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Cost of capital, discounting and relational contracting: endogenous optimal return and duration for joint investment projects

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Acknowledgements

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Notes

[1] See also HM Treasury (2004, pp. A145–8, pp. 38–9).

[2] Further critical insights are provided by behavioural finance (Kahneman and Tversky, 1979; Kahneman and Riepe, 1998; Frankfurter and McGoun, 1999; Marzo, 2002), and by other influential theoretical works (Laibson, 1997; Loewenstein and Thaler, 1989; Loewenstein and Drazen, 1992; Cropper and Laibson, 1999; Weitzman, 2001). Ainslie (1992) stressed hyperbolic (simple interest) computation for inter-temporal valuation, referring to the seminal work of Herrnstein (1961) that Mazur (1986) and Ainslie (1992) further refine and formalize. Shane et al. (2002) provided a review of the economic literature on the matter.

[3] They m

[4] Biondi

[5] Baker e

[6] For exa erce (OGC), PriceWat projects relative Cost of Capi lusion of the swap co other projects.

[7] That is

[8] NPV an te assumpt ate, while the IRR approach assumes that it is the same rate as in IRR. Thus, the generalized

approach vindicates the return-based measures like IRR and theoretically unifies discounted values and discounted rates of return.

[9] For instance, Rubinstein (2000) suggests a function where the discount factor f_t is decreasing in t, and increasing in a_t (the larger the sum of money at stake, the higher (closer to 1) the discount factor). He suggests a procedural rationality approach, framed with nonexpected utility theory. See also the references provided by the note 2. A framework for this kind of normative economics is suggested by Sugden (2004).

[10] We assume here that the rate of reference for discounting is the investment rate. IRR over (under) evaluates investment projects with high (low) rates of return.

[11] Usual relation between GIRR, Generalized Net Future Value (GNFV) and Generalized Net Present Value (GNPV) applies: GIRR is the discount rate that makes both GNFV and GNPV equal to zero.

[12] Of course, a change in the replacement rate modifies the project's GIRR, but it does not modify its comparative ranking.

[13] Drawing upon Biondi (2006), Sampaio Filho (2008) and Kierulff (2008) provide further reviews of literature.

[14] The EOD relates to the temporal evolution of the GIRRs period by period. Sufficient condition
nd in the
case of s
negative
outflows
f each
annual i
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[15] Refere
nd Kvasov
(2005) n
uses
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ing public
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ernment
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[18] In general, a replacement rate of 4.5% will reduce the optimal duration of 1–2 years under GIRR and SIRR, while it obviously does not affect the optimal duration under the BIRR.

[19] This document refers to the IRRs as part of those processes and negotiations.

[20] That is accrued income and cumulated inflows from replacement.

[21] According to the sole replacement structure, the weights attributed to preceding inflows are more relevant under IRR than GIRR, than SIRR, than finally BIRR.

[22] Each score makes the compound cumulated returns of the initial outflow (investment) equal to the cumulated cash flows including replacements.

[23] We assume here that the generalized future value from the project (cash earnings) and the cash outflows for the project (investment) are discounted at the same compound rate i. This assumption may be released by taking three different rates: one for financing (related to cash outflows), one for investing (the risk-adjusted discount rate of the investment), one for replacement (related to cash inflows). In fact, concerning the discounting of sources of financing, we should consider a Generalized Weighted Average Cost of Capital (G-WACC) based on the target capital and target financial temporal structures, since equity finances (compound interest as reference) usually h rest as referenc

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MIRR:

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