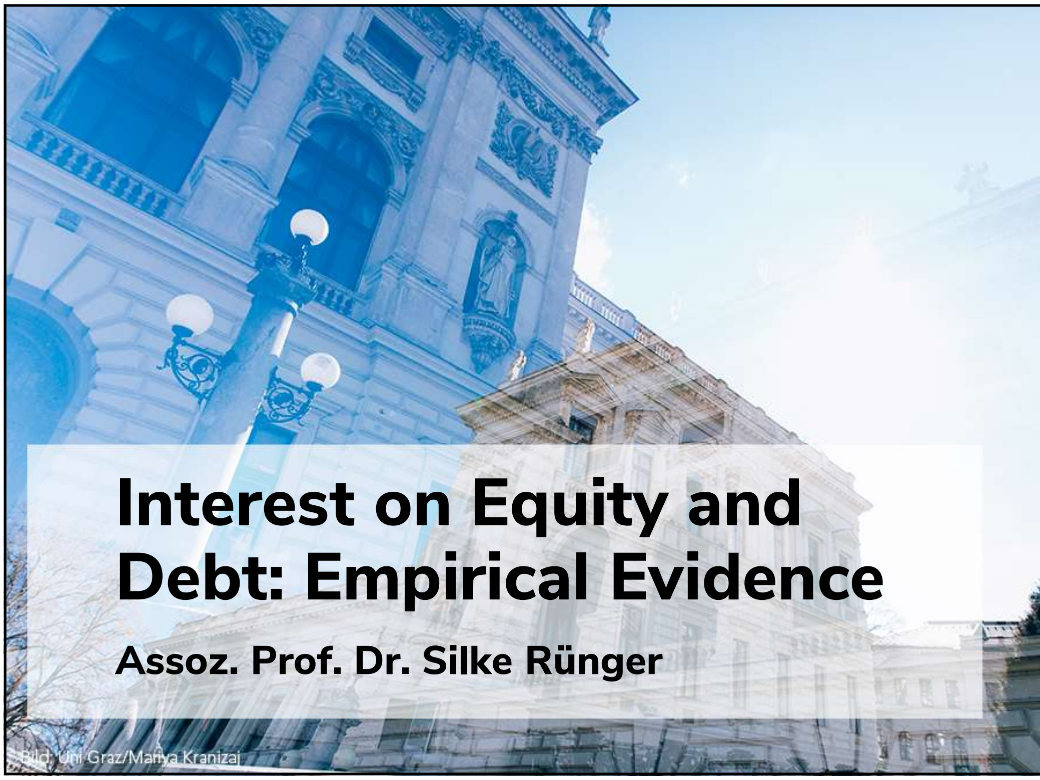

Interest on Equity and Debt: Empirical Evidence

Assoz. Prof. Dr. Silke Rünger

Agenda

- The tax benefit of debt
  - How big is the tax benefit of debt?
  - MNEs and internal debt
  - Interest limitation rules
  - Who is affected by interest limitation rules?
- Allowance for corporate equity (ACE)
  - Effects of an ACE on Capital Structure
  - Effects of DEBRA on Austrian firms

The tax benefit of debt

- in a world without taxes, the firm's capital structure is irrelevant for its value (Modigliani and Miller, 1958)
- in the real world, however, interest payments for debt are tax-deductible, while payments to equity investors are not
- if firm-level taxes are considered, the optimal financing strategy is to maximize debt (Modigliani and Miller, 1963)
- trade-off theory: firms determine the optimal level of debt by balancing the tax advantage of debt against the disadvantage of financial distress (Kraus and Litzenberger, 1973; Scott, 1977; DeAngelo and Masulis, 1980; MacKie-Mason, 1990)

How big is the tax benefit of debt?

