup> The ABX, launched in January 2007, serves as a benchmark of the market for securities backed by home loans issued to borrowers with weak credit. (Wong, 2009))

<sup>98</sup> The Economist (2007).

Prices of securities rated AA, except a brief point in September 2007, when the worst seemed to be over, crashed down to just over 45. This level finally distressed debt trades. Even prices of AAA notes, went down to between 80-82.5 cents, a level much too low for their rating. Table 26 on page 79 explains Standard & Poor's ratings definition.

The reason for this downfall was the underlying loans. Those who took out mortgages in 2006, tended to borrow more than they could hope to repay. They were either hoping to make quick profit by selling the property soon again or to refinance within a couple of years. But when house prices started to fall, the first option did not work anymore. As soon as low interest rates expired, borrowers were unable either to refinance or to afford the higher monthly payments.<sup>99</sup>

As a result, banks claimed back the property used as collateral, but nothing more. When housing prices dropped below the size of the mortgage, banks had to sell the properties at a loss.



**Figure 8: Relation of US house prices and US foreclosures<sup>100</sup>**

<sup>99</sup> see The Economist (2007).

<sup>100</sup> The Economist (2008b).

The vicious circle started because the housing slump fed on itself. Only as little as half the value of the mortgage from a foreclosure may be recovered after legal and other costs. Furthermore, foreclosures nourished house-price falls by adding to the stock of unsold houses (see Figure 8).<sup>101</sup>

## 5.2 Concept of asset securitisation

According to Kendall<sup>102</sup>, seven basic requirements, listed in Table 12, are substantial for successful securitisation programs. Furthermore, three elements are key for the success of the securitisation system:

- Attraction of private capital.
- Competitive forces providing lower cost credit and greater choice.
- Stability by managing risks inherent in lending and investing.

|                                    |                                             |
|------------------------------------|---------------------------------------------|
| Standardised contracts             | Standardisation of servicer quality         |
| Grading of risk via underwriting   | Reliable supply of quality credit enhancers |
| Database of historic statistics    | Computers to handle complexity of analysis  |
| Standardisation of applicable laws |                                             |

**Table 12: Basic requirements for securitisation**<sup>103</sup>

Standardised contracts strengthen the securitisation participants' confidence that the respective collateral allows meeting the contractual obligations. Professional underwriters evaluate the nature and grade of risk associated with the collateral. A database of historic statistics allows stress test in order to examine the performance under different conditions. Recognised standards in the application of law create confidence critical to liquidity and efficient pricing and trading. Similarly critical is the standardisation of the quality of servicers.

<sup>101</sup> see The Economist (2008b).

<sup>102</sup> see Kendall (1996) pp.6-8.

<sup>103</sup> Kendall (1996) p.5.

The credit enhancer is frequently the weakest link in the transaction, putting pressure on the entire security's rating. There, each credit enhancer is rated individually. If its rating changes, the rating of the issue it guarantees, changes too. Finally, computers enable modelling securitised structures with high volumes, tracking cash flows, and overseeing all relevant information on a daily basis.<sup>104</sup>

### 5.2.1 Securitisation players

ABS can have many different structures, depending on the transaction.<sup>105</sup> Figure 9 provides a basic overview of a securitisation transaction and the involved participants.

The originator, who normally initiates the securitisation originally owned the pool of assets, assigns assets or risks in a securitisation transaction. Possible incentives may be cheap funding or management of the balance sheet and risk (see 5.3 Effects of securitisation).<sup>106</sup>

The SPV, also called Special Purpose Entity (SPE), separates legally the pool of assets transferred from the originator. Its activities are limited as the only purpose of the SPV is to hold the assets and to contact investors on its own behalf. An SPV may be a corporation, trust or other entity.<sup>107</sup>

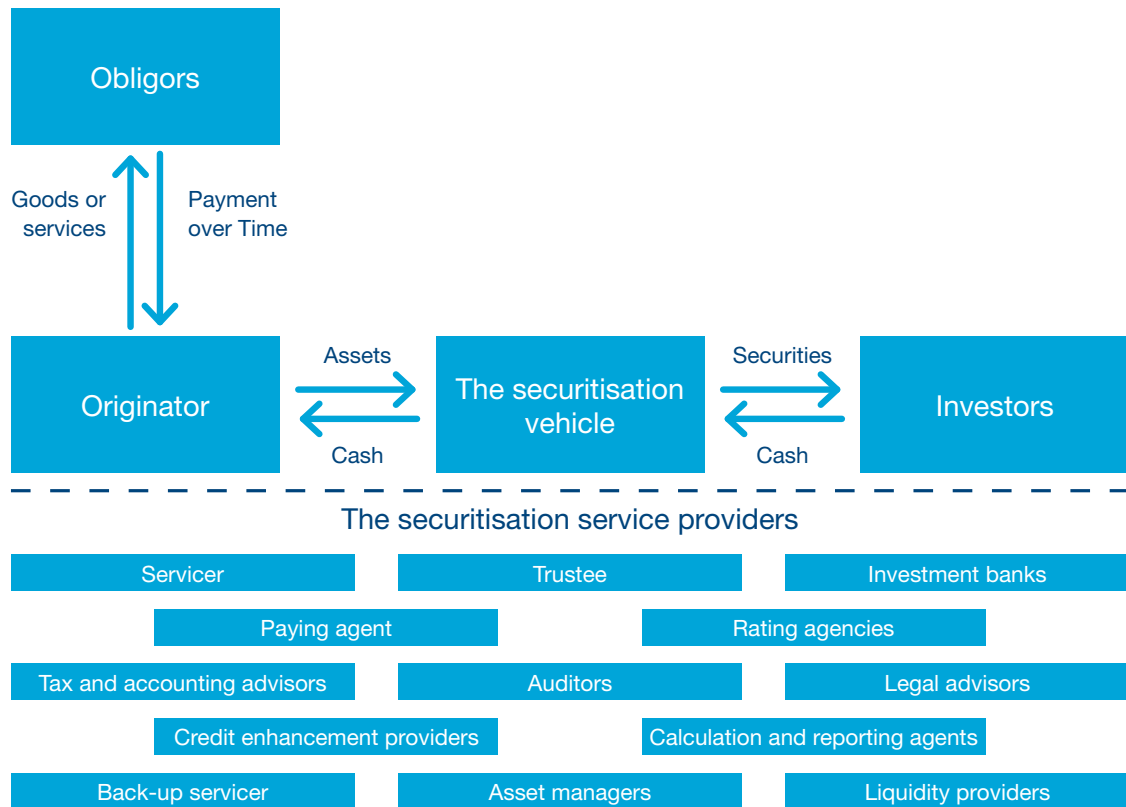
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<sup>104</sup> see Brendsel (1996) pp.22-25.

<sup>105</sup> see Riegler (2004) p.158.

<sup>106</sup> see Bertl (2004) p.7.

<sup>107</sup> see Basel Committee on Banking Supervision (2004) §552.; Bertl (2004) pp.7,8.



