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The impact of minimum taxation by an imputable wealth tax on capital budgeting and business strategy of German companies

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Abstract

An alternative minimum tax (AMT) that guarantees a minimum tax payment even in case of losses is often regarded desirable. We analyze the influence of a wealth tax designed as AMT on marginal investment decisions and provide an analytical approach and numerical analyses identifying distortive effects. We present a wealth tax AMT paradox under loss offset restrictions. Modelling enterprises of different structure, industry, size and legal status we show that companies in the financial services sector are more frequently subjected to this AMT than capital intensive industries. This result runs counter to well-known effects of a common wealth tax. We resume that whenever income is taxed correctly, AMT is dispensable.

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Notes

1. In contrast, a large literature suggests that capital income should not be taxed

at all. Cf., e.g., the seminal papers of Chambley (1986) and Judd (1985). In contrast, Aiyagari (1995) suggests that capital income taxation may be optimal but should be small.

2. Cf. Joint Committee on Taxation (2002), p 7.

3. Cf. Ministry of Finance of The Netherlands (2004).

4. This minimum wealth tax has been proposed by Germany's Green Party.

5. Hansson analyzes the abolishment or suspension of wealth tax in Austria in 1994, in Denmark in 1997, in Germany in 1997, and in the Netherlands in 2000, cf. Hansson (2006), p 6.

6. Usually it is desirable from a tax policy perspective that funds are invested in high yield projects to evoke maximum economic growth effects. If the government does not explicitly subsidize or discriminate specific economic activities, taxation should not distort investment decisions and thereby is intended to be neutral. Referring to neutral tax systems it should only be noted that the cash flow tax and the Johansson–Samuelson tax are special cases of such neutral tax systems (cf. Brown 1948; Johansson 1969; Samuelson 1964).

7. Although all kinds of wealth tax face severe problems e.g. in determining the value of non-listed firms and assets with a long useful life in the following we abstract from these aspects and focus on the economic implication of this minimum wealth tax beyond these difficulties. Asset valuation is indispensable not only for wealth tax purposes but for minimum taxation as implemented in the Netherlands as well. Cf. Ministry of Finance of The Netherlands (2004), p 21.

8. For distributive reasons.

9. Concentrating on marginal investment decision allows us to identify and isolate taxational distortions. A sophisticated extension of the decision criterion with respect to inframarginal investment projects is provided by Knirsch (2007). We delegate the question of the taxational impact of wealth AMT on inframarginal projects to future research. As inframarginal investments regularly provide sufficient high profits usually they are not burdened by the underlying AMT. Against this background we can abstract from inframarginal projects in the following analysis of a wealth AMT.

10. We neglect uncertainty in our analysis. For an elaborated investigation of the influence of income taxes on investment decisions under uncertainty and a deduction of neutral tax systems (cf. Niemann 1999; Sureth 2002; Niemann and Sureth 2004, 2005). Furthermore, we ignore international aspects of taxation like the influence of taxation on location and cross-border investment decisions. See, e.g., Devereux and Griffith (2003).

11. We abstract from corporate level taxation at this stage of the analysis for reasons of simplicity.

12. We assume a sufficiently high pre-tax market rate of return. Thereby, no wealth tax imputation backlog occurs.

13. Cf. Appendix 1.

14. Cf. Appendix 2.

15. Cf. Appendix 3.

16. Cf. Appendix 4.

17. Cf. Appendix 5.

18. Some more numerical results are provided in Appendix 6.

19. The Dutch minimum tax concept leads to comparable interrelations. Cf. Sect. 1.

20. Thus, we exclude implicit taxes from the analysis.

21. A definitive wealth tax burden occurs due to the assumed time pattern of the cash flows. Decreasing cash flows invoke low future tax bases and hence low imputation potentials in late periods. Thereby, at the end of the planning horizon an imputation backlog remains.

22. Assuming increasing cash flows we find temporary imputation backlogs only. Because of relatively high tax bases in late periods these backlogs usually can be offset completely until the end of the planning horizon.

23. In Germany, e.g., if loss carry-forwards exceed an amount of € 1,000,000 only 60% of taxable gains can be compensated through it. Austria has introduced a fraction of 75%.

24. Cf. Niemann (2004).

25. In addition to profit AMT.

26. Financial investment causes definitive wealth taxation if the rate of return is very low or wealth tax rate exceeds 1%. In the underlying example we chose a pre-tax rate of return of 2%.