- substitution effect: tax-shields other than interest payments (depreciation, investment tax credits, loss-carryforwards) are substitutes for debt (DeAngelo and Masulis, 1980; MacKie-Mason, 1990; Dhaliwal, Trezevant and Wang, 1992; Graham, 1996)
- personal tax penalty: advantage of debt over equity does not necessarily hold if investor-level taxes (taxation of dividends and capital gains) are considered (Miller, 1977)
- meta-study on the effect of corporate taxes on debt ratios (Feld, Heckemeyer and Overesch, 2013)
  - covers results from 48 studies
  - if the corporate tax rate rises by 10 percentage points (pp), debt ratios of firms increase by 1.3 pp

MNEs and internal debt

- intra-company lending is one of the two most frequently used channels through which multinational enterprises (MNEs) shift profits to minimize their overall tax liability (Taylor and Richardson, 2012)
- MNEs with subsidiaries in low-tax countries have a 1.5 times higher share of internal debt (Buettner and Wamser, 2013)
- How big is the effect of taxes on internal debt?
  - an increase in the corporate tax rate of the subsidiary country by 10 pp results in an increase in the internal debt ratio of foreign subsidiaries by approximately
    - 2.1 pp (Buettner et al., 2012); German sample
    - 2.4 pp (Huizinga, Laeven and Nicodème, 2008); European sample
    - 2.8 pp (Desai, Foley and Hines, 2004); US sample

Interest limitation rules

- to limit interest deductibility, many jurisdictions have imposed thin-capitalization rules that restrict the deductibility of interest paid on debt
- What is the effect of interest limitation rules?
  - the existence of a thin-capitalization rule in the country
    - reduces the tax-sensitivity of internal debt by about half (Buettner et al., 2012); German sample
    - reduces total debt ratios by 1.9pp and internal debt ratios by 6.3pp (Blouin et al., 2014); international sample with US parents
    - reduces total debt ratios of firms by 5pp (De Mooij and Hebous, 2018); international sample

Interest limitation rules

- despite their ability to reduce debt levels of firms, interest limitation rules come with downside effects
- if interest is non-deductible, the cost of capital for investments in affiliates increases
  - at an average corporate tax rate of 27%, an interest limitation rule reduces investment of multinational affiliates by 20% (de Mooij and Liu, 2021)
- affected firms are found to substitute debt shifting with income shifting via transfer prices (Saunders-Scott, 2015; Nicolay et al., 2017)

Who is affected by interest limitation rules?

- Germany: Blaufus and Lorenz (2009); Alberternst and Sureth-Sloane (2015)
  - 150 to 400 firms are affected (0.2-2.1%) in 2009/2010
  - 98% of the firms have net interest expense < 1 Mio.
- USA: Carrizosa et al. (2020)
  - 16.46% of the firms would be affected in 2018
- Austria: Chroustovsky and Petutschnig (2017)
  - only 78 firms would be affected in 2010-2014 (only 3 firms in all 4 years)
  - 35% of the firms have net interest expense < 30% EBITDA
  - 62% of the firms have net interest expense < 3 Mio.
  - corporate tax revenue would increase by 0.6% (26.2 Mio €)
- EU-sample: Rechbauer et al. (2019)
  - about 14% of the firms would be affected in 2015

Who is affected by interest limitation rules?