**Figure 9: Securitisation players**<sup>108</sup>

The investor buys the securities and overtakes the risks. In addition to the directly involved players, there is also the group of service providers. The servicer does administrative work and collects principal and interest payments. The servicer is commonly the originator but especially in non-performing loans transactions, roles are separated from each other. The back-up servicer replaces the servicer in case of its default. The trustee takes legal responsibility for the activities of the securitisation vehicle and for the coupon payments. The investment bank is responsible for structuring, underwriting and marketing the transaction. Tax and accounting advisers are in charge of accounting and tax implications. The rating agency sets the credit enhancement level of the asset portfolio. This includes an evaluation of servicing capabilities and monitoring performance of the transaction. The payment agent makes principal and interest payments to security holders. Legal advisers develop the sale and

<sup>108</sup> PricewaterhouseCoopers (2007) p.10.

purchase agreement, and provide its legal opinion on the “true sale” of the portfolio. The credit enhancement provider guarantees the principal and the interest payments to the security holders. The calculation and reporting agent calculates the waterfall principal and interest payments to the note holders. Liquidity providers provide the SPV with cash, in the form of some kind of bridge loan, in order to avoid any unsteadiness of cash flows to investors. Liquidity providers are usually banks. The asset manager selects the underlying assets and monitors the portfolio.<sup>109</sup>

### 5.2.2 Types of transactions

There are two forms of transactions, natural securitisation and synthetic securitisation, depending on the transfer of rights of assets.

#### 5.2.2.1 “True sale”

Natural securities are based on the direct payment of interest and principal.<sup>110</sup> In its Third Consultative Paper on The New Basel Capital Accord (Basel II), the Basel Committee on Banking Supervision of the Bank for International Settlements (BIS) defined a traditional securitisation as “...a structure where the cash flow from an underlying pool of exposures is used to service at least two different stratified risk positions or tranches reflecting different degrees of credit risk. Payments to the investors depend upon the performance of the specified underlying exposures...”.<sup>111</sup> In a traditional “true sale” transaction, the originator sells a pool of assets to a SPV. The vehicle is funded through the issue of tranches of securities. The securities are rated by an agency. Therefore, the SPV is isolated from the originator’s credit risk.<sup>112</sup> In a “true sale” transaction, the loan originators get credits off their balance sheet, thus achieve a reduction

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<sup>109</sup> see PricewaterhouseCoopers (2007) pp.10-12.

<sup>110</sup> see Kendall (1996) p.8.

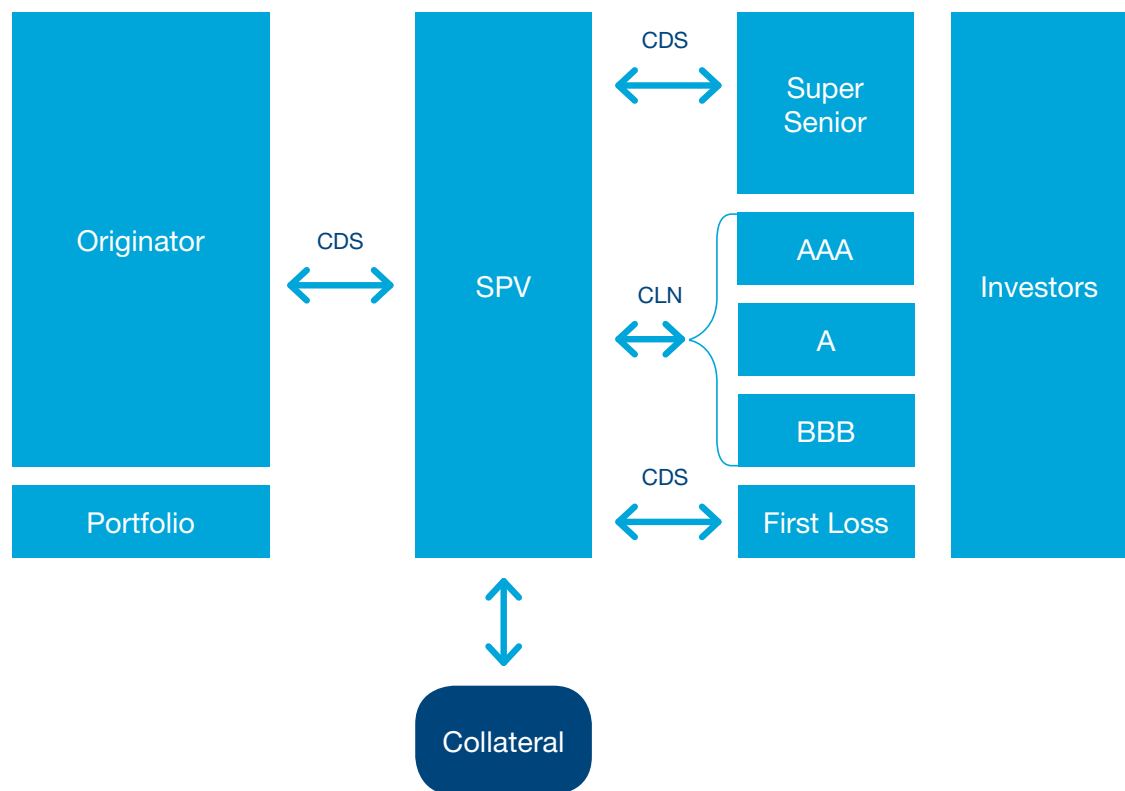
<sup>111</sup> Basel Committee on Banking Supervision (2004) §539.

<sup>112</sup> see PricewaterhouseCoopers (2007) p.8.

of their economic and regulatory capital charge. At the same time, generated funds may be used to refinance future lending activities.<sup>113</sup>

### 5.2.2.2 Synthetic

Synthetic securities involve the recycling of cash flows or credit risk from natural securities revise the bundles of rights and characteristics.<sup>114</sup> In a synthetic securitisation, the originator does not sell any assets but buys protection through a series of credit derivatives. These transactions transfer risk and reduce regulatory capital requirements, instead of providing the originator with funding. Figure 10 shows such a typical synthetic securitisation structure.



**Figure 10: Synthetic securitisation structure<sup>115</sup>**

<sup>113</sup> see Jobst (2006) pp.4,5.

<sup>114</sup> see Kendall (1996) pp.8-11.

<sup>115</sup> PricewaterhouseCoopers (2007) p.8.

In general, the owner of the assets transfers the credit risk of the assets of his portfolio to the SPV. At the same time, he remains the owner of his assets. The structured credit risk is then transferred through credit derivatives. Credit Default Swaps (CDS) are used for the Super Senior Tranche and the First Loss Pieces, while Credit Linked Notes (CLN) are more common for publicly issues tranches.<sup>116</sup> CLN are generic debt securities created out derivative structured claims on securitised assets.<sup>117</sup>

Basel II defines a synthetic securitisation as “...a structure with at least two different stratified risk positions or tranches that reflect different degrees of credit risk where credit risk of an underlying pool of exposures is transferred, ..., through the use of ... credit derivatives or guarantees.... Accordingly, the investors’ potential risk is dependent upon the performance of the underlying pool”.<sup>118</sup>

### **5.2.3 Credit enhancement**

Credit enhancement providers guarantee principal and interest payments to the security holders. Commonly, either a third party insurer or a parent company of the originator provides the credit enhancement. Credit enhancement protects investors. Without credit enhancement, the investors would bear all the credit risk in the pool of assets. Credit enhancement can be external or internal.<sup>119</sup>

#### **5.2.3.1 External credit enhancement**

In the case of a third party guarantee, losses up to a certain amount are reimbursed. Rated insurance companies or parent companies of the seller usually provide these reimbursements. Such a guarantee may be based on various means of credit enhancement.

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<sup>116</sup> see PricewaterhouseCoopers (2007) p.8.

<sup>117</sup> see Jobst (2006) p.5.

<sup>118</sup> Basel Committee on Banking Supervision (2004) §540.

<sup>119</sup> see PricewaterhouseCoopers (2004) pp.6,7.

