



Research Article

How to Broke the Dependence on Debt and Strengthen Firms: the DEBRA Proposal Against the Tax-induced Debt Bias

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Abstract

Objective: This article assesses the impact of the debt-equity bias reduction allowance (DEBRA) proposal on the tax-induced debt bias. The tax-induced debt bias is present in most fiscal systems around the world that “subsidize” debt. Debt is more interesting than equity because its cost, the interest, is tax-deductible. As a result, firms tend to have more debt, which then generates negative externalities. To break this trend, the European Commission published a directive proposal comprising a DEBRA.

Methods: The proposal includes both a notional deduction on growth in equity and an additional limitation on interest deduction for corporate income tax purposes. To evaluate the impact of the DEBRA proposal, Polish firms’ data from the BACH database over six years, from 2015 to 2020, are analyzed. Two criteria are analyzed: the impact on the ratio of total financial debt to net equity and on an Altman’s Z-score to estimate their solidity.

Results: We observe that firms tend to keep a higher level of net equity and to reduce the level of debt. A stronger solidity of firms is also noted by a reduction in their likelihood of bankruptcy.

Conclusion: The DEBRA should be an interesting fiscal tool in building an anti-fragility fiscal system. The proposal appears to be promising as it reinforces the stability of the firm in reducing the global level of its financial debt. Moreover, in improving the Z-score ratio, the DEBRA proposal tends to reduce the probability of firms going bankrupt.

Keywords: corporate debt, tax-induced debt bias, equity, financial debt, debt-equity bias

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1 INTRODUCTION

Every firm has to fund its operations and finance its assets. To do that, the management board decides

on the amount of debt and / or equity that needs to be employed. The chosen configuration of debt and equity defines the capital structure of a specific firm over a

specific period. Debt and equity are not the same.

Most corporate tax systems do not treat debt and equity equally. The tax-induced debt bias refers to tax systems that encourage corporate debt finance over equity finance. The starting point of the article is that “tax provisions favoring corporate debt over equity finance (“debt bias”) are widely recognized as a risk to financial stability”^[1]. The current tax-induced debt bias and the previous lower cost of debt are due to in part to monetary policies making debt more attractive to firms. In the previous configuration of the very low cost of debt, debt financing was almost definitely more preferred. From 2000 to 2017, the debt of nonfinancial corporates increased by 29%, according to Lund et al^[2]. At the end of 2019, the value of global corporate-bond debt was \$13.5tn, which was “double the level of 2008 in real terms”^[3]. As the Financial Times wrote in 2019^[4], “global debt surges to highest level in peacetime”. Since 2000, non-financial corporate debt has gone up from 73% to 110% in the euro area and from 64% of GDP to 81% in America. American, British and euro area public companies owe creditors \$19tn, with \$17tn owed by unlisted firms^[5]. The COVID-19 crisis amplified this phenomenon.

In the end, we had more risk.

Excess leverage contributed to the global financial crisis of 2007-2009: “by encouraging firms to finance themselves by debt rather than equity, this might have made them more vulnerable to shocks and so increased both the likelihood and intensity of financial crises”^[6]. Adding to that, the reduced financial pressure, from lower interest rates, enables the survey of firms that, in more normal times, would not be able to cover their debt-servicing costs from current profits. Such firms are called “zombie firms”^[7] and they represent a “weigh on economic performance because they are less productive and because their presence lowers investment in and employment at more productive firms”^[8].

From the literature and authors, the following conclusions of excessive debt level could be stated:

- More corporate debt levels in one sector are a threat to the economy as a whole^[9].
- On a national scale, more corporate debt levels make the economy more vulnerable to shocks^[10].
- On a national scale, there is “a positive relationship between debt and output volatility”^[11].
- More corporate debt is a brake on the post-crisis restart^[12].
- More debt for firms harms employment^[13].

