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Tax structuring and the value of the firm. Utilization of affiliated financial intermediary SPEs and hybrid instruments in investment banking

Abstract

From a German perspective this paper investigates the role of tax structuring (financial intermediary SPEs (special purpose entity)/utilization of mezzanine capital) in the investment banking sector to improve the overall investment performance. In this regard, the invention and implementation of a tax-effective financial investment structure is a key factor to derive excess risk-free returns from (financial) investments (additional tax shield). Establishing a tax-optimized investment structure has to be an integral part of the investment strategy. This means, tax structuring as a part of an investment management process enables to optimize the net present value (NPV) and adjusted present value (APV) of an investment project. Moreover, tax structuring can also be used as an investment management tool or new investment management approach to enhance the value of the whole firm.

Keywords: investment banking, intermediary SPEs, hybrid financing, investment performance, NPV and APV optimization, tax structuring, financial service center.

JEL Classification: H25, F23, G32.

Introduction

As a strategy investment banks often establish intermediary SPEs¹ as a 100% subsidiary (separate legal entity) in a foreign low-taxed financial service center to increase the investment performance (after-tax profits) in order to attract investors (insurance companies, pension funds, corporations). The foreign SPE/subsidiary operates as an “investment company”. The reason for this approach is mainly driven by tax savings. The tax burden of a financial investment is an important key factor that influences the investment project’s NPV (net present value) and APV (adjusted present value). Moreover, the interposition of foreign SPEs (Kollruss, 2010; Mintz and Weichenrieder, 2010) in investment projects is often interwoven with the utilization of hybrid instruments (mezzanine capital). The utilization of a hybrid instrument may lead to additional tax savings as a consequence that hybrid instruments might be treated differently e.g. debt in one country and equity in the other country (cross-border investment scenario). Since the applicable tax regime is an important cornerstone of financial investment’s success, investment managers has to consider tax structuring measures in setting up the financial investment structure/investment pattern to obtain optimal after-tax returns (Kollruss, 2011). Investment managers should explicitly pay

attention to the implementation of tax-effective investment structures to obtain additional investment returns. Regarding this aspect, investment managers must also consider anti-avoidance provisions – such as CFC taxation, thin capitalization rules – which can counteract excess investment profits (tax savings).

From a German perspective, this paper shows how tax structuring (Finnerty, Merks and Petriccione, 2007) can increase the investment project’s NPV and APV in the investment banking sector. In the following, the validation of this statement will be demonstrated by developing a (virtual) tax-optimized investment structure in which the intermediary SPEs are being located in a low-taxed financial service center and under consideration of hybrid instruments. The excess risk-free investment returns generated by the utilization of the tax-optimized investment structure will be revealed. A tax driven built-in risk buffer which plays an important role in tax-optimized investment structures allows excess risk-free returns from cash tax savings leading to higher periodic cash flows after taxes. Before going into details of the modeling of a concrete tax-optimized (financial) investment structure, the theoretical framework of tax structuring is developed by considering the NPV and APV concept.

1. Theoretical background

1.1. NPV optimization, internal rate of return (IRR) and tax structuring. The NPV indicates how much value an investment project adds to the investor. Each periodic net cash inflow (R_t) derived by the investment project is discounted back by the discount rate after taxes (i_s) to its present value.

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¹ It is a legal entity which fulfils narrow, specific or temporary objectives in the investment process and structure.

Afterwards, the initial cash outlay (A_0) is deducted from the sum of the investment project's discounted periodic net cash flows (R_t). The result is the NPV, a parameter for decision making in investment management. Investment managers should invest in the project which has an NPV greater than zero ($NPV > 0$) and which has the highest NPV in comparison to other available investment alternatives.