Financial Guarantee Insurance (FGI) guarantees the timely interest and principal payment to investors. Therefore, it normally produces the highest possible rating, which is secured through strict regulations and continuous controls. Prior, the originator has to ensure an investment grade rating through additional credit enhancements in order to achieve a Financial Guarantee.<sup>120</sup>

A Pool-based Insurance, compared to a Financial Guarantee, guarantees the value of the pooled assets only under concretely defined conditions. Furthermore, such insurance normally covers only a certain loss limit rather than 100% of the pool or tranche. While Financial Guarantees are usually only provided on investment grade securities in combination with other credit enhancement forms, Pool-based Insurance covers higher risks, too.

Letters of Credit (LOC, L/C)<sup>121</sup> provide the guarantee that financial institutions cover the possible losses, may it be interest or principal. The financial institutions are required to have cash readily available. This guarantee, however, is not in all cases irrevocable.<sup>122</sup>

#### **5.2.3.2 Internal credit enhancement**

There are two main groups of internal credit enhancement, Overcollateralisation and Subordination<sup>123</sup>. Either the originator covers part of the risk or priorities of payments from the asset pool are to be adjusted.

Overcollateralisation is when the value of the underlying pool assets exceeds the amount of securities. This way, more assets are available to cover possible losses.

Subordination is to prioritise cash flows to protect senior tranches by subordinate tranches in case of losses (Table 13 explains common tranches). Instead of emitting only one single tranche, the asset pool is divided in several

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<sup>120</sup> Financial Guarantees are also called Surety Bonds.

<sup>121</sup> Two types of Letters of Credit may be differentiated, i.e. Standby Letters of Credit and Commercial Letters of Credit.

<sup>122</sup> see Bertl (2004) pp.179-202.

<sup>123</sup> Subordination is also called Senior/Junior Structure or Cash Flow Bifurcation.

tranches, which may differ in several aspects such as risk, duration, and interest and principal payment modalities.<sup>124</sup>

| Description                                                              | Common term           | Alternative term |
|--------------------------------------------------------------------------|-----------------------|------------------|
| Unrated tranches ranking in payment priority ahead of rated AAA tranches | Super-senior tranches |                  |
| ABS rated in the A to AAA range                                          | Senior tranches       | Junior tranches  |
| ABS rated in the B to BBB range                                          | Mezzanine tranches    |                  |
| ABS rated below B or unrated junior ranking instruments                  | Junior tranches       |                  |
| The most junior position in a securitisation                             | Equity tranche        | First Loss Piece |

**Table 13: Examples of interchangeable expressions used in securitisation<sup>125</sup>**

## 5.2.4 Payment methods

### 5.2.4.1 Pass Trough

A Pass Through is a passive structure without cash flow management, which was mainly used, in the early times of securitisation. Payments made by the SPV to the investors take place in the same period as the receivables. Cash flows are simply passed through. Consequently, investors bear the risk of fluctuations and early repayments.<sup>126</sup>

<sup>124</sup> see Bertl (2004) pp.206, 217, 222-223; PricewaterhouseCoopers (2004) p.7.

<sup>125</sup> GBRW (2004) p.12.

<sup>126</sup> see Bertl (2004) p.236, 217, 222-223; PricewaterhouseCoopers (2004) p.21.

#### **5.2.4.2 Pay Through**

Unlike the Pass Through, Pay Through is a payment method, where cash flows to investors are prefixed in terms of pattern and maturity.<sup>127</sup> Hence, cash flows from the SPV to the investors are managed and not directly dependent on the payments of the receivables.

Tranches, which are fragments or slices of a securitisation deal, are commonly used to create ABS with differing payment structures. An Interest Only (IO) Tranche, also called IO-Bond, is an extreme example where the investor has only the right to interest payments, but not to principle payments. A Principle Only (PO) Tranche, on the other hand, entitles the investor only to one single payment similar to a Zero-bond. Combined, both tranches represent a tranche with coupons.

Further methods of cash flow management are Zero-bonds, also called Accrual Bonds where interest and principal payments are hold for certain periods but are paid at the end together with the final principal payment.<sup>128</sup>

#### **5.2.5 Securitisation process**

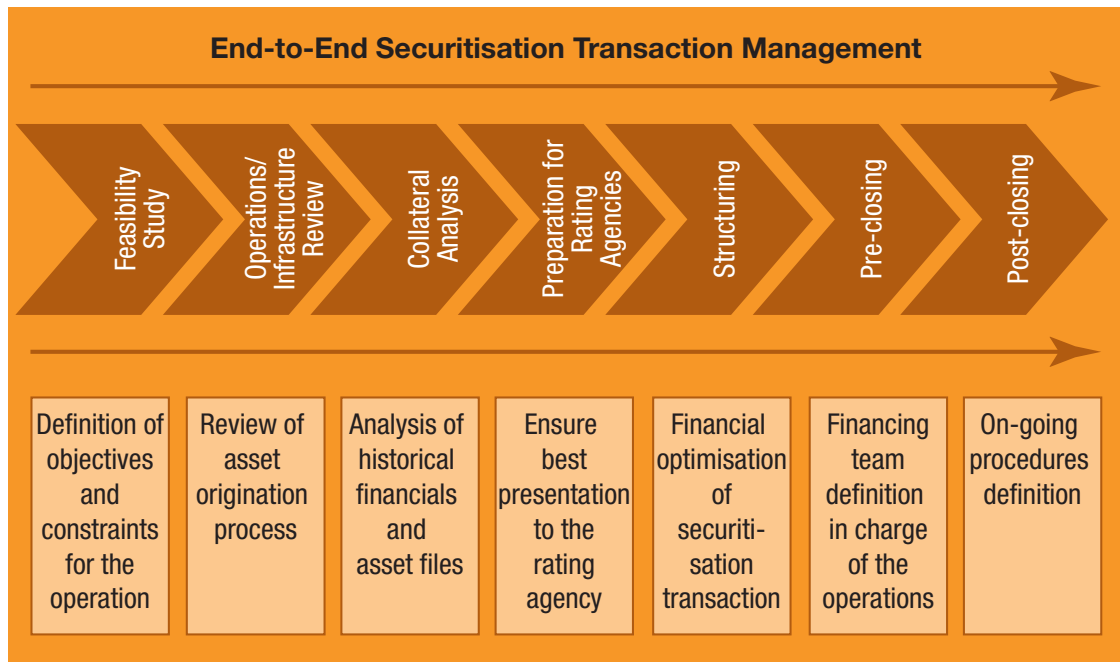
The typical securitisation process can be outlined as shown in Figure 11. During the feasibility study phase, corporate finance analysts review the asset origination, servicing, reporting processes, and performances of previous securitisations. Table 14 provides an overview of the analysis performed during the Feasibility Study phase.<sup>129</sup>

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<sup>127</sup> see PricewaterhouseCoopers (2004) p.21.

<sup>128</sup> see Bertl (2004) pp.237-242.

<sup>129</sup> see PricewaterhouseCoopers (2004) p.8.



**Figure 11: Phases of a securitisation**<sup>130</sup>

The Operations/Infrastructure Review phase is a self-assessment before the undertaking the transaction and is part of the evaluation and planning process. Analysis on the asset origination and servicing and reporting is imperative to outsiders. Concerning the asset origination, items such as the credit review process, documentation, and any possible legal issues are reviewed. The servicing and reporting system is reviewed regarding its robustness, flexibility, and readiness. Furthermore, the system needs to generate appropriate operating and management reports.

