

The Value of Non-Financial Information in SME Risk Management

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Why SMEs are so important?

- In **OECD countries**:
 - SMEs represent almost 99% of the total number of firms
 - They are responsible for 78% of the job offer of the country
 - They produce more than one-third of the country's GDP
 - But, around 80% of SMEs is shut down before one year of activity
- Many public and financial institutions, such as the World Bank or Governments themselves, launch each year **plans in order to sustain this essential player of nation's economy**.
- **Borrowing**, especially **from commercial banks**, remains undoubtedly the most important source of external SME financing.
- The **current financial crisis** is likely to affect the financing of small and medium-sized enterprises.

SME Definition

- There is **no common definition** of the segment of small and medium sized enterprises across different countries.
- Usually **qualitative and quantitative variables** are taken into account:
 - Annual turnover - Average annual receipts
 - Industry type - Work organization
 - Total assets - Number of employees
- **EU**: common definition from 1996, updated in 2003 (<250 employees, <€50 million).
- **US**: SBA sets different limits for each industry type in terms of number of employees and average annual receipts.
- **Australia**: companies with less than 50 employees and \$ 10 million.
- **Basel II**: all the companies with sales less than €50 million.

SMEs vs Large Corporates

- SMEs have been always considered as **part of the corporate segment**.
- Only from a recent period academics and practitioners have started to think about **small and medium sized enterprises as a different segment**.
- Many **characteristics** of this segment are **shared** more with the **private individuals** than with corporates:
 - Large number of applications
 - Small profit margins
 - Available information (specially for the micro companies)

Our Research on the Topic

- “Possible Effects of the New Basel Capital Accord on Bank Capital Requirements for SMEs”, *Journal of Financial Services Research*, Vol.3 (1/3), 2005.
- “Modeling Credit Risk for SMEs: Evidence from the US Market”, *ABACUS*, Vol.43, n.3, 2007.
- “The Value of Non-Accounting Information in SME Risk Management”, *Working paper*, 2008.

Evidence from UK Market

- Our sample includes about **5.8 million SMEs** data covering the period 2000-2007 with 66,833 defaults.
- For the first time, we are able to explore the **value added of non-accounting information specifically for SMEs** .
- Using the available non-accounting information, we develop a default prediction model also for that large part of SMEs for which **financial information is very limited** (e.g. sole traders, professionals, micro companies, companies that choose simplified accountancy or tax reporting).
- We find that this information, when available, is likely to **significantly improve the prediction accuracy of the model** (13% higher).

Non-Financial Information

County Court Judgments	Late Filing Days
Audited accounts (y/n)	Audit Report Judgment (e.g. mild, severe, going concern, etc.)
Cash Flow Statement (y/n)	Age of the Firm
Subsidiary (y/n)	Sector

Some Literature

Default prediction methodologies:

- Beaver (1967) and Altman (1968) inicial studies.
- Deakin (1972), Blum (1974), Eisenbeis (1977), Taffler and Tisshaw (1977), Altman et al. (1977), Bilderbeek (1979), Micha (1984), Gombola et al. (1987), Lussier (1995), Altman et al. (1995) for MDA modeling.
- Ohlson (1980), Zavgren (1983), Gentry et al. (1985), Keasy and Watson (1987), Aziz et al. (1988), Platt and Platt (1990), Ooghe et al. (1995), Mossman et al (1998), Charitou and Trigeorgis (2002), Lizal (2002), Becchetti and Sierra (2002) for logit modeling.

Studies for SMEs:

- Edmister (1972), Zhou et al. (2005), Duffie (2005).

