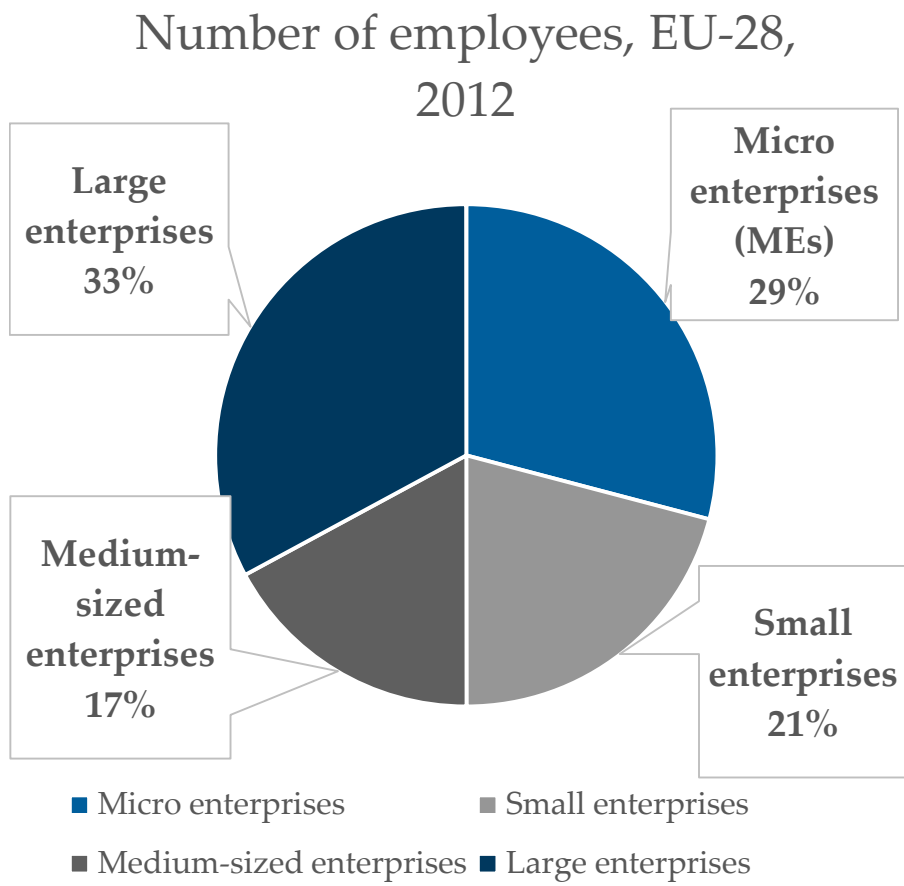
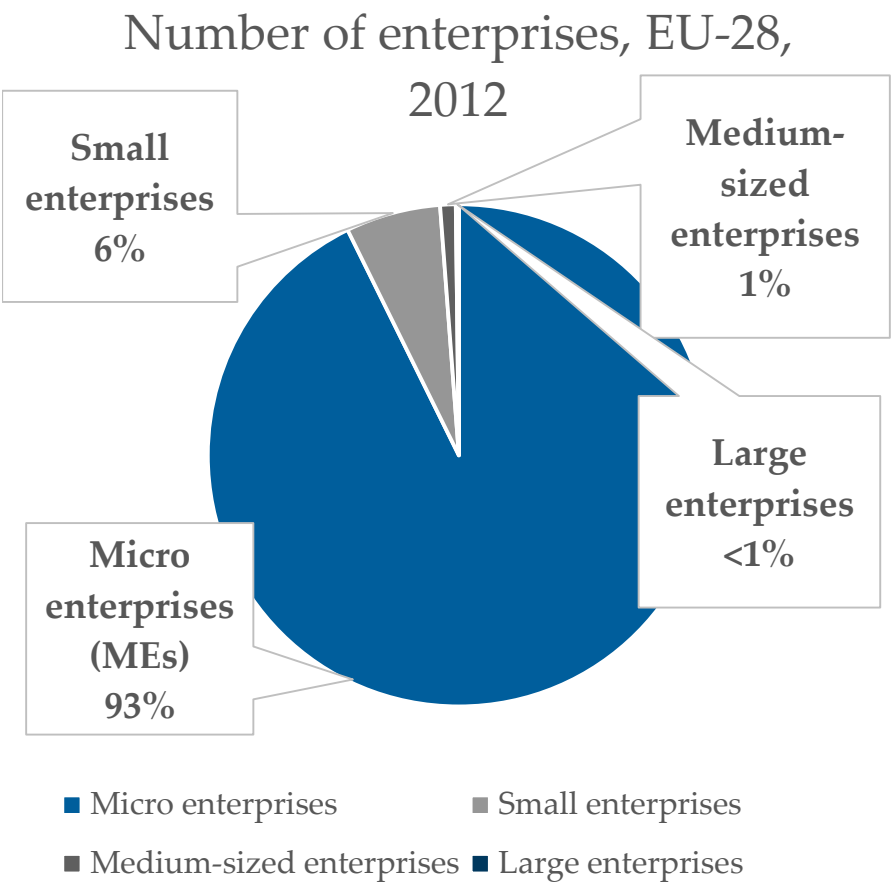