During the Collateral Analysis phase, the evaluation of the collateral portfolio includes the assessment of the portfolio's credit quality, which is typically based on historical financials, and sufficiency of asset files. Portfolio data analysis includes reviewing historical asset performance. In addition, the completeness of physical asset files and the saleability of assets in terms of data inconsistencies and deficiencies are reviewed.

<sup>130</sup> PricewaterhouseCoopers (2004) p.8.

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|                       |                                                                                                                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operations overview   | systems, policies, responsibilities of each party                                                                                                                                                            |
| Portfolio performance | compare to standard securitisation industry practices                                                                                                                                                        |
| Financial overview    | funding alternatives, profitability measurement, current funding sources                                                                                                                                     |
| Legal overview        | asset segregation, existing covenants and agreements                                                                                                                                                         |
| Tax implications      | impact on tax liability, tax advantaged structures                                                                                                                                                           |
| Credit overview       | rating of individual obligors and portfolio overall, level of concentration, risk disclosure and risk management policies, and originator and servicer credit quality                                        |
| Regulatory overview   | national, EU or US requirements and impact of securitisation                                                                                                                                                 |
| Strategic             | business models, risk-reward trade-offs, ways to raise capital                                                                                                                                               |
| Evaluation            | Identification and evaluation of alternatives to achieve objectives and to mitigate weaknesses for key areas such as operations, systems, cash flow, financial reporting, legal, tax, regulatory, and credit |

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**Table 14: Analysis performed during feasibility study phase**

The presentation of the securitisation transaction to the rating agencies is important for the final rating and consequently the overall enhancement levels.

The Structuring phase focuses on the financial impact of the securitisation transaction including funding approaches, funding sources, credit considerations, and legal issues.

During the Pre-closing phase, a financing team, selected by originators and transferors, coordinates the negotiation of business and pricing terms, and the presentation to credit analysts. Included tasks are listed in Table 15.

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|                                        |                                                   |
|----------------------------------------|---------------------------------------------------|
| Assemble financing team                | Present structure to credit and business analysts |
| Prepare legal and disclosure documents | Validate data                                     |
| Finalise deal structure                | Price transaction                                 |

---

**Table 15: Tasks performed during pre-closing phase**

After completing the securitisation transaction, issuers are responsible for certain tasks. The Post-closing phase includes: servicer statement preparation, investor reporting, internal management and operations reporting, procedures review/surveillance and related reporting of findings, tax calculations, financial reporting, portfolio and transaction performance tracking.<sup>131</sup>

### **5.3 Effects of securitisation**

In short, securitisation provides funding and liquidity by converting illiquid assets into cash.<sup>132</sup> Furthermore, asset securitisation allows the provision of credit to market processes rather than through financial intermediaries. It "... 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 ("tranches") ...". The economic reasoning of securitisation depends on whether the issuer succeeds in making profits and maximising its shareholder value. Securitisation mainly brings a competitive financial advantage through efficient asset funding, active balance sheet restructuring, market-oriented risk management of credit risk and diversified liquidity.<sup>133</sup>

#### **5.3.1 Benefits associated with securitisation**

Basically, securitisation has proven its benefits as an efficient funding and capital management system helping to mitigate the required minimum level of

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<sup>131</sup> see PricewaterhouseCoopers (2004) pp.8,9.

<sup>132</sup> see Tavakoli (2003) p.14.

<sup>133</sup> see Jobst (2006) pp.3-6.

capital and to facilitate risk management.<sup>134</sup> Table 16 lists the main differences between loans and securitised assets.

| Loans                                        | Securities                                  |
|----------------------------------------------|---------------------------------------------|
| Illiquid                                     | Liquid/tradable                             |
| Collateral valuation subjective and periodic | Market determines value                     |
| Originator assesses risk                     | Third parties assess risk                   |
| Originators' operating costs high            | Originators' operating costs low            |
| Investor market local                        | Investors market national/global            |
| Limited terms and rates offered borrowers    | Buffet of terms and rates offered borrowers |

**Table 16: Value added through securitisation**<sup>135</sup>

While benefits and the degree of their importance may vary, the main advantages of securitisations, the provision a lower cost capital and liquidity, are common.<sup>136</sup>

From an economic point of view, the two main objectives are:

- i. easing regulatory capital charge, and/or
- ii. reducing economic cost of capital.

Mostly traditional, true-sale, transactions are used to achieve the first objective through a curtailment of the balance sheet growth by moving assets off the balance sheet. Derivative, synthetic, transactions may qualify for achieving the second objective by lower bad debt provision though risk transfer.<sup>137</sup>

<sup>134</sup> see Jobst (2002a) p.2.

<sup>135</sup> Kendall (1996) p.5.

<sup>136</sup> see PricewaterhouseCoopers (2007) p.8-10.

<sup>137</sup> see Jobst (2002b) pp.9,10.

| Strategy                         | Dynamic                       | Balanced                            | Defensive                     |
|----------------------------------|-------------------------------|-------------------------------------|-------------------------------|
| <b>Key motivation</b>            | Funding growth                | Liability management                | De-leveraging                 |
| <b>Primary benefit</b>           | Funding                       | Accessing long term money           | Release of Regulatory Capital |
| <b>Secondary benefit</b>         | Release of Regulatory Capital | Release of Regulatory Capital       | Long term funding             |
| <b>Assets securitised</b>        | Core product assets           | Any suitable portfolio              | Any suitable portfolio        |
| <b>Use of released resources</b> | New core product originated   | Any desirable asset class/portfolio | None                          |

**Table 17: Main motives for securitisation in true-sale transactions<sup>138</sup>**

Motives of originating banks differ, as well as the relative importance of various benefits. Table 17 provides an overview of the main motives for securitisation in true-sale transactions. The labels “Dynamic”, “Balanced” and “Defensive” are only rough categories of feasible strategies. The ranking of benefits may also differ.<sup>139</sup>

From an issuer perspective, securitisation is mainly an alternative source of funds. Associated benefits may include shortening the balance sheet and reducing economic cost of capital. Moreover, securitisation improves the efficiency of risk management by easing regulatory capital requirements. The efficient access to capital markets enables lower cost of capital than the originator’s rating would allow.<sup>140</sup> Originators may also use structured finance vehicles to seek shelter from potential operating liabilities. Finally, structured finance vehicles can be used for tax management.<sup>141</sup>

<sup>138</sup> GBRW (2004) p.30.

<sup>139</sup> see GBRW (2004) pp.29-30.

<sup>140</sup> see Jobst (2006) p.4.

<sup>141</sup> see Tavakoli (2003) p.14.

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**Benefits to consumers-borrowers**

1. Lower cost of funds
  2. Increased buffet of credit forms
  3. Competitive rates and terms nationally and locally
  4. Funds available consistently
- 

**Benefits to originators**

5. Ability to sell assets readily
  6. Profits on sales
  7. Increased servicing income
  8. More efficient use of capital
- 

**Benefits to investors**

1. High yields on rated securities
  2. Liquidity
  3. Enhanced diversification
  4. Potential trading profits
- 

**Benefits to Wall Street (investment bankers)**

1. New product line
  2. Continuous flow of originations and fees
  3. Trading volume and profits
  4. Potential innovation and market expansion
- 

**Table 18: Benefits of securitisation<sup>142</sup>**

Table 18 provides an overview of benefits of securitisation, broken down by player. However, benefits of securitisation are closely link to the existence of imperfect markets. With perfect information, administration and marketing costs of securitisation transactions would have no counterbalancing benefit.<sup>143</sup>

### 5.3.2 Risks associated with securitisation

Securitisation allows separating the risk exposure from the related assets. Balance sheet risks are converted into marketable securitised debt through

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<sup>142</sup> Kendall (1996) p.13.