27. This decline in value corresponds to the depreciation described in Eq. (1).

28. We leave aside the controversial discussion about analyses of representative firms and regard this approach as a first step for investigating this type of AMT, e.g., cf. Shevlin (1990), Stiglitz (1987).

29. We analyzed smaller companies as well: small craft and trade partnerships with 5–10 employees, small craft and trade (non-listed) corporations with 5–10 employees and medium-sized companies from metal working industry with 30 employees and a turnover of less than € 2.5 million. In all cases net wealth is lower than € 2,000,000, always generating a wealth tax base of zero. Consequently, in the following analyses we leave aside these types of business that are unaffected by wealth taxation. For further information on this see Appendix 7.

30. Eighty percentage of this data is based on balance sheets and profit and loss statements that were prepared for the tax authorities.

31. We adjusted for exceptional capital gains or exceptional accelerated depreciations.

32. Although the provided information does not allow for perfect adjustment for tax purposes, this approach enables us to draw general conclusions on how different relations of profit and wealth that are typical for an industry will influence the tax burden. For these companies asset and equity structures occur, inducing a positive wealth tax base and thereby possibly a definitive wealth tax burden.

33. Note that capitalized market value is the average of the last quotation of every quarter of a year multiplied with the number of released shares. Cf. German Federal Bank (1999, 2003) and various DAX 30 corporations 1993–2003 annual reports.

34. The German local business tax is an additional tax on business profits after some adjustments, i.e. 50% of long-term interest payments are added to the tax base. This tax is deductible from corporate and income tax base. Furthermore, in case of partnerships German local business tax is imputable to the partners' income tax.

35. Interdependencies arise from interaction of German local business tax, corporate tax, and supplementary tax. German local tax reduces both, corporate tax base and its own tax base. As the corporate tax is the tax base of the supplementary tax, the later is influenced by German local business tax, too.

36. Although integrating personal taxes into calculus is possible in principle, we neglect this level due to a lack of individual information regarding the shareholders, e.g., we would need information on the shareholder's relevant income tax bracket, etc. Since this information is not available arbitrary assumptions would be necessary indicating that general conclusion cannot be drawn from such a model.

37. Payouts can be either dividend payments, management fees or related salaries.

38. For example, local business tax purposes according to Sects. 8 and 9 of German Local Business Tax Act (Gewerbesteuergesetz).

39. This method is implemented in Germany's Inheritance Tax Code Directives as the so called "Stuttgart Method" and has been modified for Sect. 46 of the Draft of the Heritage Tax Valuation Act proposed by the Federal State Schleswig–Holstein (Bewertungsgesetz für Zwecke der Erbschaftsbesteuerung).

40. On this basis we deduce the post-tax yield for corporations investing alternatively into riskfree bonds with a 10-year maturity. For e.g., 4.25% federal bond, security code 113533, issued July 4, 2007, maturity July 4, 2017. The pre-tax discount rate is reduced by relevant taxes applying the resulting post-tax discount factor for determining present value.

41. Although there are usually specific exceptions for financial services we consider 20% of the liabilities to be representative of an appropriate local business tax adjustment. In contrast, in the case of corporations from the manufacturing industry we assume a fraction of 60% long term liabilities among all liabilities as this industry does not enjoy the local business tax privileges that are granted to financial services firms.

42. We abstract from any effect resulting from imputation backlogs remaining after the end of the time horizon. Presumably such backlogs would depress the level of future wealth.

43. Cf. Sureth and Maiterth (2005), p 11.

44. Financial distortions occur more often in cases of higher wealth tax rate.

45. In this example income tax on dividend payments to the corporate shareholder is only € 16,108.

46. In fact, the relation between the shareholder’s income tax bracket, profits and wealth determines tax planning activities and in turn the dividend policy. Depending on individual shareholder’s influence on the dividend payout it may be possible to minimize the tax load by expanding the fraction of distributed profits in this context.

47. Conversely, in corporations only income tax on dividend income serves as

imputation potential, whereas income tax on managerial salaries does not.

48. Note that the underlying data on net wealth only provides information on net equity according to the balance sheet. Information on the market values of the firm is not available. Therefore, the indicated net wealth only approximates real net wealth, i.e. the market value. Further, operating profit in the craft and trade sector includes calculatory employer's salaries.