# Financing Micro Firms in Europe: An Empirical Analysis

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Source: EUROSTAT (2016): "Business economy - size class analysis", available at: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Business\\_economy\\_-\\_size\\_class\\_analysis#Further\\_Eurostat\\_information](http://ec.europa.eu/eurostat/statistics-explained/index.php/Business_economy_-_size_class_analysis#Further_Eurostat_information) (accessed 10 September, 2016).

- Firm-, product-, industry-, country-specific factors and the macroeconomic environment impact SMEs demand for and access to finance (e.g., Chittenden et al. 1996; Ferrando and Grieshaber 2011; La Porta et al. 1997; Levine 2002)
- The effects are more pronounced for SMEs (e.g., Beck et al. 2008; Jõeveer 2012)
- Only a few studies investigate a variety of financing instruments and the substitutive/complementary effects between these instruments (e.g., Casey and O'Toole 2014; Lawless et al. 2015; Moritz et al. 2016)
- Little is known about the financing patterns of micro enterprises and their differences with regard to other small and medium-sized enterprises (Daskalakis et al. 2013; Lawless et al. 2015; López-Gracia and Sogorb-Mira 2008; Moritz et al. 2016; Serrasqueiro et al. 2011)

Research objective: Micro firm financing in Europe and how the financing differs from other small firms

- Data
  - Survey on the access to finance of enterprises (SAFE Survey) conducted on behalf of the European Central Bank (ECB) and the European Commission (EC)
  - Conducted on a bi-annual basis by the ECB and once per year (before 2013 every two years) by the ECB and EC
  - The period Apr. – Sep. 2015 (SAFE Survey 2015H1) is used for the analysis
  - The survey includes a large number of financing instruments as well as firm-, product- and industry-specific information
  - Sample: 12,144 SMEs including 4,590 micro enterprises (number of employees 1-9) in 27 European countries

- Method:
  - 1<sup>st</sup> step: Cluster analysis
    - Explorative analysis to develop SME financing patterns (hierarchical cluster analysis with Ward algorithm and squared Euclidean distance)
    - Financing instruments as cluster variables
  - 2<sup>nd</sup> step: Logistic regression analyses
    - Clusters of the explorative analysis as dependent variables
    - Firm size as independent variable (micro = 1-9 employees, small = 10-49 employees and medium-sized = 50-249 employees) and control variables (e.g., age, industry and country dummy variables)

## Financing patterns of micro, small and medium-sized firms

| Financing instruments                                 | Debt-financed | Short-term debt | Mixed-financed (other loans) | Mixed-financed (retained earnings) | State-subsidized | Asset-based financed | Internally-financed | Pearson-Chi <sup>2</sup> |
|---|---------------|-----------------|------------------------------|------------------------------------|------------------|----------------------|---------------------|--------------------------|
| Retained earnings or sale of assets                   | 0.0%          | 4.6%            | 20.6%                        | <b>100%</b>                        | 17.4%            | 0.0%                 | 0.0%                | 9354.2 ***               |
| Grants or subsidised bank loan                        | 0.0%          | 1.5%            | 1.3%                         | 3.6%                               | <b>100%</b>      | 0.0%                 | 0.0%                | 10949.5 ***              |
| Bank overdraft, credit line or credit cards overdraft | <b>82.2%</b>  | 51.7%           | 48.6%                        | 46.8%                              | 57.5%            | 40.9%                | 0.0%                | 4183.2 ***               |
| Bank loans  | 45.2%         | 24.8%           | 24.3%                        | 26.5%                              | 43.9%            | 0.0%                 | 0.0%                | 2398.9 ***               |
| Trade credit  | 0.0%          | <b>85.4%</b>    | 30.6%                        | 33.8%                              | 32.0%            | 0.0%                 | 0.0%                | 6454.8 ***               |
| Other loan  | 0.0%          | 4.4%            | <b>100%</b>                  | 1.7%                               | 0.0%             | 0.0%                 | 0.0%                | 10061.7 ***              |
| Debt securities issued                                | 0.0%          | 8.3%            | 0.6%                         | 0.6%                               | 0.2%             | 0.0%                 | 0.0%                | 750.1 ***                |
| Equity  | 0.0%          | 10.7%           | 0.8%                         | 1.2%                               | 0.3%             | 0.0%                 | 0.0%                | 934.6 ***                |
| Leasing / factoring                                   | 15.6%         | 35.1%           | 30.9%                        | 38.6%                              | 39.2%            | <b>100%</b>          | 0.0%                | 4739.4 ***               |
| Other   | 0.0%          | 5.3%            | 1.2%                         | 0.5%                               | 8.5%             | 0.0%                 | 0.0%                | 415.6 ***                |
| No external financing                                 | 0.0%          | 0.0%            | 0.0%                         | 0.0%                               | 0.0%             | 0.0%                 | <b>100%</b>         | 12144.0 ***              |
| N   | 2062          | 1886            | 972                          | 1531                               | 956              | 1174                 | 3563                |                          |
| Percentage of firms                                   | 17.0%         | 15.5%           | 8.0%                         | 12.6%                              | 7.9%             | 9.7%                 | 29.3%               |                          |

