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The double emergence of the Modified Internal Rate of Return: The neglected financial work of Duvillard (1755 – 1832) in a comparative perspective *

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Abstra

This arti ... tment
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financial measure has been invented twice. This approach, indeed, is concerned with

the institutional changes and the theoretical developments they fostered. It analyses concepts such as time preference, techniques such as discounting and issues such as the ‘reinvestment problem’. On the one hand, the Past (especially around the eighteenth century) and Duvillard's contribution is explored. On the other hand, the Present is reconstructed (in particular the late Fifties and later), especially the recent debate that re-invented the MIRR. This article will conclude with some comparative results.

Keywords: Modified Internal Rate of Return | history of Financial Economics | history of economic analysis | discounting | investment evaluation criteria | capital budgeting

Notes

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1 Where the Present linearly waits for the Past and always advances it. In a compara [illegible] viewpoint and to c [illegible] mework is expecte [illegible]

2 See al [illegible]

3 It is a [illegible] of referenc [illegible] for the syste [illegible]

4 On us [illegible] thesis provided [illegible]

5 cf. App [illegible]

6 Many [illegible] this new forma m [illegible] dissemination, such as the early quarrel between M. Weber, W. Sombart and G. Simmel.

7 cf. also Baumol and Goldfeld (1968: 153).

8 This second formula is related to the first one by substituting i for y.

9 ‘Le prix d'une annuité (est) égal à la somme de tous les états auxquels chaque année de la rente est réduite par l'escompte jusqu'au temps t auquel elle expire’ (Duvillard 1787: 6, note).

10 So Duvillard defines rent's price: ‘annuity's price equals the sum of each annual amount resulted by discounting it as long as it lasts’, that is the present value of the rent.

11 At the same time, he distinguishes three rates: (1) the natural but fictitious rate of return; (2) the actual and verifiable rate that he developed; and (3) the normal (market?) rate of return. See section 2.3.

12 cf. Appendix II and Biondi (2003) for further details.

13 Elsewhere, the author refers to his recursive method (Duvillard 1787: 23 – 4) as a innovation (see ‘Lettre de M. Duvillard, Archives de l'Académie des Sciences, Institut de France, Paris, pochette de séance du 31 mai 1813’; reproduced in Israël (1993), especially p. 74). Lagrange and Legendre credited Duvillard for applying geometrical methods to mathematics, in their report to Sciences Academy, séance de l'Académie des Scie in Thuillier (1997: 2 63).

14 See D

15 See C n ‘lettre de M. Duvil pochette de séance c

16 cf

17 On th).

18 cf. als

19 Duvil

20 see V

21 see Walras (1900: 250 – 1).

22 See also Samuelson (1937) and Alchian (1955), commented by Robinson (1956), especially about I. Fisher and J.M. Keynes. Interestingly, however, the key notion of liquidity preference, as developed by Keynes, further distinguishes interest rate and intertemporal preferences. Shackle (1967) refers to the Aristotelian idea of money as ‘not useful in itself’ to justify this point.

23 According to Gintschel (1999), ‘Interestingly, Fisher [The theory of Interest, NY 1930] (…) fleshes out his theory by analyzing how the investment opportunity set can be derived from the underlying technology. Unlike most modern financial economists, Fisher interprets his investment opportunity set as more than a collection of cash-flow vectors. Rather, it is a complete characterization of available technology’ (ibid.: 327).

24 ‘Dean's work triggered much academic activity on the discounted cash flow technique. In 1956, a trade journal, The Engineering Economist, was founded to encourage the dissemination of ideas on newly developed capital budgeting techniques, and textbooks soon followed to establish the acceptance of discounted Cash flow techniques among academic scholars and teachers' (Johnson and Kaplan, 1987: 164); see also Miller (1998) and Dean (1954).

25 cf. also Parker (1968: 68 – 9).

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28 F… 78) and
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their complete lifetime and at no extra costs (Arrow and Levhary 1969, Flemming and Wright 1971, Eatwell 1975, Sen 1975), a solution proved to be scarcely viable.

30 On the neglected role of accounting theory and profession in the histories of discounting, cf. Parker (1968: 70).

31 In 1959, he edited a collection of important articles on investment evaluation criteria based on discounting, cf. E. Solomon (1959).

32 see Appendix II.

33 About the ‘discounting approach’, see also C. Price (1993).

34 Athanasopoulos (1978) provides other references.

35 ‘The salient advantage of ERR method [here, MIRR], compared to all others, is that it combines the recognized reliability of the present worth criteria with the ease of interpretation and understanding inherent in a rate of return (percentage) analysis (…). In view of this clear advantage of the Effective Rate of Return [ERR] technique, serious consideration as the sole criterion for investment profitability is merited’ (Athanasopoulos, 1978: 132b). Furthermore, even though a change of replacement rate modifies the MIRR of each investment project, it does not modify its ranking between different projects based on their MIRRs.

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41 As Duvillard (1787: 18) clearly states, if the annuity rate of return (r or IRR) and the replacement rate (i) have the same value, the value of his IRR (y) will be equal to it. No optimal rate would exist in this case, and the value will be ever-increasing with time.