



Analysis of the SME definition - a pilot approach using firm-level data

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Abstract

The current Small and Medium Enterprises (SME) definition is set out in a Recommendation of the Commission adopted on 6th May 2003, which came into effect on the 1st January 2005. The definition uses headcount and either turnover or balance sheet total to determine whether an enterprise is an SME, with the key cut-off points having less than 250 staff, and either less than or equal to €50m turnover or less than or equal to €43m on the balance sheet total. This study aims to understand the effects of inflation on this threshold using a sample of enterprises extracted from Orbis, a private companies database compiled by Bureau van Dijk. Results show that at EU-level in 2015 there were 2,198,514 SMEs (99.0% of the sample), and in 2020 there were 2,194,716 SMEs (98.8% of the sample). Accounting for inflation shows that an additional 1,817 enterprises (0.08% deflator impact) could be classified as SMEs in 2015, and this figure was 3,104 in 2020 (0.14% deflator impact). A bootstrapped sample, controlling for the expected proportion between SMEs and large enterprises, shows that the estimated impact of deflation on the number of SMEs was 0.01% in 2015, and at 0.02% in 2020, for the EU total sample. Although the study shows a link between inflation and the number of enterprises that can be estimated to be SMEs in the sample, limitations imply that these estimates cannot be directly generalised to the wider EU-27 SME population.

1 Introduction

The current Small and Medium Enterprises (SME) definition is set out in a Recommendation of the Commission adopted on 6th May 2003, which came into effect on the 1st January 2005. The definition uses headcount and either turnover or balance sheet total to determine whether an enterprise is an SME, with the key cut-off points having less than 250 staff, and either less than or equal than €50m turnover or less than or equal to € 43m on the balance sheet total. Thresholds are also set for separating micro, small and medium enterprises, and additional criteria are also set, such as the distinction between autonomous, partner and linked enterprises. The “User guide to the SME definition” (DG GROW, 2020) provides a detailed description of the definition and how to apply it. The SME definition is important for determining access to finance and other EU support programmes targeted specifically at these enterprises.

Over the years, the SME definition has been the subject of different evaluations, the latest one being published in 2021¹. These evaluations have analysed the relevance, effectiveness, efficiency, and coherence of the SME definition criteria, providing well-rounded views of these (e.g. CSES, 2012; Sylvest et al., 2018). Recent economic turbulences, however, have reignited the need to understand the impact of inflation on the SME definition. As such, this study aims to support the policy conversation on the impact of inflation on the SME definition, and the options for updating the financial cut-offs.

1.1 Research question and limitations

Using a sample extracted from Orbis², the present study aims to assess the robustness of the SME definition against inflation over time, by estimating the number of enterprises in the sample that meet the headcount criteria, but fail to meet the financial criteria due to inflation.

The key limitations can be summarised as follows:

- Firms on Orbis are drawn from a smaller set of enterprises than Eurostat, and mainly relate to legal. They are likely to show a bias towards capital intensive enterprises, especially in the micro category, and the extent and type of bias may also depend on the country, and the activity sector. We repeated the analysis with bootstrapping, to ensure that the class size structure of the final sample was more similar to the class size distribution as found in the Structural Business Statistics (which may also have some bias³), but no other bias-reducing techniques were used due to time restrictions. This means that the sample used in the study is not representative of the EU27 enterprises population.
- The samples used on the study may not be representative of the enterprises population on Orbis either, as not all firms report the information needed for this exercise (e.g. number of employees, turnover, etc.). Moreover, as enterprises are followed over a five year time window, the sample necessarily includes only those firms that are more robust and survive over time.
- The study focused on the headcount and financial SME definition criteria only. Additional criteria (e.g. independence status of the firm, observing whether enterprises fail to meet the thresholds for two years in a row) could not be included due to time restrictions. This may have had an impact on the estimates we obtained.
- Finally, Orbis data is only available until 2020 (and 2021, but with much fewer observations), so this study is unable to detect the impact of recent inflation changes.