Notes: N=12,144; Pearson's chi-square test: \*\*\*p < 0.01. \*\*p < 0.05. \*p < 0.1.

- Liability of smallness (e.g., lack of resources, difficulties in competing for labor and raising capital, difficulty to attract skilled workforce) and lack of economies of scale are higher for micro than for other small firms (Aldrich and Auster, 1986)
- Micro firms face even more problems from information asymmetries (information costs) than do other small firms (Daskalakis et al. 2013; Psillaki 1995)
- Micro firms especially face difficulties to provide collateral for reducing information asymmetries (Lawless et al. 2015)



**H1.** Micro firms are less likely than small firms to fall into the debt-financed cluster



- Smaller firms prefer short-term debt over long-term debt and equity (Hutchinson 1995; López-Gracia and Sogorb-Mira 2008)
- Even though short-term debt such as trade credit is a rather expensive financing instrument for micro firms, it is the most used external financing form for micro firms (Casey and O'Toole 2014; Holmes and Kent 1991; Marotta 2005; Robb 2002; Taketa and Udell 2007)
- Rather age than firm size matters with regard to trade credit (Andrieu et al. 2015; Ayadi 2009; Berger and Udell 1998)



**H2.** Micro firms are more likely than small firms to fall into the short-term debt-financed cluster

- The transaction costs and information asymmetries are especially high for micro firms
- To finance the own assets of the company and to avoid the information opacity, micro firms can use bootstrapping techniques or rely on capital provided by family and friends (Berger and Udell 1998; Ebben and Johnson 2006; Harrison et al. 2004)



**H3a.** Micro firms are less likely than small firms to fall into the mixed-financed cluster with focus on retained earnings/sale of assets

**H3b.** Micro firms are more likely than small firms to fall into the mixed-financed cluster with focus on other loans

- The liability of smallness and consequently high transaction costs lead to difficulties in applying for government grants or subsidised loans (Aldrich and Auster 1986)
- Previous research has found that micro firms have a lack of awareness of public funding bodies (Aldrich and Auster 1986; Daskalakis et al. 2013; Öztürk and Mrkaic 2014)



**H4.** Micro firms are less likely than small firms to fall into the state-subsidised financed cluster

- Agency risks for the lessor are priced in the leasing fees and the risk for the factoring company are reflected in the service fee (Eisfeldt and Rampini 2007; Klapper 2006)



**H5.** Micro firms are less likely than small firms to fall into the asset-based financed cluster

- In line with previous arguments, micro firms face higher transaction costs than other small or medium-sized firms due to the liability of smallness and the lack of economies of scale and scope
- High information asymmetries imply higher risks for capital providers
- To reduce information asymmetries, micro firms have to send more credible and cost-intensive signals to external financiers
- Hence, micro firms are less likely to apply for and obtain external financing and rely more on internal financing instruments.