49. This valuation method is implemented in Germany's Inheritance Tax Code Directives (Erbschaftsteuerrichtlinie) and called the "Stuttgart Method".

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Appendix

1.1 Appendix 1: Eq. (2)

To be able to find out under which circumstances the wealth tax discriminates real investment it is necessary to determine $\hat{t}.$ $\hat{t}$ informs about the last period in which depreciation and cash flow time structure lead to an imputation backlog and thus to a (temporarily) definitive wealth tax. If $\hat{t}=0$ wealth tax is completely and immediately imputable and thereby irrelevant. $\hat{t}$ is given by the following two equations:

$$\tau_w \cdot I_0 \cdot \frac{T- {\hat{t}}+1}{T} > \tau \cdot (CF- \frac{I_0}{T}) $$

(13)

and

$$\tau_w \cdot I_0 \cdot \frac{T- {\hat{t}}}{T} \le \tau \cdot (CF- \frac{I_0}{T}). $$

(14)

Equation (13) describes periods with a wealth tax that is higher than the corresponding income tax. In Eq. (14) wealth tax burden is less or equal to income tax burden providing complete imputation. Consequently, there will be no wealth tax burden at all if

$$\tau_w \cdot I_0 \le \tau \cdot (CF- \frac{I_0}{T}) $$

(15)

holds as future wealth tax base decreases whereas the income tax bases remains constant over time. Keeping in mind that we focus on constant cash flows and before-tax marginal investment projects we get

$$\frac{\tau_w}{\tau} \le \frac{i \cdot (1+i)^T}{(1+i)^T -1}- \frac{1}{T} $$

(16)

with

$$\frac{CF}{I_0}=\frac{i \cdot (1+i)^T}{(1+i)^T -1}. $$

(17)

1.2 Appendix 2: Eq. (4)

Economic depreciation for constant cash flows is given by the difference of present values PV_{t-1} and PV_t with

$$PV_{{\bar{t}}-1}=\sum_{t={\bar{t}}}^T{{ CF_t }\over {(1+i)^{t-({\bar{t}}-1)}}} =\sum_{t={\bar{t}}}^T{{CF_t }\over {(1+i)^{t-{\bar{t}} +1}}} $$

(18)

and

$$PV_{{\bar{t}}}=\sum_{t={\bar{t}}+1}^T \frac{CF_t} {(1+i)^{t-{\bar{t}}}} =\sum_{t={\bar{t}}+1}^T \frac{ CF_t \cdot (1+i)} {(1+i)^{t-{\bar{t}}} \cdot (1+i)} =\sum_{t={\bar{t}}+1}^T \frac{ CF_t \cdot (1+i)}{(1+i)^{t-{\bar{t}}+1}}. $$

(19)

Economic depreciation is given by

$$ED_{{\bar{t}}}= PV_{{\bar{t}}-1}-PV_{{\bar{t}}} =\sum_{t={\bar{t}}}^T \frac{ CF_t}{(1+i)^{t-{\bar{t}} +1}} -\sum_{t={\bar{t}}+1}^T \frac{ CF_t \cdot (1+i)} {(1+i)^{t-{\bar{t}}+1}} $$

(20)

$$ \begin{aligned} & = \frac{ CF_{{\bar{t}}}}{(1+i)} +\sum_{t={\bar{t}}+1}^T \frac{ CF_t- CF_t \cdot (1+i)}{(1+i)^{t-{\bar{t}}+1}} =\frac{ CF_{{\bar{t}}}}{(1+i)}- i\cdot \sum_{t={\bar{t}}+1}^T \frac{ CF_t}{(1+i)^{t-{\bar{t}}+1}} \\ & =\frac{CF}{(1+i)} -i\cdot \sum_{t= 1}^{T -

{\bar{t}}}\frac{CF}{(1+i) ^{t+1}} = \frac{CF}{(1+i)} - \frac{i}{1+i} \cdot \sum_{t= 1}^{T -{\bar{t}}} \frac{CF}{(1+i) ^{t}} \\ &= \frac{CF}{(1+i)} - \frac{i}{1+i} \cdot CF \cdot \frac{(1+i)^{T-{\bar{t}}}-1}{(1+i)^{T-{\bar{t}}} \cdot i} \\ &= \frac{CF}{(1+i)} \cdot \left[1-\frac{(1+i)^{T-\bar t}-1} {(1+i)^{T-{\bar{t}}} } \right]=\frac{CF}{(1+i)^{T-\bar t+1}} = \frac{CF}{(1+i)^T} \cdot (1+i)^{{\bar{t}}-1}. \end{aligned} $$