<sup>143</sup> see Jobst (2002b) p.7.

complicated financial structures. This influences the security's credit (or asset) risk, market risk, liquidity risk and operational risk (see Figure 12).<sup>144</sup>

| Credit Risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Structural Risk                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                         | Legal Risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Market Risk                                                                                                                                                                                              | Liquidity Risk                                                                                                                                                                                                                                                                                                          | Operational Risk                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Reference portfolio:</b> <ul style="list-style-type: none"> <li>• degree of diversification &amp; asset correlation</li> <li>• asset granularity</li> <li>• domicile of assets</li> </ul> <b>Structural provisions:</b> <ul style="list-style-type: none"> <li>• internal (credit enhancement through overcollateralisation or excess spread)</li> <li>• external (counterparty risk of third-party guarantee)</li> <li>• security design: senioritisation and tranche specification</li> </ul> | <b>Interest rate risk:</b> <ul style="list-style-type: none"> <li>• reinvestment risk (← interest rate term structure)</li> <li>• interest rate differential (base risk)</li> </ul> <b>Currency risk</b> | <b>Liquidity risk:</b> <ul style="list-style-type: none"> <li>• <u>balance sheet-based liquidity risk</u>: prepayment risk (← maturity mismatch)</li> <li>• <u>market-based liquidity risk</u>: high trading costs and loss of market power of issuers due to low market volume in primary/secondary markets</li> </ul> | <b>Agency cost of:</b> <ul style="list-style-type: none"> <li>• adverse selection</li> <li>• ex ante/ex post moral hazard</li> <li>• principal-agent problem</li> </ul> | <b>Fundamental legal framework &amp; compliance:</b> <ul style="list-style-type: none"> <li>• trade law</li> <li>• tax law</li> <li>• national/international supervisory regulation</li> </ul> <b>Implementation of legal claims:</b> <ul style="list-style-type: none"> <li>• corporate law</li> <li>• insolvency law</li> <li>• private law</li> </ul> <b>Data availability:</b> <ul style="list-style-type: none"> <li>• confidentiality &amp; data disclosure</li> <li>• banking laws</li> </ul> |

**Figure 12: Fundamental investment risks in asset securitisation**<sup>145</sup>

Holders of fixed income assets commonly face interest rate risks or risks associated with fluctuations in the market value of these assets. Holders of structured products deal with additional risks specific to such investments. For holders of mortgage assets, the prepayment risk creates uncertainty with respect to the timing of cash flows. This makes securities collateralised by mortgage products difficult and expensive to hedge.<sup>146</sup>

Many other problems arise from delinquencies and charge-offs, inaccurate investor reporting, and bad publicity.

Reputation risk is of qualitative nature. Bad reputation may result in poor underwriting and risk assessment. This leads to increased costs and decreased profitability. Effective measures for controlling reputation risk are a sound

<sup>144</sup> see Jobst (2006) p.11.

<sup>145</sup> Jobst (2006) p.12.

<sup>146</sup> see Fabozzi et al. (2007) p.16.

business plan and a comprehensive, effective risk management and control framework.

Long-term impacts of the envisaged securitisation on operations, profitability, and asset/liability management are to be analysed in order to assess the strategic risk. Long-term resource needs need to be in line with projected volumes of planned securitisation transactions.

The transaction risk arises from inefficiencies associated with servicing, such as processing problems of the transaction, inefficient collection of delinquent payments, inaccurate performance reporting to the investor. To reduce the exposure to transaction risk, adequate staffing, skill levels, and capacity of systems is required to deal with planned type and volume of transactions.

The liquidity risk arises from probability that large asset pools require balance sheet funding at unexpected or inopportune times. As part of day-to-day liquidity management, all outstanding should be monitored and plans of future funding requirements should be aligned. In addition, funding alternatives have to be assessed.

The compliance risk is related to respecting laws, rules, regulations, prescribed practices, or ethical standards. Non-conformance may lead to fines, civil money penalties, payment of damages, and the voiding of contracts resulting in a diminished reputation, limited business opportunities, lessened expansion potential, and lack of contract enforceability.<sup>147</sup>

### **5.3.3 Effects on SME financing**

Increasing internationalisation of business and use of capital markets promote asset securitisation as efficient corporate finance method for non-financial enterprises. In this relation the main motives are both funding at competitive capital cost and proactive management of balance sheet growth. While especially large companies have replace traditional on-balance sheet debt and equity finance by securitised debt, SMEs still largely depend on bank lending

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<sup>147</sup> Office of the Comptroller of the Currency (1997) pp.33-49.

and private equity. Low turnover, weak public disclosure of accounts and high monitoring effort hamper the access to capital markets. At the same time, decreasing margins in interest-based deposit business and the new regulatory capital standards outlined in Basel II (see 3 The Basel Capital Accord) put pressure on banks' lending policy. This affects primarily risky borrowers, such as SMEs tend to be, who suffer both, increasing borrowing cost of traditional lending and difficult access to capital markets. In addition, technical barriers to entry like critical amounts securitisable asset exposure and excessive start-up costs hinder SMEs to access capital markets without the support of financial institutions.

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#### **Securitised asset refinancing by corporations ("corporate securitisation")**

|           |                                                                                                                                                                                                     |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Indirect: | Multi-seller ABCP programmes sponsored by financial institutions facilitate funding of selected assets on a short-term basis                                                                        |
| Direct:   | Companies themselves securitise own payment claims, such as long-term revenues from entire operations, particular line of business (whole business ABS) or defined project cash flows (project ABS) |

#### **Securitised asset refinancing by banks**

Banks securitise medium-term and long-term SME credit exposures in large scale asset-backed transactions, so-called SME CLOs

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**Table 19: ABS techniques involving SME-related payment claims**

Two forms of securitisation, CLO and Asset Backed Commercial Paper (ABCP) programmes, offer the required flexibility in terms of security design, underlying asset type, and disclosure requirements for SMEs (see Table 19). Originators sell assets like trade receivables, consumer loans, mortgages as well as lesser-known asset classes, such as auto rentals and revenues from whole business and project finance. Financial institutions use ABCPs for refinancing their own lending activity and sponsor multi-seller ABCP securitisation programmes for

funding corporate clients. Both enable banks to extend loans to corporate customers. In particular SMEs benefit from cost efficient funding through ABCP programmes.

ABCP programmes have usually lower overall refinancing costs compared to conventional on-balance sheet external finance, such as bank debt and standalone off-balance sheet funding, like project finance ABS and whole business ABS. The cost reduction is achieved through the diversification effect of pooling individual assets and the resulting higher rating classification of ABCP programmes. ABCP have become popular especially in countries with restrictive bank lending.<sup>148</sup>

#### **5.3.4 Effects on European economy**

Günter Verheugen reckons that „micro, small and medium-sized enterprises (SMEs) are the engine of the European economy. They are an essential source of jobs, create entrepreneurial spirit and innovation in the EU and are thus crucial for fostering competitiveness and employment”.<sup>149</sup>

On average, European enterprises are smaller than American and Japanese ones. In the European Economic Area (EEA) and Switzerland 99% of all enterprises are SMEs and 93% of all employ less than ten employees.<sup>150</sup> Given these figures, vitality of SMEs plays a crucial role for the European economy.<sup>151</sup>

However, SMEs frequently face troubles in obtaining capital or credit. Basel II and greater sensitivity to the effects of economic cycles have made banks more reluctant to lend to SMEs with low equity ratios.<sup>152</sup>

Despite increasing trends observed globally, securitisation activities increased particularly in Europe during the decade after the introduction of the euro. Factors such as the further integration of European financial markets and a

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<sup>148</sup> see European Commission (2003a) pp.7,8.