To reduce this risk, on 11 May 2022, the European Commission published a directive proposal consisting

of a debt-equity bias reduction allowance (DEBRA). It includes both a notional deduction on growth in equity and an additional limitation on interest deduction for corporate income tax (CIT) purposes. The aim of the Commission’s DEBRA proposal is to foster the development of an EU Capital Markets Union by granting companies incentives to use equity, rather than debt, to finance their activities. The proposed date of entry into effect is 1 January 2024.

To sum up, firms have a tendency to use more debt than equity due to bias caused by taxes and that constitutes a threat to the economy. Towards that main problem, a new mechanism will be implemented by the EU. The purpose of the article which explains its novelty is to evaluate the impact of the DEBRA proposal on firms and to assess if their debt dependence will be reduced and their resilience to shocks will improve.

2 LITERATURE REVIEW

To finance their investments, firms can raise money from two sources. “It can raise funds from investors or financial institutions by promising investors a fixed claim (interest payments) on the cash flows generated by the assets, with a limited or no role in the day-to-day running of the business”^[14]. This is debt financing. “Alternatively, it can offer a residual claim on the cash flows (i.e., investors can acquire what is left over after the interest payments have been made) and a much greater role in the operation of the business”. Here, this is equity financing.

Modern theories of capital structure accept a difference of kind between debt and equity.

Under the assumptions of a perfect capital market, Modigliani and Miller^[15] proved that there is no optimal debt to equity ratio. In 1963, Modigliani and Miller^[16] investigated the effect of taxation. They pointed out that “the value of the firm can be increased by the use of debt since interest payments can be deducted from taxable corporate income”^[17]. They concluded that an optimal capital structure arises from “the balancing of the bankruptcy costs against the tax gains of debt finance”. A trade-off between tax shielding and financial distress explains the decision to increase or decrease debt financing^[18-20]. Kisgen^[21] adds to the trade-off theory the impact of credit ratings. The pecking order theory bases the decision of funding on the assumption of information asymmetry: firms will finance where possible with internal capital, then with debt and finally equity^[22]. The market timing theory links the decision of funding to market values of debt and equity^[23,24]: “when stock prices are overvalued, firms will finance projects through debts, otherwise the firms will be undervalued and be relied on equity financing”^[25]. The peer firm effect^[26] and Leary

and Roberts^[27] shows that “firms’ financing decisions are responses to the financing decisions and, to a lesser extent, the characteristics of peer firms”. From all those theories, one constant is the general tax advantage of debt.

There are many different benefits associated with debt financing. Debt permits a reduction in the agency costs between managers and shareholders^[28,29]. Debt has a positive signaling effect^[30-33]. Debt financing is a way to increase the firm’s value: “the net benefits to leverage are worth up to 5.5% of firm value. This means that the median firm at its value-maximizing leverage ratio is worth 5.5% more, relative to having no debt in its capital structure”^[34]. Coming back to Modigliani and Miller^[16], debt gives a tax-induced debt bias.

The need for neutrality between debt and equity is an old topic in the literature. To contain the level of debt, the most popular measure is thin-capitalization rules, which are rules limiting the amount of interest deductions when certain accounting thresholds are not respected. As stated by Cathala^[35], “thin capitalization rules are not enough by themselves to act on the debt equity bias and another solution has to be found”. To act directly on the amount of equity, the other solution is to grant a reward for it. The idea is to recognize a tax deductibility deduction to equity against corporate profits with an allowance for equity (ACE). An ACE brings more tax neutrality between debt and equity^[36]. Keuschnigg and Dietz^[37] assessed the ACE in Switzerland and observed a decline in the debt / asset ratio by 3.8%. De Mooij and Devereux^[38] showed that ACE makes thin capitalization rules “redundant”. Towards debt, they showed that the debt share falls by 4.7% points on average. For Austria, Petutschnig and Runger^[39] found that the Austrian ACE tax system increased corporate equity ratios by approximately 1.36 to 2.30 percentage points. For Italy, Branzoli and Caiumi^[40] used corporate tax returns to assess the impact of the ACE. They showed that the debt bias is decreased due to the “the deductibility from taxable income of a notional return on capital increases”. They focused their analysis on the leverage ratio of Italian manufacturing firms and found that the introduction of the ACE has substantially reduced the leverage ratio of its beneficiaries. Interestingly, the effect is larger for smaller enterprises and for mature firms.