(21)

This equation describes a geometric series in *i*. For the post-tax present value of the economic depreciation follows:

$$ \begin{aligned} PV_{ED}=&\frac{ CF}{(1+i)^T}\cdot \frac{(1+i_{\tau})^T-(1+i)^T} {(i_{\tau}-i) \cdot (1+i_{\tau})^T} =\frac{CF}{(1+i)^T} \cdot \frac{(1+i)^T-(1+i_{\tau})^T}{i \cdot {\tau} \cdot (1+i_{\tau})^T} \\ & = CF \cdot \left[\frac{1}{i \cdot s \cdot (1+i_{\tau})^T} - \frac{1} {i \cdot \tau \cdot(1+i)^T } \right] =\frac{ CF}{i \cdot \tau } \cdot \left[\frac{1} {(1+i_{\tau})^T}-\frac{1}{(1+i)^T } \right]. \\ \end{aligned} $$

(22)

Furthermore, the post-tax present value of linear depreciation is:

$$PV_{LD}=\frac{I_0}{T} \cdot \frac{(1+i_{\tau})^T-1}{i_{\tau} \cdot (1+i_{\tau})^T}. $$

(23)

The income tax effect from the difference between linear and economic depreciation in present value terms is:

$$PV_{\Updelta_D} = \tau \cdot \left[\frac{I_0}{T}\cdot \frac{(1+i_{\tau})^T-1} {i_{\tau} \cdot (1+i_{\tau})^T} -\frac{CF} {i \cdot {\tau} } \cdot \left[\frac{1} {(1+i_{\tau})^T} - \frac{1} {(1+i)^T } \right]\right]. $$

(24)

1.3 Appendix 3: Eq. (5)

For the overall effect before considering the tax shield from future imputation we observe an impact of income and wealth tax of:

$$ \begin{aligned} OA&= PV_{\Updelta D}-PV_{IB}\\ &=\tau \cdot \left[\frac{I_0}{T} \cdot \frac{(1+i_{\tau})^T-1} {i_{\tau} \cdot (1+i_{\tau})^T} - \frac{CF}{i \cdot \tau} \cdot \left[\frac{1}{(1+i_{\tau})^T} -\frac{1}{(1+i)^T} \right]\right]\\ & \quad -\frac{(1+i_{\tau})^{{\hat{t}}}-1} {(1+i_{\tau})^{{\hat{t}}} \cdot i_s \cdot T} \cdot \left[\tau_w \cdot I_0 \cdot \frac{T \cdot i_{\tau}-1} {i_{\tau} } -\tau \cdot (CF \cdot T-I_0)\right] -\tau_w \cdot \frac{I_0}{T} \cdot \frac{\hat{t}}{(1+i_{\tau})^ {{\hat{t}}}\cdot i_{\tau}}, \\\end{aligned} $$

(25)

with $I_0= CF \cdot \frac{(1+i)^T-1}{(1+i)^T \cdot i}.$ Equation (26) describes the tax subsidy due to depreciation and the tax burden caused by AMT wealth tax. Exemplifying the opposing effects for $\tau = 0.42$, $\tau_w = 0.01$, $I_0 = 1{,}000$ and the time series of the cash flow to be $CF=\frac{I_0}{\frac{(1+i)^T-1}{(1+i)^T \cdot i}},$ i.e. a before-tax marginal investment, we get the following Table 5.

Table 5 Overall impact before imputing carry-forwards

Obviously, neglecting wealth tax carry-forwards and their future imputation in a first step the positive effect from accelerated depreciation can be overcompensated by wealth taxation (negative overall effect, $OA < 0$). Then, real investment after-taxes is less attractive than financial investment.