Periodic tax savings (T_t) lead to higher net cash flows in each period of the investment project (R_t) caused by the avoidance of cash outflows (cash taxes). If the (financial) investment is being realized

$$NPV^+ = \left[\sum_{t=1}^n \frac{R_t + T_t}{(1 + i_s)^t} - A_0 \right]^{NPV_{tax-structured}} - \left[\sum_{t=1}^n \frac{R_t}{(1 + i_s)^t} - A_0 \right]^{NPV_{non-tax structured}} \quad (1)$$

$$NPV^+ = \sum_{t=1}^n \frac{T_t}{(1 + i_s)^t}$$

This effect (excess NPV^+ and higher IRR by tax structuring) can also be displayed by the graph of the NPV function. In general, a tax-structured investment project delivers a higher NPV and a higher IRR compared to the situation in which the same investment project is realized without applying any tax structuring measures. This can be demonstrated by an exemplary investment project (t /duration is four years) which has an initial cash outflow/up-front investment of 80.000 and the following sequence of annual pre-tax cash flows R_t : R_1 30.000/ R_2 37.500/ R_3 20.000/ R_4 47.500. In the scenario without tax structuring ($S_{non-tax structured}$) in which the investment project is not tax-optimized the applicable annual tax rate amounts to 30% (r_{tax}).

in a tax-optimized investment structure which derives periodic tax savings (T_t), tax structuring will provide additional periodic cash inflows (T_t) and will therefore increase the investment project's NPV and IRR (internal rate of return). The excess NPV^+ (excess investment return) provided by tax structuring can be calculated if the investment project's NPV in the case of utilizing a tax-optimized investment structure ($NPV_{tax-structured}$) is reduced by the NPV which results in the case in which the same investment project is realized without a tax-optimized investment structure ($NPV_{non-tax structured}$).

However, in the scenario in which tax structuring is utilized ($S_{tax structured}$) a tax rate of only 4% is relevant for the same investment project.

The exemplary investment project's $IRR\sim$ can be calculated by the following approximation¹ (Perri-don and Steiner, 2009):

$$IRR\sim = i_{s_1} - NPV_1 \cdot \left(\frac{i_{s_2} - i_{s_1}}{NPV_2 - NPV_1} \right) \quad (2)$$

The table below provides the various annual cash flows (R_t) of the exemplary investment project and the $IRR\sim$ also considers the utilization of a tax-optimized investment structure (tax structuring).

Table 1. Implications of tax structuring on the investment project's annual cash flows and $IRR\sim$

Investment structure	Description	t_0	t_1	t_2	t_3	t_4	$IRR\sim$
	Pre-tax net cash flows	-80.000	30.000	37.500	20.000	47.500	
Non tax structuring	Net cash flows after tax R_t (tax rate 30%)	-80.000	21.000	26.250	14.000	33.250	6.66%
Tax structuring	Net cash flows after tax (tax rate 4%)	-80.000	28.800	36.000	19.200	45.600	21.32%

The exemplary investment project's NPV graph is displayed below in a Cartesian coordinate system considering tax structuring measures [$S_{non-tax structured}$ vs. $S_{tax structured}$]. This enables to show which significant impacts tax structuring can have on the performance of an investment project (increase in NPV , excess NPV^+ and IRR^+).

To summarize the core conclusion of the analysis below, tax structuring is an important key factor for increasing the investment project's NPV level, the $IRR\sim$ as well as the overall investment performance (increase in NPV , excess NPV^+ and IRR^+). Thus, investment management – especially in investment banking – must employ tax structuring as a part of the investment strategy. Therefore, an important task in investment management is to invent and implement a tax-efficient investment structure in which the investment project can be conducted (tax shield generation). Currently, this aspect it often neglected in investment management.

¹ i_{s_1} and i_{s_2} are each approximation of IRR . In the case of i_{s_1} the investment project's NPV is greater than zero ($NPV > 0$). In the case of i_{s_2} the investment project has a $NPV < 0$. If the estimated $IRR\sim$ calculated by equation (2) is greater than the cost of capital, the investment project will be accepted. The cost of capital of the exemplary investment project should amount to 6.5% p.a.