Based on the above description of limitations, this analysis should be considered as a small-case study, providing estimates based on a non-representative sample of enterprises (based on country, activity, legal status), and results should not be generalised to the wider EU-27 SME population.

¹ SWD (2021) 280

² A companies private database compiled by Moody's Bureau van Dijk.

³ The SBS statistics base class size classification only on headcount information, and as such they are at risk of overestimating the number of SMEs according to the SME definition. See Sylvest et al. 2018.

2 The analysis

2.1 Sample and methodology

Using Orbis, we created two samples of enterprises located in the EU-27, and observed their headcount and financial information from 2015 to 2020.

The following inclusion criteria generated the first sample of 2,221,771 enterprises:

- Enterprises with active status between 2015 and 2020;
- Enterprises with complete headcount and financial information both in 2015 and 2020 (number of employees, turnover and balance sheet total);
- Enterprises located in the EU-27.
- Within the sample, enterprises are categorised as SMEs if they meet *both* the headcount criteria (number of employees less than 250) and the financial criteria (either less than €50m turnover or less than €43m on the balance sheet total) for the year under observation. No other criteria have been included in the study. Although in principle it would have been possible to do so, including additional criteria would have both restricted the sample, and increased the time needed to run the analysis.

In order to observe the effects of inflation we deflated the financial data to 2003 (the year the thresholds were set) using the implicit GDP deflator, by country⁴. The key outcome metric was computed by observing the number of enterprises that are below the headcount and financial cut-offs, using first the current and then the deflated financial data, in both 2015 and 2020. This gives us the estimated number of enterprises which *would* meet both criteria (thus being considered SMEs) *if* inflation was controlled for.

The second sample was generated by using the same criteria as above, but headcount and financial information was observed in all years between 2015 and 2020, thus reducing the sample to 1,983,721. This sample was used to observe the effects of inflation over time.

2.2 Results

Table 1 describes the composition of the sample by country and SME status. The inclusion criteria for the study are such that some Member States are poorly represented (e.g. LU and CY representing less than 0.01% of the sample, and MT having no observations), while approximately half the sample is composed of enterprises from RO (18%), IT (16%), and ES (16%). Moreover, in some Member States SMEs are overrepresented, for example in 2020 there are 477 SMEs in NL, which is 41% of the sample in this country.

Table 1. Sample description by country and SME status by year.

Country	Sample size	%	SMEs in 2015	SMEs in 2020
EU total	2,221,771	-	2,198,574	2,194,716
AT	2,300	0.10%	1,999	1,946
BE	15,981	0.72%	14,649	14,442
BG	177,776	8.00%	176,917	176,920
CY	72	0.00%	69	66
CZ	20,498	0.92%	19,938	19,925
DE	11,555	0.52%	7,753	7,327

⁴ From Eurostat, GDP and main components (output, expenditure and income) [NAMA_10_GDP__custom_7074903]. We also performed the calculations using the Harmonized Index of Consumer Prices (HICP), but results did not differ substantially so we only report the GDP deflator results.

DK	1,866	0.08%	1,471	1,448
EE	36,248	1.63%	36,141	36,135
ES	356,646	16.05%	354,180	353,493
FI	44,853	2.02%	44,534	44,453
FR	44,659	2.01%	41,614	41,241
GR	25,762	1.16%	25,483	25,402
HR	53,102	2.39%	52,772	52,735
HU	141,751	6.38%	141,017	140,895
IE	5,394	0.24%	4,875	4,780
IT	360,430	16.22%	357,379	356,505
LT	8,789	0.40%	8,432	8,372
LU	42	0.00%	27	25
LV	52,668	2.37%	52,506	52,499
NL	1,160	0.05%	593	477
PL	7,291	0.33%	6,935	6,849
PT	193,572	8.71%	192,815	192,616
RO	398,822	17.95%	397,424	397,311
SE	189,917	8.55%	189,028	188,888
SI	41,026	1.85%	40,807	40,774
SK	29,591	1.33%	29,216	29,192

Table 2 shows the results of the analysis: at EU-level in 2015 there were 2,198,514 SMEs (99.0% of the sample), while this number was 2,194,716 in 2020 (98.8% of the sample). When accounting for inflation, an additional 1,817 enterprises (0.08% deflator impact) were classified as SMEs in 2015, and this figure was 3,104 in 2020 (0.14% deflator impact).