1.4 Appendix 4: Eqs. (6) and (7)

The following Table 6 provides an overview about the resulting $\hat{t}$ for different lengths T of economic life of the underlying investment object and various market rates of return i for $\tau = 0.42$ and $\tau_w = 0.01$:

Table 6 \({\hat{t}}\) for various *T*, *i*, τ = 0.42 and τ_w = 0.01

1.5 Appendix 5: Table 1

In the years \({\hat{t}}+1\) to \({\hat{t}}+5\) the investor can offset the following backlog amounts:

$$IBA_{{\hat{t}} +1}=\tau_w \cdot \frac{I_0}{T} - \left[\tau_w \cdot I_0 \cdot \frac{T-{\hat{t}}+1}{T}-\tau \cdot \left(CF- \frac{I_0}{T }\right)\right], $$

(26)

$$IBA_{{\hat{t}} +2}=2 \cdot \tau_w \cdot \frac{I_0}{T} - \left[\tau_w \cdot I_0 \cdot \frac{T-{\hat{t}}+1}{T}-\tau \cdot \left(CF-\frac{I_0}{T} \right)\right], $$

(27)

$$IBA_{{\hat{t}} +3}=3 \cdot \tau_w \cdot \frac{I_0}{T} - \left[\tau_w \cdot I_0 \cdot \frac{T-{\hat{t}}+1}{T}-\tau \cdot \left(CF-\frac{I_0}{T}\right)\right], $$

(28)

$$IBA_{{\hat{t}} +4}=4 \cdot \tau_w \cdot \frac{I_0}{T} - \left[\tau_w \cdot I_0 \cdot \frac{T-{\hat{t}}+1}{T}-\tau \cdot \left(CF-\frac{I_0}{T} \right)\right], $$

(29)

$$IBA_{{\hat{t}} +5}= 5 \cdot \tau_w \cdot \frac{I_0}{T} - \left[\tau_w \cdot I_0 \cdot \frac{T-{\hat{t}}+1}{T} -\tau \cdot \left(CF-\frac{I_0}{T}\right)\right]. $$

(30)

These equations are equal to a arithmetic progression:

$$IBA_{{\hat{t}}+t}=\tau \cdot \left(CF-\frac{I_0}{T}\right)-\tau_w \cdot I_0

$$ \cdot \frac{T-{\hat{t}}}{T} +(t-1) \cdot \tau_w \cdot \frac{I_0}{T}. $$

(31)

Discounting to $t = {\hat{t}}:$

$$ \begin{aligned} PV_{IBA}&=\left(\tau \cdot \left(CF - \frac{I_0}{T}\right)-\tau_w \cdot I_0 \cdot \frac{T-{\hat{t}}}{T} \right)\cdot \frac{(1+i_{\tau})^5-1 }{(1+i_{\tau})^5 \cdot i_{\tau}}+\frac{\tau_w \cdot {\frac{I_0}{T}}} {i_{\tau}} \\ & \cdot \left(\frac{(1+i_{\tau})^5-1}{(1+i_{\tau})^5 \cdot i_{\tau}}- \frac{5}{(1+i_{\tau})^5}\right) \\ & = \left(\tau \cdot \left(CF-\frac{I_0}{T}\right)-\tau_w \cdot I_0 \cdot \frac{T-{\hat{t}} }{T}+\frac{\tau_w \cdot \frac{I_0}{T}} {i_{\tau}} \right)\cdot \frac{(1+i_{\tau})^5-1}{(1+i_{\tau})^5 \cdot i_{\tau}}- \frac{\tau_w \cdot \frac{I_0}{T}}{i_{\tau}} \cdot \frac{5}{(1+i_{\tau})^5} \\ & = \left(\tau \cdot \left(CF-\frac{I_0}{T}\right)-\tau_w \cdot I_0 \cdot \frac{T-{\hat{t}}}{T}+\frac{\tau_w \cdot {I_0 }}{T\cdot i_{\tau}} \right)\cdot \frac{(1+i_{\tau})^5-1}{(1+i_{\tau})^5 \cdot i_{\tau}}- \frac{\tau_w \cdot I_0 } {i_{\tau}\cdot (1+i_{\tau})^5 }\cdot {{5}\over {T}}. \\ \end{aligned} $$

(32)