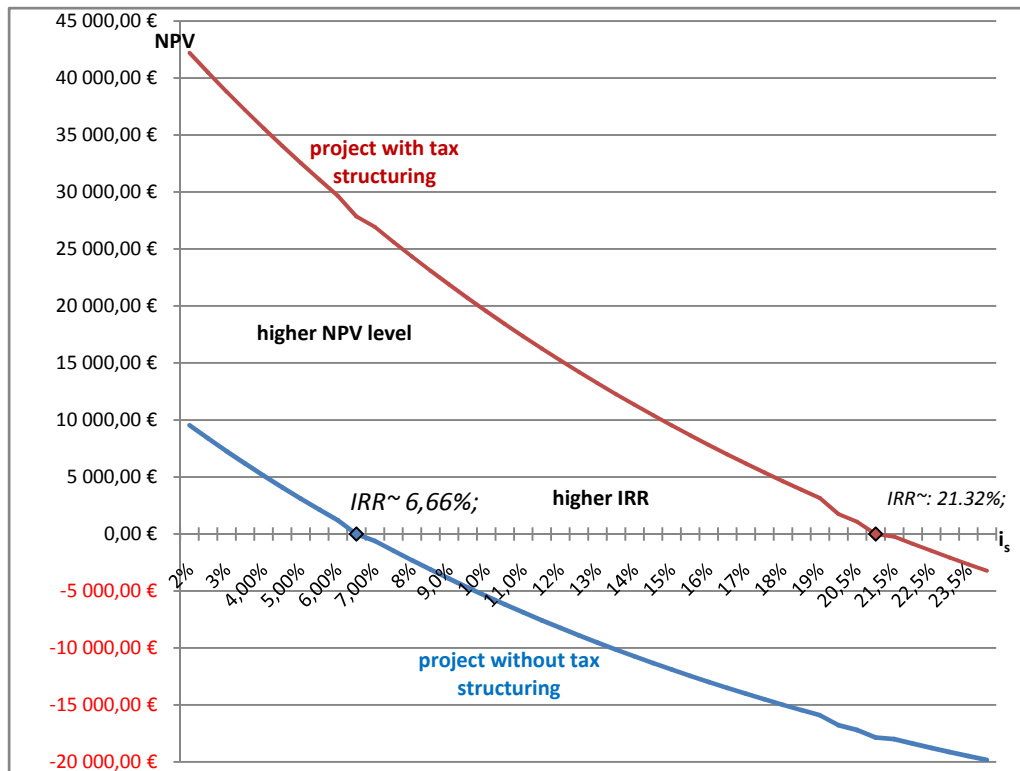


Fig. 1. NPV and IRR progression by tax structuring

1.2. Extension of the APV method. The APV method is a business valuation method (discounted cash flow method) which can be used for the valuation of an enterprise or an investment project (Myers, 1974; Enzinger and Kofler, 2010; Dastgir, Khodadadi and Ghayed, 2010). In a first step, the NPV of the project/enterprise is calculated from a pure equity financing perspective (so-called NPV “Base-Case Value”). This means, all free cash flows of the investment project would be discounted at the unlevered cost of equity; in this regard, the applicable discount rate is the rate of return on equity (i_{Equity}) which can be derived from CAPM (Schäfer, 2005; Enzinger and Kofler,

2011). In a second step, – according to the APV concept – there is a tax shield from the investment project’s (fractional) debt financing which leads in principle to an additional NPV contribution because of tax-deductible interest expenses (debt), so-called NPV “Value of Financing Side Effects (Interest Tax Shield) (Schäfer, 2005; Groh and Henseleit, 2009). In this respect, the applicable discount rate is the cost of debt capital (i_{Debt}). Pursuant to the traditional APV approach and the *Value Additivity Theorem* (Myers, 1991; Hal, 1987) the total NPV^{APV} of the investment project consist of two components¹ (Arnold, Lahmann and Schwetzler, 2011) and can be stated as follows:

$$NPV^{APV} = \underbrace{\left[\sum_{t=1}^n \frac{R_t}{(1 + i_{s-Equity})^t} - A_0 \right]}_{\text{Component 1:}}^{NPV_{Base Case}} + \underbrace{\left[\sum_{t=1}^n \frac{debt_{capital_t} \cdot i_{Debt} \cdot r_{tax}}{(1 + i_{s-Debt})^t} \right]}_{\text{Component 2:}}^{NPV_{debt financing}} \quad (3)$$

Component 1:
NPV, if the investment project is solely equity-financed

Component 2:
Additional NPV contribution due to tax savings from investment project’s debt financing (interest tax shield)

¹ Regarding the second component of the APV approach (NPV contribution by interest tax shield), the limitation of interest expenses for tax purposes (thin-capitalization rules) is often excluded. See for the German restriction (interest barrier rule).