Another solution only present in the literature is the comprehensive business income tax (CBIT). Historically, this was recommended by the US Department of Treasury in 1992. CBIT denies the tax deductibility of any financing costs from CBIT entities. The return on equity and the interest on debt are both taxed at firm level at the corporate tax rate and debt financing loses its inherent tax advantage. To avoid double taxation, interest received from other CBIT entities are not taxed. CBIT enlarges the

corporate tax base and makes all capital income taxed at source. CIT is based on corporate profits after depreciation but before interest.

In looking for a model to reduce drawbacks of both systems, ACE and CBIT, De Mooij and Devereux^[38] estimate a “partial ACE relief and partial interest deductibility...a combination of 2/3 of an ACE and 1/3 of a CBIT, i.e. an allowance of 2/3 of the cost of finance”. In that case, debt is reduced by 5.8%. Princen^[41] observed that, with an equal tax treatment of debt and equity, on average 2-7% less debt is reached and it is significant at the 1% level. In 2015, Hebous and Ruf^[42] obtained a reduction in the total debt ratio by around 3.5%-5% on average.

More recently and focusing on the situation in the Netherlands, Schindler and Vrijburg^[43] observed that in both cases, a reduction of the debt bias is observed even if some negative consequences in terms of investment and profit shifting were noted by the authors.

All of those solutions look for an incentive to mitigate the tax induced debt bias in corporate investment decisions. The solution proposed by the EU commission is the DEBRA. It includes two separate measures that apply independently: (i) a notional interest allowance on changes in the company’s equity level, and (ii) a limitation on interest deduction to 85% of the exceeding borrowing costs (being: interest paid minus interest received).

- The notional interest allowance would be computed based on the difference between net equity at the end of the current tax year and net equity at the end of the previous tax year, multiplied by a notional interest rate. This notional interest rate equals the 10-year risk-free interest rate (for the relevant currency), increased by a risk premium of 1.5% for small and medium-sized enterprises (SMEs) or 1% for non-SMEs.

- The allowance on equity is accompanied by a new limitation of the deductibility of debt-related interest payments to 85% of the excess borrowing costs (interest paid minus interest received).

Some authors have already made some comments towards the proposal. For instance, Van den Hurk^[44] underlined that DEBRA brings many benefits for companies. However, a thorough analysis revealed some non-welcomed elements. He stated that the carrying back or forward of non-deductible interest will only be possible in accordance with the interest deduction limitation of 85% rule, which will lead to restriction and could lead to a high number of bankruptcies, especially in SMEs. Kelly^[45] stated that the DEBRA proposal was well received by the funds industry. He also considered some bad parts of the reform for companies. According to him, the lack of

distinction between internal and external intercompany financing could be problematic and the rules consider financing decisions only under the scope of the tax avoidance.

Compared to previous studies, the innovation of the article relies on the fact that it is a direct application of a planned fiscal law which combines an ACE part and a CBIT part. Such an application is based on real historical data, the one for Poland. Two dimensions are taken into account, not only the impact of the reform on the financial debt to equity ratio but also a measure of the impact on the probability of financial distress. Finally, the split between firms' size adds some new insights on the debt bias mitigation. The article contributes in that way to the evaluation of the DEBRA proposal.

3 METHODS

3.1 Database and Period Used

The BACH database (www.bach.banque-france.fr) is used for empirical observations. The period analyzed is six years, from 2015 to 2020 and for one state, Poland. As the website states, "the data are based on the annual statistical financial statements collected by the Central Statistical Office. The survey comprises enterprises of more than 9 employees".