**H6.** Micro firms are more likely than small firms to fall into the internally-financed cluster

# Results – Logistic Regression Analyses

| VARIABLES                    | Debt-<br>financed   | Short-term<br>debt-<br>financed | Mixed-<br>financed<br>(retained<br>earnings) | Mixed-<br>financed<br>(other<br>loans) | State-<br>subsidised | Asset-<br>based<br>financed | Internally-<br>financed |
|------------------------------|---------------------|---------------------------------|--|--|----------------------|-----------------------------|-------------------------|
| Size micro (1-9 employees)   | 0.202***<br>(0.069) | -0.398***<br>(0.074)            | -0.830***<br>(0.080)                         | 0.072<br>(0.095)                       | -0.952***<br>(0.101) | -0.482***<br>(0.089)        | 1.111***<br>(0.061)     |
| Size small (10-49 employees) | 0.090<br>(0.066)    | -0.100<br>(0.067)               | -0.398***<br>(0.068)                         | -0.146<br>(0.092)                      | -0.248***<br>(0.083) | -0.012<br>(0.077)           | 0.520***<br>(0.060)     |
| Age <2                       | 0.265***<br>(0.086) | -0.014<br>(0.017)               | 0.167<br>(0.104)                             | -0.167<br>(0.115)                      | -0.093<br>(0.120)    | -0.161<br>(0.100)           | -0.035<br>(0.072)       |
| Ages 2-4                     | 0.022<br>(0.067)    | 0.181*<br>(0.094)               | 0.123<br>(0.082)                             | 0.015<br>(0.093)                       | -0.205**<br>(0.095)  | -0.081<br>(0.071)           | -0.044<br>(0.058)       |
| Ages 5-9                     | -0.268*<br>(0.154)  | 0.139<br>(0.159)                | -0.096<br>(0.178)                            | 0.224<br>(0.181)                       | -0.594***<br>(0.227) | -0.140<br>(0.168)           | 0.257**<br>(0.115)      |
| Family or entrepreneurs      | 0.284**<br>(0.141)  | -0.381***<br>(0.122)            | 0.282**<br>(0.142)                           | 0.326<br>(0.204)                       | -0.251<br>(0.159)    | 0.191<br>(0.164)            | -0.222**<br>(0.109)     |
| One owner                    | 0.320**<br>(0.142)  | -0.368***<br>(0.123)            | 0.141<br>(0.145)                             | 0.168<br>(0.205)                       | -0.301*<br>(0.162)   | 0.185<br>(0.163)            | -0.094<br>(0.110)       |
| Innovativeness               | -0.067<br>(0.054)   | 0.106*<br>(0.056)               | 0.066<br>(0.060)                             | 0.179**<br>(0.074)                     | 0.291***<br>(0.073)  | -0.059<br>(0.068)           | -0.217***<br>(0.047)    |
| Industry                     | 0.034<br>(0.067)    | 0.376***<br>(0.075)             | 0.081<br>(0.073)                             | -0.316***<br>(0.096)                   | 0.358***<br>(0.090)  | -0.107<br>(0.084)           | -0.304***<br>(0.059)    |
| Trade                        | 0.031<br>(0.064)    | 0.635***<br>(0.069)             | -0.036<br>(0.075)                            | 0.001<br>(0.088)                       | 0.082<br>(0.096)     | -0.265***<br>(0.087)        | -0.300***<br>(0.054)    |
| Pseudo R <sup>2</sup>        | 0.055               | 0.124                           | 0.078  | 0.071                                  | 0.119                | 0.065                       | 0.168                   |
| Observations                 | 12,144              | 12,144                          | 12,144                                       | 12,144                                 | 12,144               | 12,144                      | 12,144                  |

Notes: Logit regression, robust SEs are in parentheses. \*\*\*p < 0.01. \*\*p < 0.05. \*p < 0.1. Country dummies, capital position, changes in turnover, profit, access to finance problems and additional ownership and industry categories also included.

- **Results**

- Firm size significantly affects financing of firms
- Micro firms are more likely than small firms to fall into the internally-financed cluster, but are less likely to be in the state-subsidised or mixed-financed (retained earnings) cluster
- Micro firms are more likely to be in the debt-financed cluster and are less likely to fall into the short-term debt-financed cluster

- **Contribution**

- There is a link between the use of external financing and firm size (effect is independent from firm age)
- Micro firms appear to have difficulties to receive grants or subsidised loans (Daskalakis et al. 2013)

- **Limitations**
  - **No panel data** set and only financing instruments that are used in the past **6 months**
  - **No solo self-employed** in the data set included
  - No information about the **relative importance** of the financing instruments
  - Is the finding that micro firms are more often in the internally-finance cluster due to **external constraints**?
- **Future research**
  - Financing patterns **over time**
  - Relative importance of financing instruments – balance sheet analysis
  - Application of **financing theories** to micro firms

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