The APV approach includes no component for NPV contribution added by tax structuring. Only tax savings from the investment project's debt financing (interest tax shield) are being considered (component 2). As shown above in section 1.1, realizing the investment project via a tax-efficient investment structure (tax structuring) delivers excess NPV^+ . Therefore, the APV approach has to be extended by a third component which reflects the additional NPV (tax savings). Thus, for the first time this paper extended the APV method by a third component ($NPV_{tax\ structuring}$) which considers the additional NPV contribution induced by tax structuring of the investment project. The reason is that tax structuring works as an additional value driver increasing the investment project's performance in terms of generating excess NPV. Since a tax-efficient investment structure designed by tax structuring includes a built-in risk buffer which allows excess risk-free returns from periodic cash

tax savings (T_t), the relevant discount rate is the risk-free rate of return after taxes (i_{s-Debt}). In this respect the relevant tax rate (r_{tax}) is the regular statutory (business) tax rate.

$$NPV_{3rd\ component}^{APV} = \sum_{t=1}^n \frac{T_t}{[1 + i_{Debt} \cdot (1 - r_{tax})]^t} \quad (4)$$

Component 3:

Additional NPV contribution by tax savings from investment project's tax structuring (Tax Structuring Tax Shield)

According to the "Value Additivity Theorem", the new third component (equation (4)) which incorporates the value proposition from tax structuring (periodic tax savings) can be integrated in the APV approach and results in the following *new APV formula*:

$$NPV_{APV}^{NEW} = \underbrace{\left[\sum_{t=1}^n \frac{R_t}{(1 + i_{s-Equity})^t} - A_0 \right]}_{\text{Component 1: NPV from equity-financing}} + \underbrace{\left[\sum_{t=1}^n \frac{debt_{capital_t} \cdot i_{Debt} \cdot r_{tax}}{(1 + i_{s-Debt})^t} \right]}_{\text{Component 2: Interest Tax Shield}} + \underbrace{\left[\sum_{t=1}^n \frac{T_t}{[1 + i_{Debt} \cdot (1 - r_{tax})]^t} \right]}_{\text{New APV Component 3: Tax Structuring Tax Shield}} \quad (5)$$

The new APV formula reveals that investment management has to consider tax structuring (operating the investment in a tax-efficient investment structure) as an additional source of value besides corporate operations and leverage. Therefore, tax management and tax structuring has to be considered as an integral part of investment management. Given the above as a basis, this means that tax structuring affects not only the value (NPV) of each single investment project but also the value of the whole firm. Moreover, the new APV formula/approach has also implications for the value of the whole firm. This aspect will be discussed in section 1.3 (tax structuring and the value of the firm).

1.3. Tax structuring and the value of the firm.

Considering the new APV formula/approach (new component 3: Tax structuring tax shield) derived in section 1.2, investment management should mind that tax structuring can generally create a higher NPV for each single investment project and also of the whole firm. In this respect, we can understand a firm as a "cluster" of various (major) investment projects (IP_n) such as various specific financial assets and/or product lines. Tax structuring means that the investment manager operates each major in-

vestment project of the firm in a specific developed and fine-tuned tax structure (tax-optimized investment structure) to obtain a higher NPV in each project. As a consequence – taking the "Value Additivity Theorem" into account – the value of a "tax structured firm" is considerably higher compared to a firm that does not utilize tax structuring to increase the investment project's value/performance.

