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Taxation and the optimal constraint on corporate debt finance: why a comprehensive business income tax is suboptimal

Published: 17 November 2016

Volume 24, pages 731–753, (2017) [Cite this article](#)

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5% of corporate tax revenue. The welfare gain would arise mainly from a fall in the social risks associated with corporate investment, but also from the cut in the corporate tax rate made possible by a broader corporate tax base.

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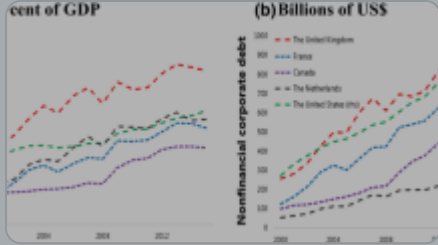
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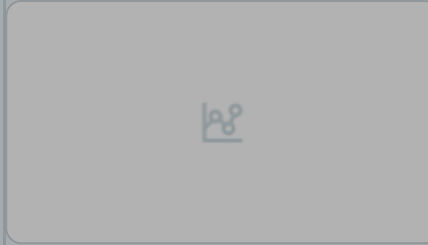
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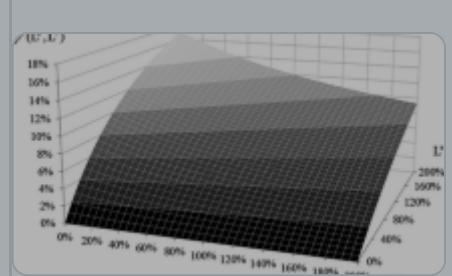
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Notes

1. The likely revenue loss has often been overstated in the debate on the ACE.

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5. This value of η is higher than the user cost elasticity found in most of the empirical studies surveyed by Hassett and Hubbard (2002), but as we shall see in the next section, the quantitative results from our model are not very sensitive to the value of η .
6. To derive the optimal constraint on debt finance from formula (21) and the resulting welfare gain from formula (30), I use an iterative solution algorithm implemented in an Excel spreadsheet available on request.
7. Recall from (8) that the relationship between the cost of finance (q) and the cost of capital (c) is $c = q / (1 - \tau)$.
8. Another way of explaining the firm's preference for debt over new equity is

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Acknowledgements

I wish to thank Guttorm Schjelderup, Bev Dahlby and an anonymous referee for helpful comments on an earlier version of this paper. The paper is a further development of work originally carried out for the Norwegian government tax reform committee, presented in Sørensen ([2014](#)). I thank members of the committee and its secretariat for fruitful discussions of many of the issues involved. Any remaining shortcomings are my own responsibility.

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$$\begin{aligned}
& p\left(\beta\right) \approx p\left(\left|\beta\right|\right) \\
& +\frac{\hbox {d}p\left(\left|\beta\right|\right)}{\hbox {d}\beta}\left(\beta-\left|\beta\right|\right) +\frac{1}{2}\frac{d^2p\left(\left|\beta\right|\right)}{\left(\hbox {d}\beta\right)^2}\left(\beta-\left|\beta\right|\right)^2, \\
& \end{aligned}$$

(33)

where

$$\frac{\hbox {d}p\left(\left|\beta\right|\right)}{\hbox {d}\beta} = \left(1-\tau\right) p_{\mathrm{d}}\left(\left|\beta\right|\right) - p_{\mathrm{e}}\left(\left|\beta\right|\right) + \left(1-\left|\beta\right|\right) p_{\mathrm{e}}^{\prime}\left(\left|\beta\right|\right) + \left|\beta\right|\left(1-\tau\right) p_{\mathrm{d}}^{\prime}\left(\left|\beta\right|\right)$$

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In the absence of tax ($\tau = 0$), private and social risk premiums would coincide, and firms would minimize their cost of finance by minimizing the expression in (36), implying the first-order condition

$$\begin{aligned} & \frac{d p_{\mathrm{s}}}{d \beta} \left(\beta \right) \\ & \equiv 0 \quad \rightarrow \frac{d p_{\mathrm{d}}}{d \beta} \left(\beta \right) - p_{\mathrm{e}} \left(\beta \right) + \left(1 - \beta \right) p_{\mathrm{e}}^{\prime} \left(\beta \right) + \beta p_{\mathrm{d}}^{\prime} \left(\beta \right) = 0. \end{aligned}$$

(37)

Inserting (37) into (34), we get

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as stated in (6) in Sect. 2. Further, by using (37), we can write the second-order Taylor approximation to the social risk premium (36) around $(\beta = \bar{\beta})$ as

$$\begin{aligned}
 p_{\mathrm{s}}(\beta) &\approx p_{\mathrm{s}}(\bar{\beta}) + \frac{1}{2} \frac{d^2 p_{\mathrm{s}}(\bar{\beta})}{d\beta^2} (\beta - \bar{\beta})^2,
 \end{aligned}$$

(41)

where

$$\frac{d^2 p_{\mathrm{s}}(\bar{\beta})}{d\beta^2} = 2 \left[p_{\mathrm{d}}'(\bar{\beta}) \right]$$

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(44)

Using (43) and (44), we may therefore write (41) as

$$\begin{aligned} p_{\mathrm{s}}(\beta) &\approx p_{\mathrm{s}}(\bar{\beta}) + \frac{b_s}{2}(\beta - \bar{\beta})^2, \quad b_s \equiv b + 3\tau k\bar{\beta} \end{aligned}$$

(45)

Equation (45) is seen to be identical to Eq. (27) in the main text. Note from (32), (36) and (44) that

$$p_{\mathrm{s}}(\bar{\beta}) = \dots$$

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$$\frac{\partial c}{\partial \beta} = \frac{b \left(\beta - \bar{\beta} \right) - \tau \left(r + \pi + a \right) \left(1 - \tau \right)}{c - \beta \left(r + \pi + a \right) + a \left(\bar{\beta} - 0.5k \bar{\beta}^3 \right) \left(1 - \tau \right)}$$

(48)

$$\frac{\partial c}{\partial \tau} = \frac{c - \beta \left(r + \pi + a \right) + a \left(\bar{\beta} - 0.5k \bar{\beta}^3 \right) \left(1 - \tau \right)}{c - \beta \left(r + \pi + a \right) + a \left(\bar{\beta} - 0.5k \bar{\beta}^3 \right) \left(1 - \tau \right)}$$

(49)

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