The Real Effects of Improving Access to Capital Markets Financing: Evidence from European SMEs

Dr. Alexander Eisele, UBS AM, Zurich
Prof. Dr. Eric Nowak, Swiss Finance Institute and University of Lugano
BACKGROUND AND RESEARCH QUESTION

Background:

• Availability of bank loans to SMEs in Europe started to deteriorate
  - New Regulation (Basel III, IFRS 9) makes SME loans unattractive
• Growth innovative financing sources: Listed SME credit and equity vehicles, Covered SME bonds, Crowdfunding, SME market segments for stocks and bonds

This paper focuses on the introduction of dedicated SME market segments for stocks and bonds

Research Questions:

1. Is there any impact on the capital structure?
2. Are there any real effects?
MAIN TAKEAWAYS

Real Effects:
• Introduction of SME equity segments raises investment by 4% annually
• Introduction of SME equity segments decreases the amount of corporate cash holdings by 1%

Capital Structure Effects:
• Introduction of SME equity segments increases the equity financing of SMEs significantly (around 6% in relative terms)
• Introduction of SME bond segments increases bond financing of SMEs significantly (around 10% in relative terms)
• Results suggest positive a complementarity of introducing a SME bond and equity segment
  - Higher disclosure costs can be utilized across different financing sources => SMEs more likely to pay the costs in the first place
• If deciding whether to open special SME segments do it for both equity and bonds at the same time
LITERATURE

- Cross-country studies on capital structure and financing patterns
  - Colin Mayer et al., vast literature

- Impact of financial crises and recessions on bank financing
  - Rajan (1992), Santos and Winton (2008)
  - Iyer et al. (2014), Cingano et al. (2013), Jimenez et al. (2012)
  - Trade credit: Carbo-Valverde et al. (2012)

- Complementarity of different forms of (early-stage) financing
  - Ozmel et al. (2013), Hellmann et al. (2015)
DATA AND METHODOLOGY I

• BACH Database
  - Bank for the Accounts of Companies Harmonized
  - Created by the European Committee of Central Balance – Sheet Data
  - Contains comparable information aggregated across a set of 12 Euro(pean) countries aggregated by sectors and by size class (<50 Mio.)
  - Number of SMEs increases from 648’000 in 2000 to 1.2 million in 2013

• Data from the ECB Survey on Access to Finance for Enterprises (SAFE)
  - Comprises survey responses from companies
  - Available every 6 month starting from 2009
  - Covers over 10’000 enterprises in the Euro Area

• ECB Lending Survey
  - Responses of senior loan officers from 90 banks in the euro area
  - Available quarterly since 2000
DATA AND METHODOLOGY II

• Empirical Analysis I – Purely descriptive Analysis
  - We use a panel of 17 sectors across 9 countries (153 observations per year) between 2000 and 2013
  - We use regression analysis to study the impact of country, time and sector effects on the financial structure of SMEs

• Empirical Analysis II – Impact of Financial Crisis on SME bank financing
  - Impact of Crisis on loans, spreads, collateral, maturity, trade credit

• Empirical Analysis III - Identification Strategy – Intro of SME Segment
  - We use the implementation of innovative forms of SME financing in a country as event to study the impact on the financial structure of SMEs => Difference-in-Difference (DID) analysis
  - SMEs in a country with market innovation are the treatment group
  - Control group are non-SMEs and SMEs in non-treated countries
OVERVIEW ON SME FINANCING

Source: BACH, own calculations
BANK FINANCING- OVER TIME

Bank Funding Ratio (BFR)

- Bank Funding Ratio: fraction of loans from banks to total liabilities (excluding provision and deferred liabilities)
- The fraction of bank financing stays relatively stable across time
- Only 0.92% of variation in the fraction of bank financing are explained by time effects

Source: BACH, own calculations
 Fraction of bank financing varies significantly across sectors

25% of the variation in bank funding ratios are explained by industry effects
Bank Funding Ratio

- Fraction of bank financing varies significantly across countries
- 28% of the variation in bank funding ratios are explained by country effects

