# Do Thin-Capitalization Rules Affect Capital Structure Decisions? Evidence from Norwegian MNCs

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**Multinationals can exploit the tax advantage of debt by allocating internal and external debt to high tax countries. In response to this, several countries have implemented so-called thin-capitalization rules to protect their corporate tax base from this type of tax avoidance behavior. We study the effects of such rules using data from foreign affiliates of Norwegian multinationals. Our analysis suggests that thin-capitalization rules reduce the use of internal debt in affiliates of multinationals, but we find only a limited effect on total debt. A possible explanation may be that firms can substitute external for internal debt if the thin-capitalization rules only restrict the use of internal debt.**

The general design of thin-capitalization rules is to limit the use of debt by defining a maximum allowable amount of debt relative to equity, often called a safe haven debt-to-equity ratio. If the debt-to-equity ratio of a firm exceeds the defined safe haven ratio, the tax-deductibility of interest payments is restricted. In other words, the debt tax shield is zero for debt exceeding the safe haven ratio. Usually, only interest payment to internal debt is restricted when the ratio is exceeded, and thin-capitalization rules are therefore mainly relevant for MNCs.

Theory predicts that thin-capitalization rules reduce the level, as well as the tax rate sensitivity, of debt for firms that are restricted by the rules. In absence of loopholes, the level of debt should be reduced to the safe haven ratio, since the debt tax shield of debt exceeding this ratio is zero. For the same reason, restricted firms should not respond to changes in the tax rate. In reality, it is likely that thin-capitalization rules have loopholes, allowing the debt tax shield of exceeding debt to remain positive. However, it is also likely that exploiting such loopholes is costly. Thus, theory still predicts that thin-capitalization rules reduce the level, as well as the tax rate sensitivity, of debt for restricted firms when there are loopholes.

Our empirical analysis is inspired by a study by Buettner et al. (2012). We make use of variation over time in countries' tax rates, and variation in the presence and tightness of thin-capitalization rules. Our main analysis is based on affiliates of Norwegian multinationals in European and OECD countries, in the years 1996-2004. This main sample is created to include the same years and countries that was used in the study by Buettner et al. (2012). We also have an extended sample, including 25 additional countries and the years 1994-2006.

The main sample provides some evidence supporting that thin-capitalization rules reduce the tax rate sensitivity of internal debt. However, we do not obtain any evidence supporting a direct reduction in the level of internal debt by thin-capitalization rules. For total debt, we obtain slightly stronger evidence of reduced tax rate sensitivity by thin-capitalization rules. The results suggest that the reduction in sensitivity is increasing with the tightness of the rule. Quantitatively, a rule with an approximately sample average safe haven debt-to-equity ratio of 4:1 is estimated to reduce the tax rate sensitivity of total debt to zero. However, we obtain no evidence of a reduction in the level of debt.

Robustness tests and testing of various subsamples reveal that the results vary depending on the sample used. A subsample including only the countries that implemented a rule during the sample period provides evidence for thin-capitalization rules having the intended effects in these countries. A thin-capitalization rule with a safe haven ratio of 4:1 is estimated to reduce the parental debt-to-asset ratio by 2.8 – 4.7 percentage points. Equivalently, it is estimated that the tax rate sensitivity to a 10 percentage point increase in tax rate is reduced by 25% - 40%.

In another subsample, firms with debt ratios in the fifth quintile provide robust evidence supporting that the level and the tax rate sensitivity of internal debt is reduced for the highest leveraged firms. Quantitatively, the reduction in the parental debt ratio is estimated to 3.2 – 4.4 percentage points. The total debt ratios of the highest leveraged affiliates do not show strong evidence of being affected by thin-capitalization rules. None of the lower quintiles are significantly affected by thin-capitalization rules, which may suggest that the fifth quintile is able to isolate the restricted firms.

Overall, to the extent that we find evidence of the effects of thin-capitalization rules, the evidence supports that thin-capitalization rules are effective in reducing the incentive to use internal debt. The strongest evidence is found in countries that implemented a rule and for affiliates with the highest debt levels. This suggests that the rules have an effect on the firms they are aimed at. We only find weak evidence of thin-capitalization rules affecting total debt. A possible explanation may be that firms can substitute external for internal debt if the thin-capitalization rules only restrict the use of internal debt. The weak effects on total debt may suggest that the rules are not effective in increasing the corporate tax base.