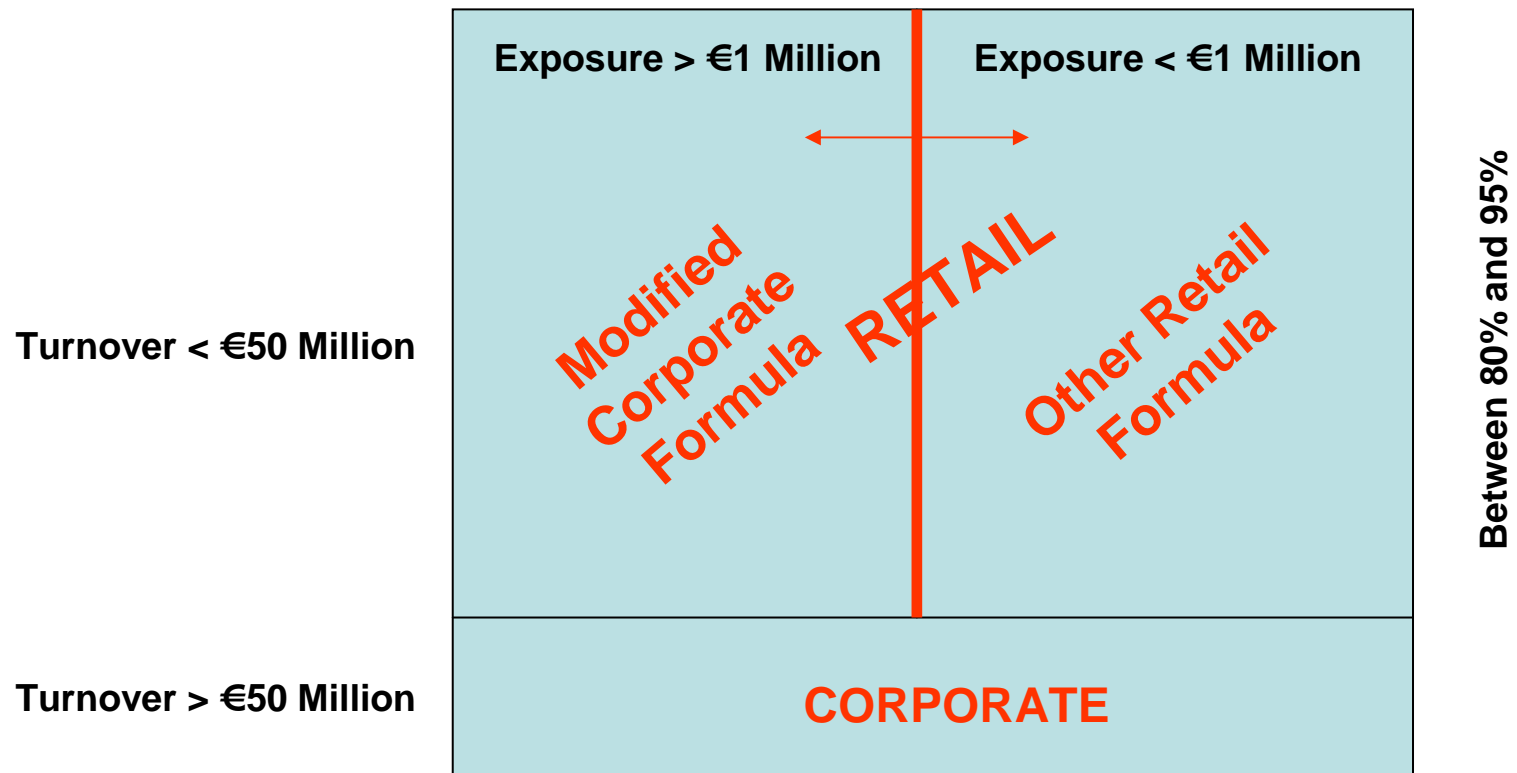
Results

		Type of model	
		SME1	SME2
Only financial variables	US weights	0.64	n.a.
	UK weights	0.67 (0.71)	0.71 (0.74)
Adding Qualitative info	UK weights	0.76 (0.78)	0.75 (0.80)

Benefits: Internal Efficiency

- Implementing a scoring model specific for SMEs is likely to have **beneficial effects** on many operational aspects:
 - Decreases approval costs
 - Decreases approval time
 - Increase the quality of the decision (accept/reject)
 - Increase the profitability of the business
- Banks should not only apply **different procedures** (in the application and behavioral process) to manage SMEs compared to large corporate firms, but banking organizations should also use **instruments** (such as scoring and rating systems) **specifically addressed to the SME portfolio**.

SMEs: Retail or Corporate?




Benefits: Lower Capital Requirements

- We show that modeling credit risk specifically for SMEs also results in **slightly lower capital requirements** (around 0.5%) for banks under the A-IRB approach of **Basel II** than applying a generic corporate model.
- This is true **whatever the percentage** of firms classified as **retail** or as **corporates**.
- This is due to the **higher discrimination** power of a specific SME credit risk model applied on a SME sample.

SME as retail	SME as corporate
$\text{Correlation}=R=0.03*(1-\text{EXP}(-35*PD))/(1-\text{EXP}(35)) +0.16*[1-(1-\text{EXP}(-35*PD))/(1-\text{EXP}(-35))]$	$\text{Correlation}=R.= 0.12*(1-\text{EXP}(-50*PD))/(1-\text{EXP}(-50)) +0.24*(1-(1-\text{EXP}(-50*PD))/(1-\text{EXP}(-50))) -0.04*(1-(S-5)/45)$
$\text{Capital requirement}=K=LGD*N((1-R)^{-0.5}*G(PD) + (R/(1-R)^{0.5})*G(0.999)) -PD*LGD$	$\text{Capital requirement}=K= (LGD*N((1-R)^{-0.5}*G(PD) + (R/(1-R)^{0.5})*G(0.999)) - PD*LGD)*(1-1.5*b)^{-1*(1+(M-2.5)*b)}$
	$\text{Maturity adjustment}=(b)= (0.11852-0.05478*LN(PD)^2)$

Capital requirements: Results

	Altman Z''-Score	New SME model
SMEs as retail	4.76%	4.31%
SMEs as corporate	8.60%	8.10%



Even using a model specifically developed for SMEs and not a generic corporate model, the capital requirements found classifying all SMEs as corporate are higher than under the current Basel I.

Our Findings

- We demonstrate that banks will likely enjoy significant **benefits in terms of SME business profitability** by modeling credit risk for SMEs separately from large corporates (30% higher discrimination).
- We prove that the complexity of these companies cannot be managed only with bureau information, but a **financial analysis is needed (to be updated at least annually)**.
- We find that using **qualitative variables** (e.g. CCJ, Audited account, Late filing days, etc.) as predictors of company failure significantly improves the prediction model's accuracy (13% in our sample).
- We demonstrate that the part of SMEs classified as **retail** can enjoy significantly lower capital requirements than the part classified as **corporate** if banks follow the A-IRB approach.

Conclusions

- Today banks should consider to increase the portion of **SMEs treated as retail clients as much as possible** in order to be competitive in the credit business and to generate appropriate revenues.
- We think that the complexity of these companies should not be managed only with personal bureau information, but a **financial analysis is needed**.
- When **non-accounting information** is available, this should be used to improve model accuracy and discrimination.
- Treating SMEs as retail clients can provide benefits also in terms of **lower capital requirements** under Basel II A-IRB approach.
- Basel II is motivating banks to ***update their internal systems and procedures*** in order to be able to manage SMEs on a pooled basis through the use of a scoring, rating or some other automatic decision system. **These procedures will be important in managing SMEs as retail accounts.**