The following 16 sectors have been aggregated in the database:

- Accommodation and Food Service Activities
- Administrative and Support Service Activities
- Agriculture, Forestry and Fishing
- Arts, Entertainment and Recreation
- Construction
- Education
- Electricity, Gas, Steam and Air Conditioning Supply
- Human Health and Social Work Services
- Information and Communication
- Manufacturing
- Mining and Quarrying
- Other Service Activities
- Real Estate Activities
- Transportation and Storage
- Water Supply, Sewerage, Waste Management and Remediation Act
- Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles

The analysis is narrowed by the size of firms. Small firms (turnover < €10 million) are distinguished from medium-sized firms (€10 million ≤ turnover < €50 million) and from large firms (turnover ≥ €50 million). SMEs cover firms with turnover < €50 million.

The research method is based on real firms' data according to their size to get more precise observations

and to adjust the impact of the proposal which differs between SMEs and non SMEs.

3.2 Financial Ratio Used to Assess Firms' Debt Dependence

To estimate the debt dependence, the ratio analyzed is the ratio of total financial debt to net equity (before and after the reform). The financial debt is the sum of amounts owed to credit institutions and other financial creditors. Net equity is the equity reduced by participation in affiliated companies and own shares. In the following analysis, net equity is defined as "paid capital, reserves, treasury stock and other equity instruments. Subscribed capital but not paid is deducted from this item. This item also includes the cumulative net income of prior periods, the net income for the period as well as dividends paid in advance, the revaluations, adjustments on financial investments and other comprehensive income are not taken into account". No participation in affiliated companies and no own shares are considered because the data are not available.

The data are compared "before and after DEBRA", which means before and after the reform. After DEBRA means for the net equity:

After the application of the notional interest allowance (the ACE part of the proposal). To compute the notional interest rate, the 10-year risk-free interest rate is used. The POLAND 10Y BOND YIELD (Bonds: 10PLY.B) is taken as a benchmark with the last available rate at the end of the year. For instance, for the year 2016, the rate used is the one on 30/12/2016 at the closing (3.631).

It is important to note that the deductibility of the allowance is limited to a maximum of 30% of the taxpayer's earnings before interest, tax, depreciation, and amortization for each tax year. Taxpayers will be able to carry forward their unused allowance on equity, which exceeds the 30% of taxable income, for up to five tax years. The threshold is checked in the current analysis.

The dividend policy is considered to be constant in value over the years.

After the application of the limitation of the deductibility of debt-related interest payments (the limited CBIT part of the proposal) to 85% of the excess borrowing costs (interest paid minus interest received). The borrowing costs (interest paid minus interest received) shown in the P&L are considered to be fully paid.

The research method measures the impact of the DEBRA on the net equity by estimating the change in the ratio of total financial debt to net equity (before and after the reform).

Table 1. Net Equity Before and After the DEBRA (Average)

Ratio Financial Debt / Net Equity	Before DEBRA	After DEBRA	Difference
LARGE	122,938,392,073	123,151,985,499	0.17%
MEDIUM	38,208,752,225	38,270,126,991	0.16%
SMALL	36,515,791,159	36,558,614,664	0.12%
SME	74,724,795,047	74,812,634,564	0.12%
All	272,387,730,504	272,793,361,719	0.15%

Table 2. Ratio of Financial Debt / Net Equity Before and After the DEBRA (Average)

Ratio Financial Debt / Net Equity (Increased)	Before DEBRA	After DEBRA	Difference
LARGE	65.08%	64.87%	-0.21%
MEDIUM	56.34%	56.15%	-0.19%
SMALL	43.87%	43.80%	-0.07%
SME	45.41%	45.32%	-0.08%
All	52.54%	52.41%	-0.14%

Table 3. Ratio of Financial Debt / Net Equity Before and After the DEBRA (Average)

Ratio Financial Debt (Reduced) / Net Equity (Increased)	Before DEBRA	After DEBRA	Difference
LARGE	65.08%	61.89%	-3.19%
MEDIUM	56.34%	53.80%	-2.54%
SMALL	43.87%	41.92%	-1.95%
SME	45.41%	43.41%	-2.00%
All	52.54%	50.13%	-2.41%