<sup>149</sup> Günter Verheugen cited in European Commission (2003b) p.3.

<sup>150</sup> see European Commission (2002) p.4.

<sup>151</sup> see GBRW (2004) p.6.

<sup>152</sup> see Kreditanstalt für Wiederaufbau (2003) p.16-18; GBRW (2004) p.6.

move to a more market-based financial system change the role of banks related to lending from “originate and hold” to “originate, repackage and sell” Furthermore, this increases the supply of lending because “...securitisation provides banks with additional flexibility to face changes in market conditions...”.<sup>153</sup> Today, the two main markets for SME securitisation in Europe are Germany and Spain.

So far, securitisation has been relatively ineffective in distributing risk associated with lending to SMEs. However, developments related to Basel II may help increasing efficiency of the risk transfer process. This development and the flexibility of securitisation as a gateway to capital markets may indeed aid SMEs access to finance.<sup>154</sup> From a broader economic point of view, securitisation entails a risk sharing mechanism, which mitigates disparities in the availability and cost of credit, thus improving overall market efficiency. Debt securities issued in securitisation transactions are generally less risky than the original credit risk of the underlying because of diversification and a variety of incorporated security mechanisms.

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<sup>153</sup> see Altumbas et al. (2007) pp.7-9,24.

<sup>154</sup> see Kreditanstalt für Wiederaufbau (2003) pp.21,22,52-58.

## 6 Conclusion

Previous Sections explain various characteristics typical for SMEs, related difficulties in accessing finance, possible effects of Basel II on SME financing and some financing alternatives. Finally, various forms of structured finance products are reviewed, involved parties discussed and the benefits and drawbacks associated with asset securitisation assessed. Overall, one can say that securitisation has proven its benefits as efficient funding and capital management method.

Decision-makers of SMEs are typically owner-managers. In particular small enterprises are family businesses. In this respect, sustainability and long-term independence are considered as superior to short-term profit. Basel II will further lead to higher credit spreads due to the growing importance of credit ratings. This puts further pressure on SMEs that have commonly low equity ratios.

Considering increasing costs of traditional borrowing, as a result of shrinking margins in interest-based deposit business and the effects of Basel II, asset securitisation seems a promising funding alternative, especially for SMEs. In particular Continental European SMEs still heavily rely on traditional bank lending and SME securitisation has been largely limited to indirect securitisation transactions lead by banks. Dried up traditional funding of riskier borrowers, such as SMEs tend to be, might further encourage SMEs to consider asset securitisation to meet funding needs. In future, smaller corporation may participate in securitisation transactions arranged by banks, which is already quite common in capital markets-based financial systems. SMEs may benefit in particular from such cost efficient funding through ABCP programmes sponsored by financial institutions. Considering the continuously changing structure of the financial environment and the significant economic importance of SMEs in Europe, it seems safe to say that asset securitisation will soon join ranks with traditional debt finance.



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# **Appendix**



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## **Annex I: Summary of U.S. small business Size Standards<sup>155</sup>**

### **Construction**

- General building and heavy construction contractors: \$33.5 million
- Special trade construction contractors: \$14 million
- Land subdivision: \$7 million
- Dredging: \$20 million

### **Manufacturing**

- About 75 percent of the manufacturing industries: 500 employees
- A small number of industries: 1,500 employees
- The balance: either 750 or 1,000 employees

### **Mining**

- All mining industries, except mining services: 500 employees

### **Retail Trade**

- Most retail trade industries: \$7 million
- A few (such as grocery stores, department stores, motor vehicle dealers and electrical appliance dealers), have higher size standards, but none above \$35.5 million.

### **Services**

- Most common: \$7 million
- Computer programming, data processing and systems design: \$25 million

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<sup>155</sup> U.S. Small Business Administration.

- Engineering and architectural services and a few other industries have different size standards.
- The highest annual-receipts size standard in any service industry: \$35.5 million
- Research and development and environmental remediation services: the only service industries with size standards stated in number of employees

### **Wholesale Trade**

- For small business Federal contracts: 100 employees, and the firm must deliver the product of a small domestic manufacturer, as set forth in SBA's nonmanufacturer rule, unless waived by the SBA for a particular class of product. For procurements made under the Simplified Acquisition Procedures of the FAR and where the purchase does not exceed \$25,000, the nonmanufacturer may deliver the goods of any domestic manufacturer.
- For loans and other financial programs: 100 employees is applicable for all industries.

### **Other Industries**

- Divisions include agriculture; transportation, communications, electric, gas, and sanitary services; and finance, insurance and real estate.
- Because of wide variation in the structure of industries in these divisions, there is no common pattern of size standards.

For specific size standards as of January 1 of each year, refer to the size regulations in 13 CFR §121.201. SBA's Table of Small Business Size Standards includes all changes and modifications made since January 1 of the most recent year.

## Annex II: Relationship of SMEs and banks in Europe<sup>156</sup>

|                              | Manufac-<br>turing | Construc-<br>tion | Wholesale | Retail | Transport/<br>communica-<br>tion | Business<br>services | Personal<br>services | Total |
|------------------------------|--------------------|-------------------|-----------|--------|----------------------------------|----------------------|----------------------|-------|
| No credit line with any bank | 18                 | 15                | 17        | 23     | 14                               | 24                   | 24                   | 21    |
| Only 1 bank                  | 36                 | 46                | 33        | 41     | 43                               | 39                   | 42                   | 41    |
| 2 or 3 banks                 | 32                 | 29                | 37        | 30     | 34                               | 29                   | 26                   | 30    |
| 4 banks or more              | 9                  | 6                 | 9         | 3      | 7                                | 5                    | 3                    | 5     |
| Don't know/no answer         | 4                  | 3                 | 5         | 3      | 3                                | 3                    | 5                    | 3     |
| Total*                       | 100                | 100               | 100       | 100    | 100                              | 100                  | 100                  | 100   |

\* The sum of each column is not always 100 %, due to rounding.

**Table 20: Percentage of SMEs with credit lines, by number of banks and sectors in Europe-19<sup>157</sup>**

|                      | < 10 employees | 10-49 employees | 50-249 employees |
|----------------------|----------------|-----------------|------------------|
| Only 1 bank          | 52             | 39              | 33               |
| 2-3 banks            | 38             | 42              | 31               |
| 4 or more banks      | 6              | 11              | 22               |
| Don't know/no answer | 4              | 7               | 14               |
| Total*               | 100            | 100             | 100              |

\* The sum of each column is not always 100 %, due to rounding.  
Data referring only to those SMEs having credit lines.

**Table 21: Percentage of SMEs with credit lines, by number of banks and size class in Europe-19<sup>158</sup>**

<sup>156</sup> European Commission (2003) pp.22-28.