country	total	no Allowance		3 Mio.		2 Mio.		1 Mio.		0.5 Mio.	
AT	3,344	222	6.64%	42	1.26%	55	1.64%	66	1.97%	89	2.66%
BE	12,250	1,287	10.51%	74	0.60%	98	0.80%	176	1.44%	307	2.51%
BG	12,046	1,663	13.81%	14	0.12%	21	0.17%	43	0.36%	83	0.69%
CZ	15,242	985	6.46%	15	0.10%	25	0.16%	61	0.40%	115	0.75%
DE	8,676	935	10.78%	264	3.04%	325	3.75%	428	4.93%	540	6.22%
ES	13,237	1,805	13.64%	239	1.81%	327	2.47%	516	3.90%	748	5.65%
FI	16,378	1,902	11.61%	82	0.50%	117	0.71%	177	1.08%	244	1.49%
FR	131,597	8,829	6.71%	257	0.20%	338	0.26%	530	0.40%	916	0.70%
GB	18,725	2,156	11.51%	786	4.20%	914	4.88%	1,145	6.11%	1390	7.42%
GR	4,620	1,298	28.10%	74	1.60%	94	2.03%	146	3.16%	214	4.63%
HU	6,322	299	4.73%	3	0.05%	5	0.08%	13	0.21%	16	0.25%
IE	443	35	7.90%	9	2.03%	10	2.26%	11	2.48%	14	3.16%
IT	185,353	42,539	22.95%	331	0.18%	473	0.26%	928	0.50%	1902	1.03%
LU	42	4	9.52%	2	4.76%	2	4.76%	3	7.14%	3	7.14%
LV	194	16	8.25%	0	0.00%	1	0.52%	1	0.52%	1	0.52%
PL	8,668	718	8.28%	17	0.20%	27	0.31%	47	0.54%	87	1.00%
PT	1,465	309	21.09%	55	3.75%	77	5.26%	123	8.40%	157	10.72%
RO	26,206	1,311	5.00%	15	0.06%	27	0.10%	39	0.15%	74	0.28%
SE	10,376	1,165	11.23%	212	2.04%	316	3.05%	514	4.95%	748	7.21%
SI	4,949	113	2.28%	3	0.06%	3	0.06%	5	0.10%	9	0.18%
SK	12,844	1,295	10.08%	13	0.10%	17	0.13%	33	0.26%	79	0.62%
	492,977	68,886	13.97%	2,507	0.51%	3,272	0.66%	5,005	1.02%	7,736	1.57%

Source: Petutschnig et al. (2019).

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Allowance for Corporate Equity

- a way to eliminate the tax benefit of debt, while keeping a tax-deductibility for interest payments on debt at the same time, is to grant an allowance for corporate equity (ACE).
- Wenger (1983), Boadway and Bruce (1984) and Devereux and Freeman (1991) were the first to propose an ACE
- ACE systems can be divided into
  - hard ACE (allowance based on the total book value of equity): Belgium (2006-2017), Croatia (1994 to 2000), Liechtenstein (since 2011), Malta (since 2018)
  - soft ACE (allowance based on the annual increase in equity): Austria (2000 to 2003), Brazil (since 1996), Belgium (since 2018), Cyprus (since 2015), Italy (1998 to 2003 and since 2012), Latvia (2009 to 2014), Portugal (since 2010), Turkey (since 2016)

Effects of an ACE on Capital Structure

- significant decrease in debt in
  - Belgium (Princen, 2012; Panier, Pérez-González and Villanueva, 2015; Schepens, 2016): -7pp to -10pp
  - Italy (Bernasconi, Marenzi and Pagani, 2005; Panteghini, Parisi and Pighetti, 2012; Branzoli and Caiumi, 2020): -12pp
  - subsidiaries of German MNEs that qualify for an ACE (Hebous and Ruf, 2017): -3pp to -5pp
- significant increase in equity in Austria (Petutschnig and Rünger, 2016 and 2022): +2.30pp
  - only 4% of firms claimed a notional interest deduction (average deduction: 53.000 Euro)
  - revenue loss of 1.43% of corporate income taxes

Who would be affected by DEBRA?

- Petutschnig et al. (2022)
  - sample of 4,000 Austrian firms
  - about 75% show an increase in equity, resulting in average tax savings due to the notional interest deduction of 60,000 Euro
  - 70% of firms that would qualify for a notional interest deduction are SMEs
  - SMEs generate only 27.11% of the tax savings due to the notional interest deduction
  - 66% would be affected by the limited deductibility of interest, resulting in average additional taxes of 15,000 Euro → no de minimis rule

Conclusion

- there is a corporate tax benefit of debt
  - but economic effect of corporate taxes on external debt is limited
  - however, internal debt seems to be a prominent shifting channel
- interest limitation rules
  - appear to reduce total debt, but might result in unintended side-effects
  - ATAD interest limitation rule: very small number of firms is affected
  - number of affected firms is significantly higher under DEBRA
- currently, only 5 EU member states allow for a notional interest deduction
  - effect of notional interest deduction on debt ratios is substantially higher than effect of interest limitation rules
  - however, there is no empirical evidence on how a notional interest deduction interacts with interest limitation rules

Thank you for your attention!

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We work for tomorrow

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