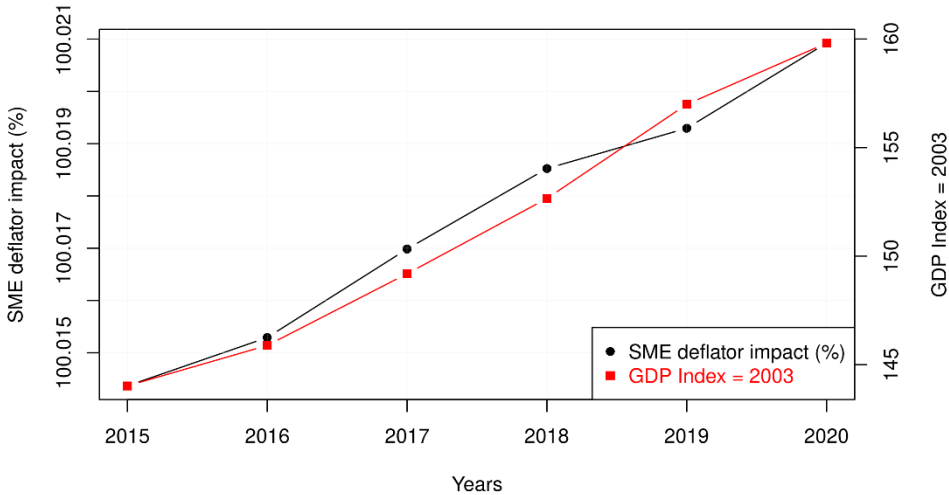
Next, by using a combination of linear programming and bootstrapping we ensure that the distribution across class sizes (SMEs vs. Large) is in line with the distribution as recorded by Eurostat Structural Business Statistics (Di Bella et al., 2023). We performed 5,000 iterations where each extracted sample (with replacement) maximises the number of observations that maintains the proportions between SMEs and Large enterprises, by country. Results show that the deflator effect is smaller, when balancing the sample for class size distribution, but it still shows a larger effect in 2020 as compared to 2015: at EU level, in 2015 the impact of deflation was 0.01%, increasing to 0.02% in 2020.

Table 2. Number of SMEs with and without taking inflation into account for the EU total sample, and the respective sample with bootstrapping.

	Sample with no bootstrapping		Sample with bootstrapping	
Year	2015	2020	2015	2020
Sample	2,221,771	2,221,771	2,202,558	2,198,693
SMEs	2,198,574	2,194,716	2,198,574	2,194,716
SMEs adjusted for inflation	2,200,391	2,197,820	2,198,886	2,195,172
SMEs deflator impact	1,817	3,104	312	456
SMEs deflator impact (%)	0.08%	0.14%	0.01%	0.02%

The relationship between inflation and the deflator impact for SMEs can also be observed in Figure 1. This shows that there is a positive relationship between the two: as inflation increases over the years, so does the SMEs deflator impact, i.e. a larger proportion of enterprises find themselves above the financial thresholds while controlling for inflation (and simultaneously meet the headcount criteria as well).