Source: BACH, own calculations
EQUITY FINANCING - OVERVIEW

- Equity constitutes on average around **38% of all funding**
- Increased from 34% in 2000 to **40% in 2013**
- **2.5% of variation** can be explained by **time effects**
- Fraction of equity varies significantly across sectors
  - **23% of the variation** in equity ratios can be explained by **industry effects**
- Fraction of equity varies significantly across countries
  - **34% of the variation** in equity ratios can be explained by **country effects**

swiss:finance:institute
BOND FINANCING - OVERVIEW

• Constitutes on average around 0.6% of all funding

• Increased with the beginning of the financial crisis

• 0.36% of variation can be explained by time effects

• Fraction of bonds varies significantly across sectors
  - 6% of the variation in bond funding ratios can be explained by industry effects

• Fraction of bonds varies significantly across countries
  - 8% of the variation in bond funding ratios can be explained by country effects
SME FINANCING AND THE FINANCIAL CRISIS

- The supply of bank loans tightened during the financial crisis with negative consequences for corporate investment
  - Iyer et al. (2014): Portuguese banks relying more on interbank financing tightened credit supply significantly; firms are not able to substitute shortfall through other banks
  - Cingano et al. (2013): The freeze of the interbank market in 2007 explained more than 40% of the decrease in corporate investment in Italy
  - Jimenez et al. (2012): During times of crisis banks are less likely to grant loans the weaker their capital position

Source: ECB Survey on Access to Finance of Enterprises (SAFE)
BANK LOANS IN CRISIS – INTEREST RATES

- Rajan (1992): Banks extract informational rents from their borrowers when their access to market-based funding is more difficult (hold-up problem)

- Santos and Winton (2008): Hold-up problem particularly severe in recessions

Interest Rate Spread between Small (<EUR 1 million) and Large Loans

Source: ECB Bank Lending Survey
BANK LOANS – INTEREST RATES

Interest Rate Spread between Small and Large Loans

Source: ECB Bank Lending Survey
BANK LOANS - COLLATERAL

Collateral Requirements

Source: ECB Bank Lending Survey

- Banks require more collateral for SME loans
BANK LOANS – MATURITY

Net percentage of SMEs reporting a decrease in loan maturities

Source: ECB Survey on Access to Finance of Enterprises

- Loan maturities are becoming significantly shorter
Due to the higher costs and decreased availability, SMEs substituted bank loans with trade credit in countries where firms were more likely to be constrained (see Carbo-Valverde et al. 2012).
Some increase in equity financing during the GFC particularly in countries with established SME equity segments (France and Germany).

For example the number of listed SMEs at Alternext increased from 125 in June 2008 to 177 at the end of 2014.
DEBT SECURITIES

Percentage of SMEs using Debt Securities

Source: ECB Survey on Access to Finance of Enterprises
QUASI-EXOGENOUS SHOCKS – EQUITY I

Countries introducing SME segments:

- **France**: SME equity segment «Alternext» since May 2005; public guarantee on SMEs equity investments («Fonds Stratègique d’Investissement» in 2008; Tax incentives
- **Germany**: SME equity segment («Entry Standard») since 2005; favorable interest rates to companies investing in SME equity (ERP)
- **Italy**: AIM Italia MAC (2008), new facility to trade SME equity
- **Spain**: MAB (2009), new facility to trade SME equity
QUASI-EXOGENOUS SHOCKS – EQUITY II

- Domestic companies listed at SME exchanges (France: cumulative number of IPOS)
Countries introducing SME segments:

- **Germany**: Market for Mittelstandsanleihen since 2010; at the end of 2014 the approximate size of the market was EUR 6 bn with 148 different issues
- **Spain**: Market for SME bonds since October 2013
- **Italy**: Market for Italian minibonds since 2013; bonds are partially guaranteed by the Italian government; only for institutional investors; at the end of 2014 there were around EUR 4 bn in minibonds outstanding (82 issues) (see Kraemer-Eis et al. 2014); Cerved Group (2013) the pool of potential issuers comprises 34’000 companies with EUR 140 bn of outstanding debt
- **France**: Market for SME bonds since 2014; access for retail as well as institutional investors
Real Effects I