Such a tax-efficient investment structure (tax structure) regularly consists of various subsidiaries (investment companies) having a specific tax-driven design in respect of the organizational, legal and financial structure – the capital structure included – in relation to each other and especially in relation to the top holding (parent company). Figure 3 below reveals with respect to top holding's investment project IP_2 how a tax structure can look like. Thus, in relation to the top holding, a tax structure can be considered as a "subgroup". The whole organizational architecture of the firm is mainly composed of the top holding and the corporate and legal structure which results from each tax structure (subgroup). This means, that the firm's (variable) organizational architecture is partly an implication of the various tax structures.

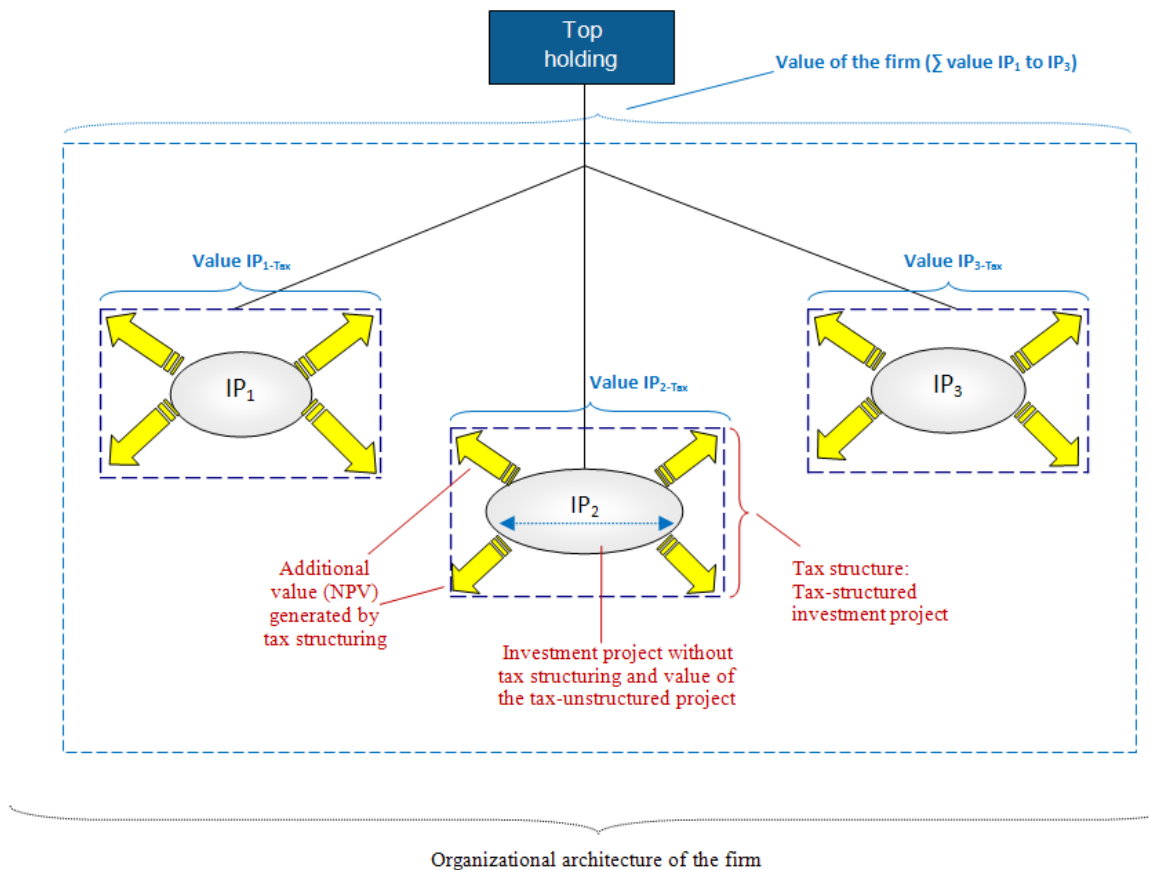


Fig. 2. Tax structuring and value of the firm

In conclusion, it can be said that tax structuring is an important key factor (value driver) to influence the value of the whole firm (tax structuring tax shield). Therefore, investment management should apply tax structuring for each major investment project of the firm to enhance the value/performance (NPV) of each single investment project. In this context different tax structures will be needed depending on the specific character of the respective investment project. As a consequence, according to the “*Value Additivity Theorem*”, the value of a “tax structured firm” will be considerably higher than in a benchmark scenario without applying tax structuring. Therefore, investment manager should consider tax structuring as an integral part of the investment management process (tax engineering).