In case of an incomplete offset only a fraction of the wealth tax burden can be offset during the carry-forward periods, i.e. during periods $({\hat{t}}+1$ to $({\hat{t}}+5.$ This effect leads to a present value of tax savings by imputable carry-forwards of:

$$PV_{TS}=\left(\tau \cdot \left(CF-\frac{I_0}{T}\right)-\tau_w \cdot I_0 \cdot \frac{T-{\hat{t}}}{T}+\frac{\tau_w \cdot {I_0 }} {T\cdot i_{\tau}} \right)\cdot \frac{(1+i_{\tau})^5-1} {(1+i_{\tau})^{{\hat{t}}+5} \cdot i_{\tau}} - \frac{\tau_w \cdot {I_0 }}{i_{\tau}\cdot (1+i_{\tau})^{{\hat{t}}+5} }\cdot \frac{5} {T}. $$

(33)

If the economic life of the real investment object ends before the end of the five year carry-forward period a carry-forward is just possible for the remaining $(T-$

{\hat{t}}\) periods. Then, a tax shield of

$$ \begin{aligned} PV_{TS}&= \left(\tau \cdot \left(CF-\frac{I_0}{T}\right)-\tau_w \cdot I_0 \cdot \frac{T-{\hat{t}}}{T}+\frac{\tau_w \cdot {I_0 }} {T\cdot i_{\tau}} \right)\cdot \frac{(1+i_{\tau})^{T- \hat t}-1}{(1+i_{\tau})^{T} \cdot i_{\tau}}\\ &\quad - \frac{\tau_w \cdot {I_0 }}{i_{\tau}\cdot (1+i_{\tau})^{T} }\cdot \frac{T-{\hat{t}}}{T}\\ \end{aligned} $$

(34)

in present value terms is left.

1.6 Appendix 6: Figure 2

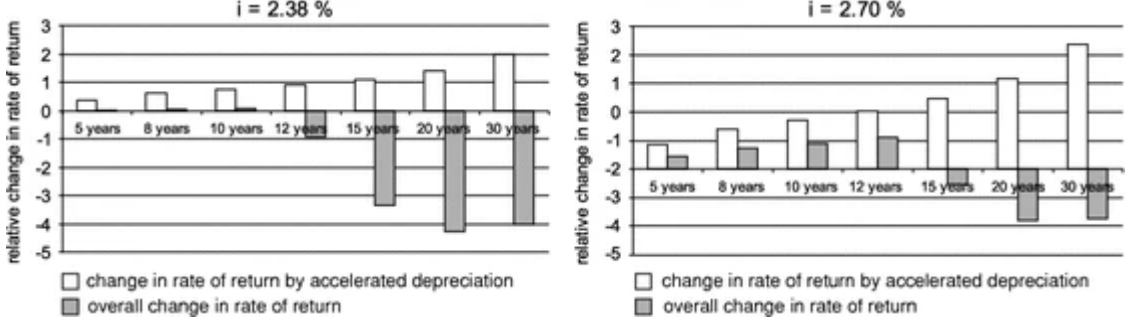
Figure 2 clarifies that even in case of a five year carry-forward AMT wealth tax can overcompensate the depreciation caused subsidy and finally might lead to an overall disadvantage of the real investment in comparison to the financial alternative.

The following Table 7 provides some more numerical results for the given setting with $I_0 = 1{,}000$, $\tau = 0.42$ and $\tau_w = 0.01$:

Table 7 Overall present value of tax impact

If we focus on the relative change of the rate of return we get corresponding results:

Fig. 8



Relative change of after-tax rate of return

The following Table 8 provides the numerical results for Fig. 8:

Table 8 Relative change of after-tax rate of return

1.7 Appendix 7: Smaller businesses

For typical these smaller businesses we assume the following structure: [48]

Table 9 Structure of small craft and trade partnerships and medium-sized companies

Information from balance sheets and profit and loss accounts for 2002 for craft and trade companies provided by the North-Rhine Westphalian Chamber of Crafts (cf. Table 9) provides data for the craft and trade companies. These data comprise comparisons of the average profits, liquidity and wealth of the underlying businesses collected by annual voluntary questionnaires.

Considering a tax allowance of € 2,000,000 no wealth tax is levied on these businesses. In all cases net wealth is lower than € 2,000,000, always generating a tax base of zero. Additionally, taking future profits into account and determining a combined tax base consisting of a weighted average of the present value of future profits and net asset value, [49] the limit of € 2,000,000 is again not exceeded. The legal status of the business does not influence this general result for the craft and

trade companies. Consequently, in the following analyses we leave aside these types of business that are unaffected by wealth taxation.

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