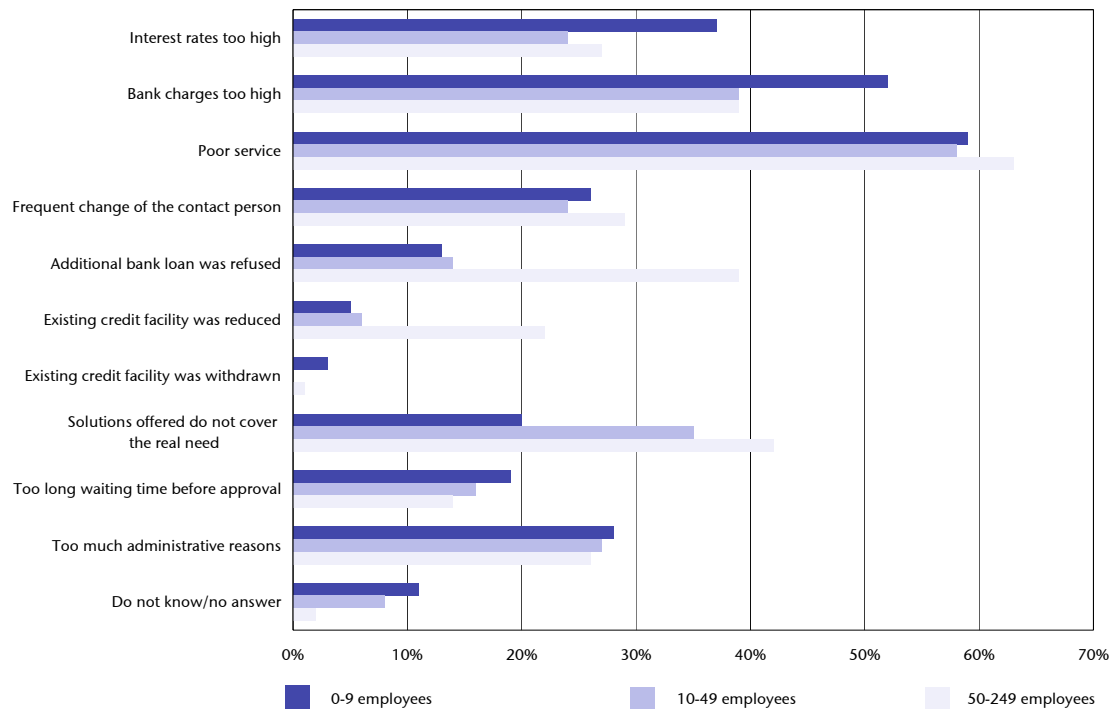
<sup>157</sup> Source: ENSR Enterprise Survey 2002.

<sup>158</sup> Source: ENSR Enterprise Survey 2002.

|                      | Manufactur-<br>ing | Construc-<br>tion | Wholesale | Retail | Transport/<br>communica-<br>tion | Business<br>services | Personal<br>services | Total |
|----------------------|--------------------|-------------------|-----------|--------|----------------------------------|----------------------|----------------------|-------|
| Less than 6 months   | 7                  | 7                 | 18        | 9      | 5                                | 9                    | 6                    | 8     |
| 6 months to 1 year   | 9                  | 7                 | 7         | 8      | 8                                | 5                    | 5                    | 7     |
| 1 to 3 years         | 14                 | 22                | 14        | 14     | 18                               | 17                   | 18                   | 17    |
| 3 to 5 years         | 26                 | 26                | 18        | 23     | 26                               | 18                   | 16                   | 21    |
| 5 years or longer    | 21                 | 24                | 22        | 26     | 29                               | 28                   | 43                   | 27    |
| Don't know/no answer | 24                 | 15                | 21        | 21     | 14                               | 22                   | 22                   | 20    |
| Total*               | 100                | 100               | 100       | 100    | 100                              | 100                  | 100                  | 100   |

\* The sum of each column is not always 100 %, due to rounding.

**Table 22: Percentage of SMEs, by maturity period for the largest bank loan and sector in Europe-19<sup>159</sup>**



More than one answer allowed.

Data referred exclusively to those SMEs which are dissatisfied with their most important bank (in terms of credit).

**Figure 13: Reasons for dissatisfaction with the most important bank, by enterprise size (in percent), in Europe-19<sup>160</sup>**

<sup>159</sup> Source: ENSR Enterprise Survey 2002.

<sup>160</sup> Source: ENSR Enterprise Survey 2002.

|                                                       | 0-9 employees | 10-49 employees | 50-249 employees |
|-------------------------------------------------------|---------------|-----------------|------------------|
| More favourable conditions with the new bank          | 36            | 44              | 48               |
| Better service with the new bank                      | 31            | 26              | 14               |
| As a result of the merging of banks                   | 2             | 1               | 3                |
| Contact person with former bank changed               | 4             | 3               | 2                |
| Former bank changed conditions                        | 3             | 4               | 14               |
| Additional loan was refused by former bank            | 3             | 1               | 5                |
| Existing credit facility was reduced by former bank   | 1             | 0               | 1                |
| Existing credit facility was withdrawn by former bank | 1             | 1               | 1                |
| Other reason                                          | 18            | 20              | 12               |
| Don't know/no answer                                  | 1             | 0               | 0                |
| Total*                                                | 100           | 100             | 100              |

\* The sum of each column is not always 100 %, due to rounding.

Data referred exclusively to those SMEs which have changed one or more major bank accounts during the last three years.

**Table 23: Most important reason for changing a major bank account, by size class (in percent), in Europe-19<sup>161</sup>**

|                                              | 0-9 employees | 10-49 employees | 50-249 employees |
|----------------------------------------------|---------------|-----------------|------------------|
| Not enough guarantee collateral              | 23            | 34              | 3                |
| Bank not satisfied with business performance | 7             | 4               | 17               |
| Bank not satisfied with information given    | 5             | 10              | 20               |
| Other reasons                                | 55            | 38              | 47               |
| Don't know/no answer                         | 11            | 14              | 12               |
| Total*                                       | 100           | 100             | 100              |

\* The sum of each column is not always 100 %, due to rounding.

Data referred exclusively to those SMEs which did not receive all the additional required bank loans within the last three years.

**Table 24: Most important reason for not obtaining additional bank loans, by size class (in percent), in Europe-19<sup>162</sup>**

<sup>161</sup> Source: ENSR Enterprise Survey 2002.

<sup>162</sup> Source: ENSR Enterprise Survey 2002.



### Annex III: Main distinctive features of equity, debt and hybrid capital

|                      | Equity                        | Hybrid capital                    | Debt                         |
|----------------------|-------------------------------|-----------------------------------|------------------------------|
| Liability            | At least to the capital share | Only to the extend of convertible | No                           |
| Profit participation | Aliquot on profits and losses | Profit-related interest           | No                           |
| Asset participation  | Aliquot                       | Option                            | No                           |
| Voting rights        | Yes, as a rule                | Possible                          | No                           |
| Time limit           | No                            | Temporary equity                  | Yes, as a rule               |
| Collateral           | No                            | No                                | Loan security                |
| Drain on finances    | Not fix, only dividends       | Low interest payments             | Fix interest payments        |
| Tax burden           | Tax on profits                | Interest payments deductible      | Interest payments deductible |

**Table 25: Main distinctive features of equity, debt and hybrid capital**<sup>163</sup>

<sup>163</sup> see Grabherr (2001) p.32.