In the next section the concrete application of tax structuring in the investment planning process is described. In this regard the development of a tax structure which leads to excess risk-free investment returns (periodic tax savings) is highlighted.

2. Application of tax structuring in investment planning

This section demonstrates the functionality and the application of tax structuring in the investment planning process. For this purpose we look at the top holding (investment bank) described in section 1.3. The top holding is a corporation and a resident of Germany. Therefore, German tax law is applicable. The top holding plans an investment project (IP₂) with a duration (t) of four years and which consists of financial assets providing the following annual pre-tax cash flows as mentioned in section 1.1: $R_t: R_1 30.000/R_2 37.500/R_3 20.000/R_4 47.500$. If the top holding does not consider to conduct the investment project (IP₂) via a tax-optimized investment structure (non-application of tax structuring), the applicable tax rate (r_{tax}) is 30% (15% German Corporate Income Tax/15% German Trade Tax). In this case ($S_{non-tax structured}$) the investment project derive the following annual after-tax cash flows and internal rate of return (IRR^-).

Table 2. Performance of the investment project (IP₂) without applying tax structuring

IP ₂	Description	t_0	t_1	t_2	t_3	t_4	IRR~
		Pre-tax net cash flows	-80.000	30.000	37.500	20.000	47.500
	Cash taxes tax burden 30%		9.000	11.250	6.000	14.250	
	Net cash flows after tax R_t (tax rate 30%)	-80.000	21.000	26.250	14.000	33.250	6.66%

In the following, the case in which the top holding applies tax structuring to the investment project (IP₂) is considered. In this scenario ($S_{tax\ structured}$), the investment project is realized in a specific developed and fine-tuned tax-optimized investment structure (tax structuring). In a first step the top holding sets up a 100% German subsidiary (corporation) for the function as a intermediary holding company (special purpose entity/SPE 0) and inject the investment amount as equity contribution into SPE 0. In a second step SPE 0 establishes two 100% subsidiaries (SPE 1/SPE 2) in the Madeira International Business Center (Portugal). The relevant tax rate (r_{Port}) for the Portuguese subsidiaries is 4%. From the perspective of the *legal structure* the Portuguese SPE 1 is a hybrid entity which is treated as a corporation for Portuguese tax purposes and for German tax considerations (deviant) as a flow-through (transparent) entity. The Portuguese SPE 2 is treated as corporation for German and Portuguese tax purposes.

When it comes to the *capital structure*, SPE 1 is provided with equity capital by SPE 0 that forwards the capital received by from step 1. Moreover, SPE 0 provides the Portuguese SPE 2 with the minimum share capital (equity). Then SPE 1 forwards its total capital in form of granting internal mezzanine capital to SPE 2. In this regard the financial instrument is a typical silent partnership interest (hybrid instrument) in SPE 2 which qualifies SPE 1 for a profit-related interest in SPE 2 (profit participating right). Furthermore, SPE 2 acts as an investment company utilizing its total capital for the investment (IP₂). SPE 1 has the function of an internal financing company. The whole tax structure in which top holding's investment project IP₂ is wrapped is depicted in Figure 3.