3.3 Measure Used to Assess Firms’ Resilience to Shocks

To measure the impact on firms’ resilience to shocks, the probability of financial distress is compared before and after applying the DEBRA. The comparison is based on a measure of the probability of financial distress with an Altman’s Z-score^[46]:

$$Z^a = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5 \quad (1)$$

Where X_1 is the ratio of working capital to total assets, X_2 is the ratio of retained earnings to total assets, X_3 is the ratio of earnings before interest and taxes to total assets, X_4 is the ratio of the book value of equity to the book value of total liabilities and X_5 is the ratio of sales to total assets. A higher score will illustrate firms that are not likely to go bankrupt.

Following Altman^[47], a four-variable Z-score model without the Sales / Total Assets ratio will be used. In fact, as shown by Altman et al.^[48], there exists a potential industry effect influencing financial distress analysis. The same financial ratios could differ from firms in different industries, and that could have an effect on the boundary between bankrupt and non-bankrupt firms. Due to the wide variation among industries in assets turnover, the exclusion of the X_5 should annihilate the potential industry effect. As shown by Altman et al.^[48] the four-

variable model works consistently across different countries and could be applied to Poland as a whole, including public and private firms (the most important) and manufacturing and non-manufacturing firms (87% of the firms do not belong to the manufacturing sector). The function of this Z-score model is:

$$Z^b = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4 + 3.25 \quad (2)$$

To sum up, the aim of the research method is to show that due to the DEBRA, firms will gain more stability (=lower ratio of total financial debt to net equity) and more probability to survive (=higher Z-score).

4 RESULTS

4.1 Impact of the DEBRA on the Ratio of Total Financial Debt to Net Equity

The first test checks the impact of the DEBRA on the ratio of total financial debt to net equity with the same dividend policy over the years (Tables 1-4).

All firms have far more net equity. The benefit of the ACE was stronger than the negative impact of the partial CBIT.

Keeping constant the same level of financial debt, it means that the ratio has been reduced. The DEBRA

Table 4. Ratio of Financial Debt / Net Equity Before and After the DEBRA Per Year (Average)

Ratio Financial Debt (Reduced) / Net Equity (Increased)	Before DEBRA	After DEBRA	Difference
LARGE	65.08%	61.89%	-3.19%
2015	46.33%	46.33%	0.00%
2016	61.55%	58.31%	-3.24%
2017	73.92%	69.57%	-4.35%
2018	66.55%	62.76%	-3.79%
2019	70.68%	66.80%	-3.88%
2020	70.99%	67.17%	-3.82%
MEDIUM	56.34%	53.80%	-2.54%
2015	65.20%	65.20%	0.00%
2016	68.82%	65.07%	-3.76%
2017	39.42%	37.07%	-2.35%
2018	39.17%	37.04%	-2.13%
2019	40.17%	37.91%	-2.26%
2020	85.23%	80.49%	-4.74%
SMALL	43.87%	41.92%	-1.95%
2015	45.99%	45.99%	0.00%
2016	43.75%	41.36%	-2.39%
2017	43.88%	41.53%	-2.35%
2018	41.59%	39.31%	-2.28%
2019	41.07%	38.86%	-2.21%
2020	46.94%	44.47%	-2.47%
SME	45.41%	43.41%	-2.00%
2015	51.37%	51.37%	0.00%
2016	50.76%	48.03%	-2.73%
2017	42.47%	40.12%	-2.35%
2018	40.76%	38.53%	-2.23%
2019	41.02%	38.78%	-2.24%
2020	46.06%	43.64%	-2.42%
All	52.54%	50.13%	-2.41%

under such a hypothesis should reach its target. Firms rely less on debt. The larger the companies are, the stronger the difference observed even if the risk premium is 0.5% lower.

The impact should be stronger because the DEBRA will directly impact the firms' behavior towards debt. Using the same result as De Mooij and Devereux^[38] with a "partial ACE relief and partial interest deductibility" like in the DEBRA, debt is estimated to be reduced by 5.8%.

