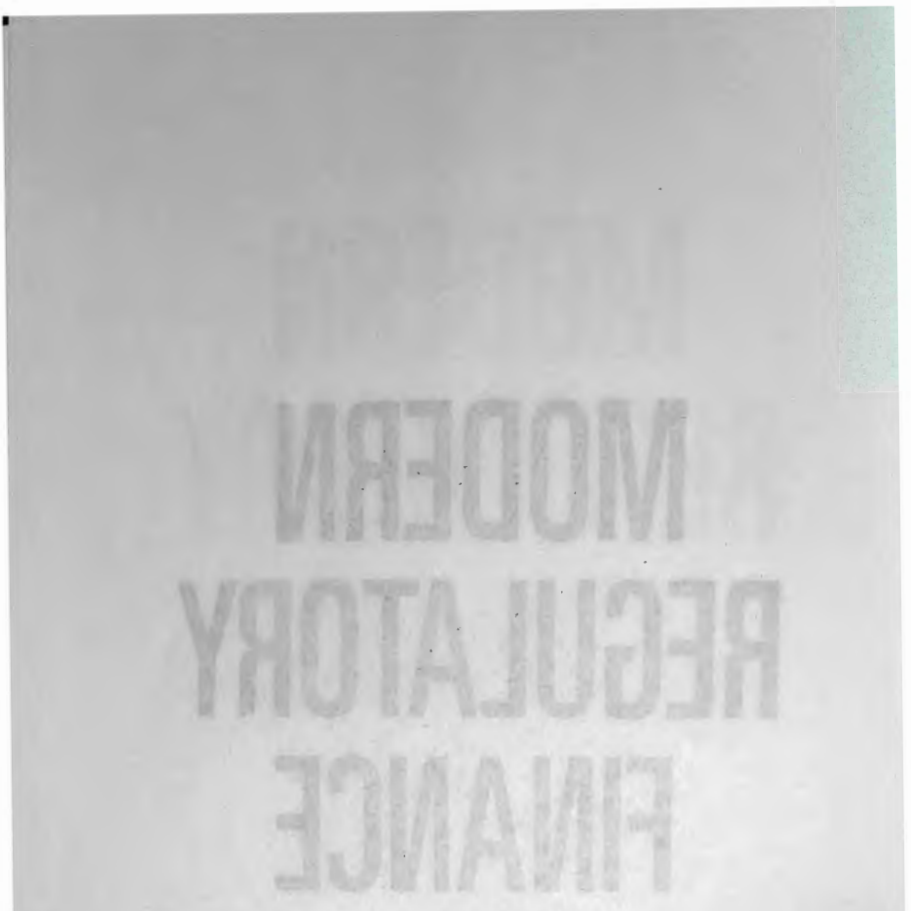
MODERN REGULATORY FINANCE

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2021
PUR Books



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Modern Regulatory Finance/Roger A. Morin

ISBN-13: 978-0-578-93571-3

First Printing, October 2021

Printed in the United States of America

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The less restrictive assumptions required by the Arbitrage Pricing Model are (i) that investors are self-interested; (ii) that investors are risk averse; (iii) that investors can diversify company-specific risks by holding large portfolios; and (iv) that enough investors possess similar expectations to trigger the arbitrage process.

The person who developed the Arbitrage Pricing Model, Professor Steve Ross, refers to the one-factor Arbitrage Pricing Model equation as follows: "*the equation is identical to that of the CAPM.*"[8] Another advanced graduate corporate finance textbook states in a chapter on the CAPM and Arbitrage Pricing Model that "*the CAPM may be viewed as special case of the APM [Arbitrage Pricing Model] when the market rate of return is assumed to be the single relevant factor.*"[9] In short, the CAPM is indeed a special case of the Arbitrage Pricing Model with arguably less restrictive assumptions than the DCF model.

To conclude, as is the case with the DCF model, the assumptions underlying any model in the social sciences, including the CAPM, are stringent. Although both the CAPM and the DCF model provide useful evidence, they should be complemented by other methodologies as well.

15.4 Reflections on Multi-Stage DCF Models

One central assumption in Multi-Stage DCF models, and a potential Achilles' heel in my view, is that utility growth rates will eventually match the growth of the macroeconomy usually measured by the growth of the Gross Domestic Product (GDP). I am not aware of any financial literature supporting the notion that that utility earnings per share are expected to grow at the average growth of the economy, or GDP growth.

As discussed in Chapter 10, based upon the wealth of empirical and academic literature that supports the superiority of analyst's forecasts as measures of investor expectations for the use of such forecasts in the DCF model, current earnings growth forecasts are the appropriate growth rates to use in a DCF analysis. Besides, to the extent that economic trends influence growth, it is reasonable to assume that they are already captured in analysts' growth estimates for utilities.

Multi-stage DCF applications appear somewhat disconnected from the assumptions of the method and the consensus expectations of investors. The investment community does not look to GDP growth over the next several decades when evaluating an investment in utility stocks, nor does it anticipate a series of discrete multi-stage decennial stages. I am not aware of any evidence that investors evaluate the future based on the assumptions and data sources required to apply the two-stage or three-stage DCF model.

8. Stephen Ross, *et al.*, *Corporate Finance* (10th ed. 2013), page 388.
9. Thomas Copeland, *et al.*, *Financial Theory and Corporate Policy*, 219 (3d ed. 1992)