**Hypothesis I:** Under the assumption that at least some SMEs are financially constrained, an easier access to external finance increases investment

**Hypothesis II:** Under the assumption that at least some SMEs are financially constrained, an easier access to external finance decreases the amount of corporate cash holdings (Almeida et al (2004), Keynes (1936))
Real Effects II

This table shows the effect of introducing a dedicated bond/equity segment on the investment activity and the liquidity policy of SMEs. Our data comprises bond/equity/market-based funding ratios of 17 sectors across 9 countries from the BACH database. The variable SME Bond/Equity segment is a dummy equal to 1 after the introduction of a SME bond/equity market segment, i.e. the multiplication of a treatment dummy and a post-treatment period dummy. Coefficients for the post treatment dummies are not displayed. T-Statistics are in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level respectively.

<table>
<thead>
<tr>
<th></th>
<th>Acquisition - Disposals)/Assets</th>
<th>Cash/Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) (2) (3) (4) (5) (6)</td>
<td></td>
</tr>
<tr>
<td>SME EQUITY SEGMENT</td>
<td>0.041*** (3.416)</td>
<td>-0.011*** (-3.533)</td>
</tr>
<tr>
<td></td>
<td>0.040*** (3.385)</td>
<td></td>
</tr>
<tr>
<td>SME BOND SEGMENT</td>
<td>0.015 (0.516)</td>
<td>-0.012*** (-3.11)</td>
</tr>
<tr>
<td></td>
<td>0.008 (0.263)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.113*** (3.119)</td>
<td>0.043*** (8.18)</td>
</tr>
<tr>
<td></td>
<td>0.084** (2.368)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>947</td>
<td>1652</td>
</tr>
<tr>
<td>R2</td>
<td>0.365</td>
<td>0.561</td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.341</td>
<td>0.551</td>
</tr>
</tbody>
</table>
CAPITAL STRUCTURE EFFECTS I

- Median Equity Funding Ratio before and after the introduction of a SME equity segment across countries
CAPITAL STRUCTURE EFFECTS II

- Median **change** in the Equity Funding Ratio after the introduction of a SME equity segment across sectors
This table shows the effect of introducing a dedicated equity segment on the equity funding ratio of SMEs. Our data comprises equity funding ratios of 17 sectors across 9 countries from the BACH database. The variable SME segment is a dummy equal to 1 after the introduction of a SME equity market segment in a specific country, i.e. the multiplication of a treatment dummy and a post-treatment period dummy. Coefficients for the post treatment dummies are not displayed. T-Statistics are in parentheses. *, **, *** indicates statistical significance at the 10%, 5% and 1% level respectively.

<table>
<thead>
<tr>
<th></th>
<th>EQUITY FUNDING RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>SME EQUITY SEGMENT</td>
<td>3.35***</td>
</tr>
<tr>
<td></td>
<td>(4.78)</td>
</tr>
<tr>
<td>COUNTRY FIXED EFFECTS</td>
<td>Y</td>
</tr>
<tr>
<td>SECTOR FIXED EFFECTS</td>
<td>Y</td>
</tr>
<tr>
<td>TIME FIXED EFFECTS</td>
<td></td>
</tr>
<tr>
<td>CONSTANT</td>
<td>35.62***</td>
</tr>
<tr>
<td></td>
<td>(41.03)</td>
</tr>
<tr>
<td>Observations</td>
<td>1,685</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.35</td>
</tr>
</tbody>
</table>

- Introduction of a SME equity segment increases the equity funding ratio by 2.37% (the average equity funding ratio is 38.6%) so around 6% in relative terms
### CAPITAL STRUCTURE EFFECTS V

- Median Bond Funding Ratio before and after the introduction of a SME bond segment across countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>0.00%</td>
<td>0.10%</td>
</tr>
<tr>
<td>France</td>
<td>0.20%</td>
<td>0.40%</td>
</tr>
<tr>
<td>Italy</td>
<td>0.50%</td>
<td>0.70%</td>
</tr>
</tbody>
</table>
CAPITAL STRUCTURE EFFECTS VI