## Annex IV: Standard & Poor's credit ratings definitions<sup>164</sup>

| Investment Grade                    |                                                                                                                                        |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>AAA</b>                          | Highest rating; obligor's capacity to meet its commitment is extremely strong.                                                         |
| <b>AA</b>                           | Only small difference to 'AAA'; obligor's capacity to meet its commitment is very strong.                                              |
| <b>A</b>                            | Obligor's capacity to meet its commitment is still strong.                                                                             |
| <b>BBB</b>                          | Weakened obligor's capacity to meet its commitment.                                                                                    |
| Non-Investment Grade <sup>165</sup> |                                                                                                                                        |
| <b>BB</b>                           | Obligor's capacity could be inadequate to meet its commitment.                                                                         |
| <b>B</b>                            | More vulnerable to nonpayment; obligor's capacity or willingness to meet its commitment is likely to be impaired.                      |
| <b>CCC</b>                          | Currently vulnerable to nonpayment; in event of adverse conditions, obligor is not likely to have the capacity to meet its commitment. |
| <b>CC</b>                           | Currently highly vulnerable to nonpayment.                                                                                             |
| <b>C</b>                            | Currently highly vulnerable to nonpayment; perhaps bankruptcy.                                                                         |
| <b>D</b>                            | Payment default.                                                                                                                       |
| <b>Plus (+) or minus (-)</b>        | Plus (+) or minus (-) may be added to 'AA' to 'CCC' to show relative standing within the major rating categories.                      |
| <b>NR</b>                           | No rating or insufficient information                                                                                                  |

**Table 26: Standard & Poor's long-term issue credit ratings definitions**

<sup>164</sup> see Standard & Poor's (2008) pp.3-5.

<sup>165</sup> also called Junk Bonds; are regarded as having significant speculative characteristics.



**Abstract: English**

The financial sector has changed significantly during recent decades. Higher competitive pressure and a greater concentration of banks have diverse impacts on lending practices. The new Basel Capital Accord, Basel II, is supposed to harmonise international capital requirement standards in banking and to enhance the financial system's security and solidarity. Such changes in the financial environment may have substantial effects on the access to finance of small and medium-sized enterprises (SMEs), which generally tend to face significant problems in accessing equity as well as debt.

Decision-makers of SMEs are typically owner-managers. In particular small enterprises are family businesses. In this respect, sustainability and long-term independence are considered as superior to short-term profit. Basel II will further lead to higher credit spreads due to the growing importance of credit ratings. This puts further pressure on SMEs that have commonly low equity ratios.

Considering increasing costs of traditional borrowing, as a result of shrinking margins in interest-based deposit business and the effects of Basel II, asset securitisation seems a promising funding alternative, especially for SMEs. Many financial institutions issue securitised debt on various asset classes. However, in particular Continental European SMEs still heavily rely on traditional bank lending and SME securitisation has been largely limited to indirect securitisation transactions lead by banks. Dried up traditional funding of riskier borrowers, such as SMEs tend to be, might further encourage SMEs to consider structured finance to meet funding needs. In future, smaller corporation may participate in securitisation transactions arranged by banks, which is already quite common in capital markets-based financial systems. SMEs may benefit in particular from such cost efficient funding through Asset Backed Commercial Paper (ABCP) programmes sponsored by financial institutions. Considering the continuously changing structure of the financial environment and the significant economic importance of SMEs in Europe, it seems safe to say that asset securitisation will soon join ranks with traditional debt finance.



**Abstract: Deutsch**

Der Finanzsektor hat sich über die Jahrzehnte signifikant verändert. Stärkerer Wettbewerb und eine konsolidierte Bankenlandschaft haben diverse Auswirkungen auf die Kreditvergabepraktiken. Die neue Baseler Eigenkapitalvereinbarung, Basel II, soll die internationalen Standards für die Kapitalanforderungen an Banken harmonisieren und die Sicherheit und Solidarität des Finanzsystems stärken. Diese Veränderungen in der Finanzwelt können substantielle Auswirkungen auf den Zugang zu Kapital von kleinen und mittleren Unternehmen (KMU) haben, wobei KMUs ohnehin tendenziell Probleme haben Eigenkapital wie auch Fremdkapital aufzubringen.

Die Entscheidungsträger von KMUs sind typischer Weise Eigentümer-Unternehmer. In der Regel sind kleine Unternehmen Familienbetriebe. Diesbezüglich genießt Nachhaltigkeit und langfristige Unabhängigkeit eine höhere Bedeutung als kurzfristiger Profit. Basel II wird wegen der zunehmenden Bedeutung der Bonität von Unternehmen zu größeren Credit Spreads führen, was KMUs aufgrund der allgemein schlechteren Eigenkapitalausstattung weiter unter Druck setzt.

Berücksichtigt man die steigenden Kosten der traditionellen Kreditvergabe, als Folge von schrumpfenden Margen des Einlagengeschäfts und den Auswirkungen von Basel II, erscheint die Verbriefung von Forderungen besonders für KMUs eine vielversprechende Finanzierungsalternative zu sein. Viele Finanzinstitutionen emittieren verbrieft Forderungen auf verschiedenste Kategorien von Aktiva. Dennoch vertrauen besonders Kontinentaleuropäische KMUs noch immer sehr auf die traditionelle Bankenfinanzierung während KMU-Verbriefungen größten Teils auf von Banken geleitete indirekte Verbriefungen beschränkt sind. Die sich immer schwieriger gestaltende traditionelle Kreditvergabe an riskante Kreditnehmer wie viele KMUs wird möglicherweise KMUs ermutigen strukturierte Finanzprodukte als Finanzierungsalternative in Betracht zu ziehen. Kleine Unternehmen werden vielleicht an von Banken durchgeführten Transaktionen teilnehmen, wie es bereits in marktbasierenden Finanzsystemen üblich ist. KMUs könnten von kosteneffizienten

Finanzierungsformen wie Asset Backed Commercial Paper (ABCP) Programmen besonders profitieren. Berücksichtigt man die sich permanent verändernde Struktur der Finanzwelt und die beträchtliche Bedeutung von KMUs in Europa, dann wird aller Voraussicht nach die Bedeutung der Forderungsverbriefung jene traditioneller Finanzierungsformen erreichen.

## Curriculum Vitae

### Personal Information

Name Philip Chlupacek  
 Date of birth 28 September 1979  
 Place of birth Vienna, Austria  
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### Education

|                       |                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Oct 1999 – Jan 2006   | Studies of Business Administration at<br>The University of Vienna, Austria                                                                   |
| Oct 2005 – Jan 2006   |                                                                                                                                              |
| Mar 2008 – May 2009   | <i>Majors</i><br><i>Bachelor: Management</i><br><i>Master: Finance, Operations Management</i>                                                |
| Sept 2004 – May 2005  | Studies of Commerce at<br>The University of Birmingham, UK<br>Scholarship with Merit<br><i>Major: Business Management &amp; Organisation</i> |
| Sept 1998 – May 1999  | Military Service, Austria                                                                                                                    |
| Sept 1990 – June 1998 | High School in Vienna, Austria                                                                                                               |

### Professional Experience

|                     |                                                                                                     |
|---------------------|-----------------------------------------------------------------------------------------------------|
| July – Aug 2003     | <b>European Central Bank</b>                                                                        |
| Mar 2006 - Feb 2008 | Frankfurt am Main, Germany<br>Organisational Planning                                               |
| Dec 2004 – May 2005 | <b>National Express</b><br>London, Birmingham, et al., UK<br>Management of Rail Replacement Service |
| 1998 - 2004         | <b>Tennis Instructor</b> (self-employed)<br>Vienna region, Austria                                  |
| Sept 2002           | <b>Bank Austria – Creditanstalt</b> , Vienna<br>Treasury Operations                                 |
| Sept 2001           | <b>Capital Invest</b> , Vienna<br>Stock Fund Management                                             |
| Aug 2000            | <b>Geyer &amp; Geyer Steuerberatung</b> , Vienna<br>Accounting                                      |
| May 1999            | <b>Creditanstalt</b> , Vienna<br>Customer Service                                                   |

### Languages

German, English, Spanish, French, Latin