In that case, as expected, the impact is stronger. Again, the DEBRA under such a hypothesis should reach its target. Firms will rely less on debt.

When we look at the evolution per year, the strongest change is not the same year for all categories of companies, which underlines the fact that the economic situ-

ation is not the same according to the size of the firms. That confirms the sense to have a risk premium different according to the firms' size.

As shown by the tests, the DEBRA proposal should reduce the weight of the financial debt towards equity. The attraction of the tax bias is weakened.

Moreover, coming back to a period with inflation, the higher rate of interest with the end of quantitative easing should also be a deterrent to a higher debt level. The impact should be a lower debt level and that will change according to each fiscal and accounting year.

4.2 Impact of the DEBRA on the Probability of Survival

To assess the impact on firms' resilience to shocks, the probability of financial distress is compared before and after the DEBRA. The comparison is based on a measure of the probability of financial distress with an

Table 5. Z-score Before and After DEBRA (Average)

Z-score	Before DEBRA	After DEBRA	Difference
LARGE	2.0465	2.0502	0.37%
MEDIUM	2.1841	2.1887	0.46%
SMALL	2.0031	2.0061	0.30%
SME	2.0931	2.0961	0.31%
All	2.0821	2.0856	0.36%

Table 6. Z-score with Only X₂ and X₄ Before and After the DEBRA (Average)

Z-score with X ₂ and X ₄	Before DEBRA	After DEBRA	Difference
LARGE	0.1407	0.1444	0.38%
MEDIUM	0.1402	0.1447	0.45%
SMALL	0.1154	0.1184	0.30%
SME	0.1226	0.1257	0.31%
All	0.1296	0.1332	0.36%
Share in total Z-score	6.22%	6.39%	0.16%

Altman’s Z-score. It is the most popular bankruptcy prediction model. It is based on financial ratios and uses profitability, leverage, liquidity, solvency, and activity to estimate if a company has a high probability of becoming insolvent. The function of this Z-score model is:

$$Z^b = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4 + 3.25 \quad (2)$$

Where X₁ is the ratio of working capital to total assets, X₂ is the ratio of retained earnings to total assets, X₃ is the ratio of earnings before interest and taxes to total assets and X₄ is the ratio of the book value of equity to the book value of total liabilities. A higher score will illustrate firms that are not likely to go bankrupt.

As expected, the score is higher after the DEBRA for all firms (Table 5). Interestingly, the impact is higher here, not for large firms as it was for the ratio, but for medium firms. In total, we observe on average that the probability of financial distress is reduced after DEBRA’s application.

If only X₂ and X₄ are isolated, the same results are logically observed (Table 6). However, the share of those two elements in the total Z-score is interesting, going from 6.22% to 6.39%. The impact of the change is 0.16%.

The evolution per year shows that the strongest change is also not the same year for all categories of companies, which underlines the fact that the economic situation is not the same according to the firms’ size (Table 7).

As shown by the tests, the DEBRA proposal should strengthen the solidity of firms and reduce the probability of financial distress.

4.3 Impact of the DEBRA-Discussion of the Results

As analyzed above, the DEBRA should reduce the dependence on debt for all firms, whatever their size. It is more important for large firms than for medium and small ones. On average a reduction of 2.41% in the ratio of total financial debt to net equity is observed.

In terms of firms’ solidity, a positive impact is also noted with an improvement in the probability of bankruptcy. On average, an increase of 0.36 in the Z-score (Table 8).

Such an effect is more important for medium firms than for large and small ones.

The observations in terms of firms’ size are decisive for the state, according to the share of firms it has inside its boundaries. It is a factor important to take into account, especially when establishing the risk premium.

As a conclusion, we could state that taking a specific country, Poland, and analyzing the DEBRA proposal on firms’ capital structure gives the following results:

- With the first positive impact on the level of equity, the DEBRA should reach its target in incentivizing firms to keep a higher level of net equity.
- With the second negative impact on the level of debt (interest costs are reduced), the DEBRA should reach its target in limiting the positive attraction to firms to use debt when financing is needed.