- Median **change** in the Bond Funding Ratio after the introduction of a SME bond segment across sectors
This table shows the effect of introducing a dedicated bond segment on the bond funding ratio of SMEs. Our data comprises bond funding ratios of 17 sectors across 9 countries from the BACH database. The variable SME Bond segment is a dummy equal to 1 after the introduction of a SME bond market segment, i.e. the multiplication of a treatment dummy and a post-treatment period dummy. Coefficients for the post treatment dummies are not displayed. T-Statistics are in parentheses. ***,*** indicates statistical significance at the 10%, 5% and 1% level respectively.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SME BOND SEGMENT</td>
<td>0.03</td>
<td>0.03</td>
<td>0.06**</td>
</tr>
<tr>
<td>(1.35)</td>
<td>(1.39)</td>
<td>(2.03)</td>
<td></td>
</tr>
<tr>
<td>COUNTRY FIXED EFFECTS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>SECTOR FIXED EFFECTS</td>
<td></td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>TIME FIXED EFFECTS</td>
<td></td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>0.13***</td>
<td>0.15***</td>
<td>0.10**</td>
</tr>
<tr>
<td>(7.28)</td>
<td>(5.72)</td>
<td>(2.52)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>1,685</td>
<td>1,685</td>
<td>1,685</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.35</td>
<td>0.43</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Introduction of a SME bond segment increases the bond funding ratio by 0.06% (the average bond funding ratio is 0.62%) so almost 10% in relative terms.
CAPITAL STRUCTURE EFFECTS VIII

This table shows the effect of introducing a dedicated bond/equity segment on the bond/equity/market-based funding ratio of SMEs. Our data comprises bond/equity/market-based funding ratios of 17 sectors across 9 countries from the BACH database. The variable SME Bond/Equity segment is a dummy equal to 1 after the introduction of a SME bond/equity market segment, i.e. the multiplication of a treatment dummy and a post-treatment period dummy. Coefficients for the post treatment dummies are not displayed. T-Statistics are in parentheses. ***,*** indicates statistical significance at the 10%, 5% and 1% level respectively.

<table>
<thead>
<tr>
<th></th>
<th>Market-based funding Ratio</th>
<th>Equity Funding Ratio</th>
<th>Bond Funding Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>SME EQUITY SEGMENT</td>
<td>1.93***</td>
<td>2.13***</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(2.64)</td>
<td>(2.93)</td>
<td>(0.17)</td>
</tr>
<tr>
<td>SME BOND SEGMENT</td>
<td>2.11**</td>
<td>2.36**</td>
<td>0.05**</td>
</tr>
<tr>
<td></td>
<td>(1.99)</td>
<td>(2.23)</td>
<td>(1.98)</td>
</tr>
<tr>
<td>COUNTRY FIXED EFFECTS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>SECTOR FIXED EFFECTS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>TIME FIXED EFFECTS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Constant</td>
<td>41.79***</td>
<td>41.21***</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(25.68)</td>
<td>(25.33)</td>
<td>(0.46)</td>
</tr>
<tr>
<td>Observations</td>
<td>1,685</td>
<td>1,685</td>
<td>1,685</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.60</td>
<td>0.60</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Introduction of a SME bond segment has a positive impact also on the Equity Funding Ratio. Results suggest **positive complementarity** of introducing a SME bond and equity segment.
CONCLUSIONS AND NEXT STEPS

• Introduction of SME equity segments raises investment by 4% annually
• Introduction of SME equity segments decreases the amount of corporate cash holdings by 1%
• Introduction of SME equity segments increases the equity financing of SMEs significantly (around 6% in relative terms)
• Introduction of SME bond segments increases bond financing of SMEs significantly (around 10% in relative terms)
• Results suggest positive a complementarity of introducing a SME bond and equity segment
  - Higher disclosure costs can be utilized across different financing sources => SMEs more likely to pay the costs in the first place
• We aim to complement our results with a firm-level analysis
  - on the cost of capital, investment, and other measures