Comparing Figure 2 and 3 in respect of investment project IP₂, the following overview displays the contemplated tax structure:

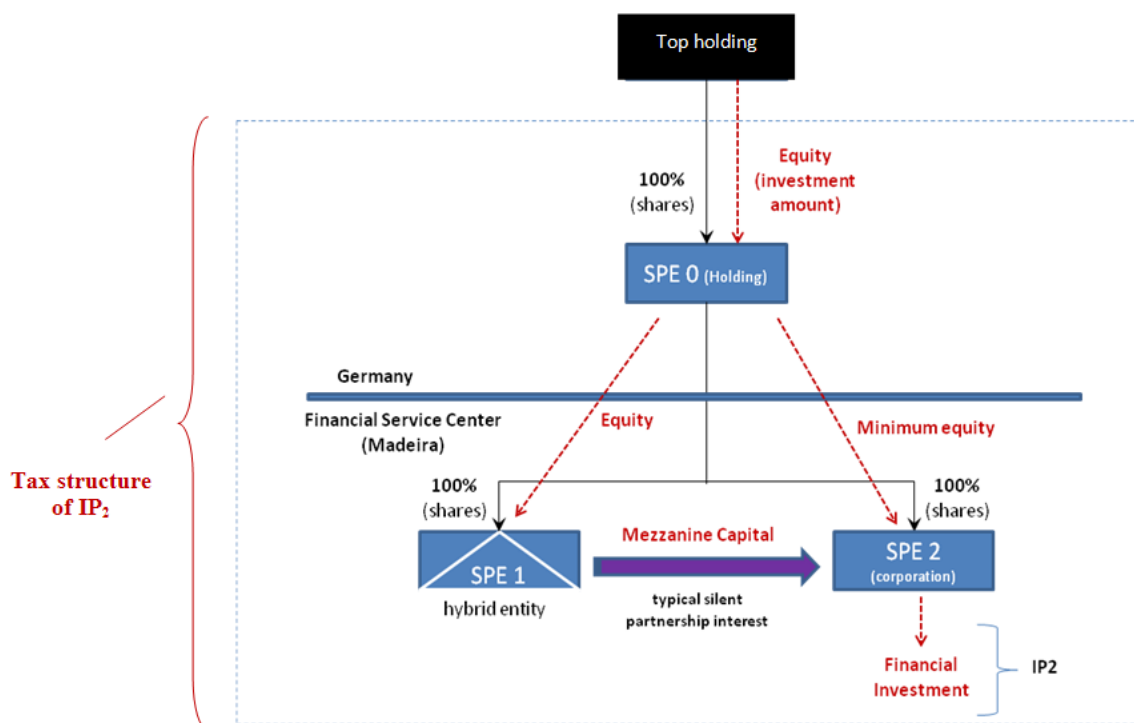


Fig. 3. Tax structured investment project (IP₂)

Coming back to the concrete tax effects of the structure and discussing the Portuguese tax consequences at first. For Portuguese tax purposes the mezzanine/hybrid financial instrument (typical silent partnership) leads to the effect that SPE's 2 pre-tax profits (R_1 to R_4) from the investment project IP₂ have been shifted to hybrid SPE 1 and were subject to Portuguese Corporate Income Tax at the level of SPE 1 (applicable tax rate 4%). The Portuguese thin-capitalization rule (interest deduction limitation) is not applicable because SPE 1 is a Portuguese entity and is also considered as a tax resident

of Portugal. According to the Parent-Subsidiary Directive a profit distribution from SPE 1 to SPE 0 is not subject to Portuguese taxation (zero withholding tax).

Regarding the German tax implications of the tax structure, the following effects occur: Due to the mezzanine/hybrid financial instrument (typical silent partnership) the German CFC taxation is not applicable in respect of SPE 2 (sec. 10, para. 4 AStG). Moreover, SPE's 1 profit share in SPE 2 – containing the profit from the investment project IP₂ – qualifies as business profits from a foreign flow-through entity

(SPE 1) at the level of SPE 0 and is, therefore, exempt from German Trade Tax (sec. 2 para. 1, sec. 9 no. 2 German Trade Tax Act) at the level of SPE 0. The regular German Trade Tax rate is 15%. From the German tax perspective SPE 1 is not a taxpayer because SPE 1 is treated as a flow-through entity. Thus, SPE's 1 profit is subject to German taxation at the level of SPE 0. Additionally, according to the German-Portugal double tax treaty (Art. 24, para. 2c), the mezzanine/hybrid financial instrument qualifies SPE 0 for a tax matching credit against the German Corporate Income Tax. This means, that SPE 0 is entitled to deduct an amount of 15% (tax matching credit) of the annual pre-tax profit derived by the mezzanine instrument from the German Corporate Income Tax which is levy on these profits. Hence, the German Corporate Income Tax rate also amounts to 15%, SPE 0 has not to pay German Corporate Income Tax on its profits from any mezzanine instrument.