The DEBRA should be an interesting fiscal tool in building an anti-fragility fiscal system. It should enable firms to gain strength from downturns by increasing their solidity (more net equity and less debt), limiting their likelihood of bankruptcy and giving them more possibilities to grasp new opportunities that emerge during a downturn.

Table 7. Z-score Before and After DEBRA Par Year (Average)

Z-score	Before DEBRA	After DEBRA	Difference
LARGE	2.0465	2.0502	0.38%
2015	2.1160	2.1160	0.00%
2016	1.9855	1.9862	0.07%
2017	2.1555	2.1676	1.21%
2018	2.0116	2.0173	0.58%
2019	2.0125	2.0157	0.32%
2020	2.0024	2.0030	0.06%
MEDIUM	2.1841	2.1887	0.45%
2015	2.1856	2.1856	0.00%
2016	2.0588	2.0627	0.40%
2017	2.2468	2.2573	1.05%
2018	2.2475	2.2533	0.58%
2019	2.2052	2.2100	0.48%
2020	2.1608	2.1630	0.22%
SMALL	2.0031	2.0061	0.30%
2015	2.0421	2.0421	0.00%
2016	2.1462	2.1500	0.38%
2017	2.0160	2.0186	0.26%
2018	2.0479	2.0549	0.70%
2019	1,9719	1,9752	0.33%
2020	1.7943	1.7956	0.13%
SME	2.0931	2.0961	0.31%
2015	2.0845	2.0845	0.00%
2016	2.1267	2.1288	0.20%
2017	2.1307	2.1361	0.53%
2018	2.1284	2.1348	0.64%
2019	2.0917	2.0952	0.35%
2020	1.9964	1.9975	0.11%
All	2.0465	2.0502	0.38%

Table 8. Comparison of the Change in the Ratio and the Z-score After the DEBRA Per Year (Average)

	LARGE		MEDIUM		SMALL		SME	
	Ratio	Z-score	Ratio	Z-score	Ratio	Z-score	Ratio	Z-score
2015	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2016	-3.24%	0.07%	-3.76%	0.40%	-2.39%	0.38%	-2.73%	0.20%
2017	-4.35%	1.21%	-2.35%	1.05%	-2.35%	0.26%	-2.35%	0.53%
2018	-3.79%	0.58%	-2.13%	0.58%	-2.28%	0.70%	-2.23%	0.64%
2019	-3.88%	0.32%	-2.26%	0.48%	-2.21%	0.33%	-2.24%	0.35%
2020	-3.82%	0.06%	-4.74%	0.22%	-2.47%	0.13%	-2.42%	0.11%
Average	-3.18%	0.37%	-2.54%	0.45%	-1.95%	0.30%	-2.00%	0.31%

5 FISCAL IMPLICATIONS AND FURTHER STUDIES

The DEBRA should be an interesting tool in limiting the tax-induced debt bias. It could actively participate in the reduction of the dependence on debt and could strengthen firms in making their financial structure

less debt dependent. The cell of the reform should be reached: less debt and more stability for the economy.

For future research, it would be good to verify the analysis by building some tests based at firm level and on their declared fiscal result registered by the state.

Having more equity and less debt should also make the state more stable and create a more developed EU Capital Markets Union. It should strengthen the EU Private Equity market, which could also be a topic for future research.

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Conflicts of Interest

Cathala C declared no conflicts of interest. He is not an employee of the European Commission and has not received any grant or salary for such work. He had no conflicts of interest to declare.

Author Contribution

Cathala C designed the experiment, supervised the work, performed the data analysis and drafted the manuscript. The author contributed to writing the article, read and approved its submission.

Abbreviation List

ACE, Allowance for equity
CBIT, Comprehensive business income tax
CIT, Corporate income tax
DEBRA, Debt-equity bias reduction allowance
SMEs, Small and medium-sized enterprises

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