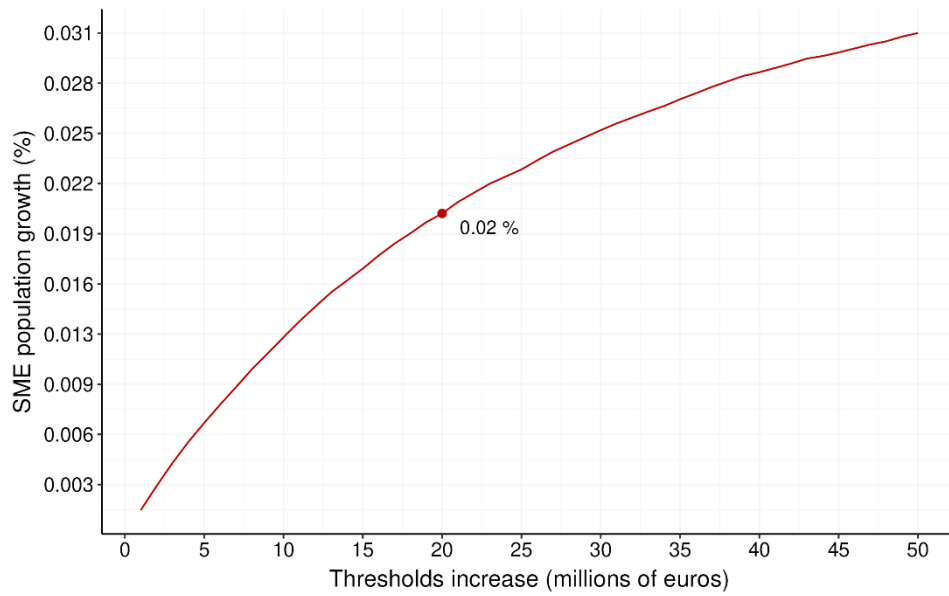
Figure 1. Evolution over time of the relationship between inflation (indexed to the year 2003) and the SME deflator effect (%), for the EU total sample.



Note: figures computed with bootstrapped sample

Finally, we also mapped what would be the effect of raising the financial thresholds on the SME population size in the 2020 EU total sample. Figure 2 shows the extent to which the SME population grows as the thresholds are raised by €10m each. As the thresholds increase, the SME population is expected to grow, as fewer enterprises find themselves above the financial thresholds while controlling for inflation (and simultaneously meet the headcount criteria as well). The figure shows that raising the thresholds by €20m each achieves an estimated SME population growth of 0.02%.

Figure 2. Simulated EU SME population growth in 2020 based on raising the financial thresholds (turnover and balance sheet total).



Note: figures computed with bootstrapped sample

3 Conclusions

We explored the impact of inflation on the SME definition, using a sample of enterprises extracted from Orbis. This analysis shows that inflation has an impact on the number of enterprises that can be estimated to be SMEs (based on the headcount, balance sheet total, and turnover criteria), and this impact increases over time as inflation also increases. Raising the financial thresholds is an option for compensating for the effects of inflation.

The sample used for the analysis was not a representative sample of EU enterprises, and as such results could not be generalised to the wider population. Future iteration of this study should attempt to address this, knowing that Orbis over-represents capital intensive enterprises, while the Eurostat SBS overestimates SMEs (as discussed in Sylvest et al., 2018). One option for improving the representativeness of the sample is to focus on the best populated countries, as suggested by Bagjar et al. (2020). A sample validation exercise, comparing the distribution of the headcount and financial indicators with official statistics, similar to what Hallak and Harasztosi (2019) or Kalemli-Ozcan et al. (2015) performed, would help identifying the countries most suited for inclusion in the study. While this still would not produce a EU27-wide representative sample, it would allow to produce a more robust sample of enterprises from several countries, thus making results easier to interpret. Additionally, results could be also explored by size class – as Orbis is less representative of enterprises smaller than 10 (Bagjar et al., 2020).

Finally, it should be noted that other sources of information could provide useful insights for triangulation to address the original research question of the impact of inflation on the SME definition: for example, quantitative analysis based on Eurostat statistics (e.g. longitudinal trends in the share of the different size classes), more general inflation analysis, and even information collected via mixed-methods such as surveys or interviews with experts and stakeholders.

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List of abbreviations and definitions

CSES Centre for Strategy and Evaluation Services

DG GROW Directorate General for Internal Market, Industry, Entrepreneurship and SMEs

EU-27 Abbreviation of European Union (EU) which consists of 27 countries (Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden(SE)), as of 1 February 2020.

GDP Gross Domestic Product

HICP Harmonised Index of Consumer Prices

SME Small and Medium Enterprises

SBS Structural Business Statistics

SWD Staff Working Document

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