Since the interest from the mezzanine instrument consists of SPE's 2 pre-tax profits derived from the investment project IP₂, the profit from investment project IP₂ is not subject to any German business taxation at the level of SPE 0 (zero German tax burden)¹. Overall the tax structure leads to the effect that the effective tax burden of investment project IP₂ is only 4% (Portuguese Corporate Income Tax at the level of SPE 1). Moreover, the tax structure (Figure 3) contains a tax driven built in risk-buffer for the case in which the tax matching credit will not be granted. This risk-buffer can be seen in the fact that the shifted profit from SPE 2 to SPE 1 via the mezzanine instrument is not subject to German Trade Tax at the level of SPE 0 (sec. 9, no. 2 German Trade Tax Act) whereas in the scenario without tax structuring a German Trade Tax burden in the amount of 15% of these profits is applicable.

Table 3. Performance of the investment project (IP₂) utilizing tax structuring

IP ₂	Description	t ₀	t ₁	t ₂	t ₃	t ₄	IRR~
	Pre-tax net cash flows	-80.000	30.000	37.500	20.000	47.500	
	Cash taxes (tax burden 4%)		1.200	1.500	800	1.900	
	Net cash flows after tax R _t (tax rate 4%)	-80.000	28.800	36.000	19.200	45.600	21.32%

Compared to the situation without applying tax structuring, the top holding can derive excess risk-free returns (periodic cash tax savings) from the investment project IP₂ due to the wrapping and realization of the investment project in a tax optimized investment structure (Figure 3). If the top holding also conduct the investment project IP₁ and IP₃ in a specific developed tax optimized investment structure (see Figure 2) the total value of the firm can be significantly enhanced.

Conclusion

The research results of this paper can be summarized as follows:

1. Tax structuring is an important instrument in the investment planning process to increase the investment project's NPV level, the IRR and the overall investment performance.
2. The APV method/approach (Adjusted Present Value) is not sufficient caused by the fact that the APV does not reflect the value contribution generated by tax structuring (periodic cash tax savings). Therefore, the APV method has to be extended by a new third component which considers the "tax structuring tax shield". Concerning this matter, this paper develops and demonstrates a new APV formula/approach as a solution.
3. Tax structuring and the value of the firm. From the background of the "Value Additivity Theorem" the value of the whole firm can be en-

hanced if each major investment project will be wrapped and realized in a specific developed and fine-tuned tax structure (tax optimized investment structure). From the perspective of this new investment management approach, the firm can be understood as a "cluster" of various (major) investment projects. Tax optimized investment management can increase the value of the firm by applying specific developed tax structures to each major investment project.

4. Since tax structuring enables to derive excess risk-free investment returns (periodic cash tax savings), investment managers should consider tax structuring as an integral part of the investment management process (tax engineering). Therefore, developing a tax optimized investment structure in which the investment project can be wrapped should be utilized as investment management tool.

¹ SPE's 2 pre-tax profit from the investment project IP₂ is 30.000 in period 1 (R₁). This profit is shifted by the mezzanine instrument to SPE 1 (flow-through entity for German tax purposes) and qualifies at the level of SPE 0 for a tax matching credit in the amount of 15% of the pre-tax profit pursuant to the German-Portugal tax treaty. Since the German Corporate Income Tax rate is 15%, SPE 0 can receive the profit (R₁) from SPE 2 without paying any German Corporate Income Tax (15% x 30.000 = German CIT) - (15% x 30.000 = tax matching credit). Moreover, SPE's 1 income (R₁) from the mezzanine instrument is exempt from German Trade tax at SPE's 0 level. Due to the tax structure the profit from the investment project IP₂ is not taxed in Germany at the level of SPE 0.

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