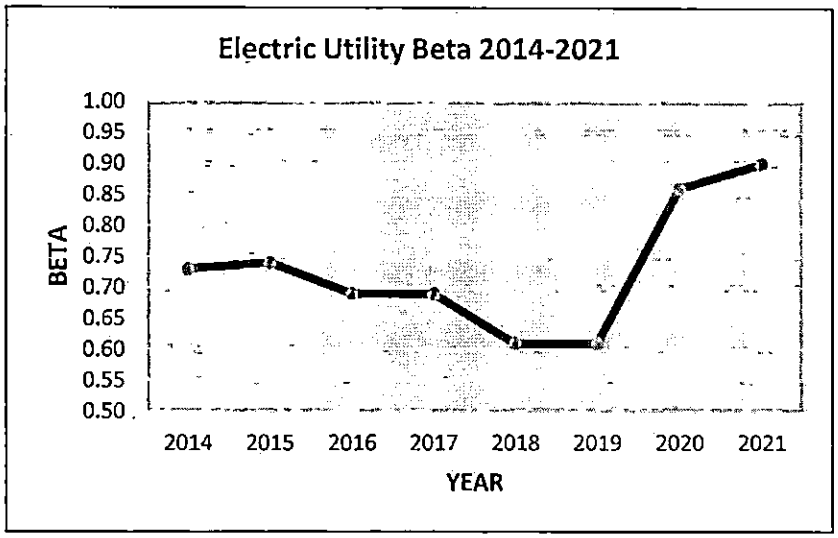
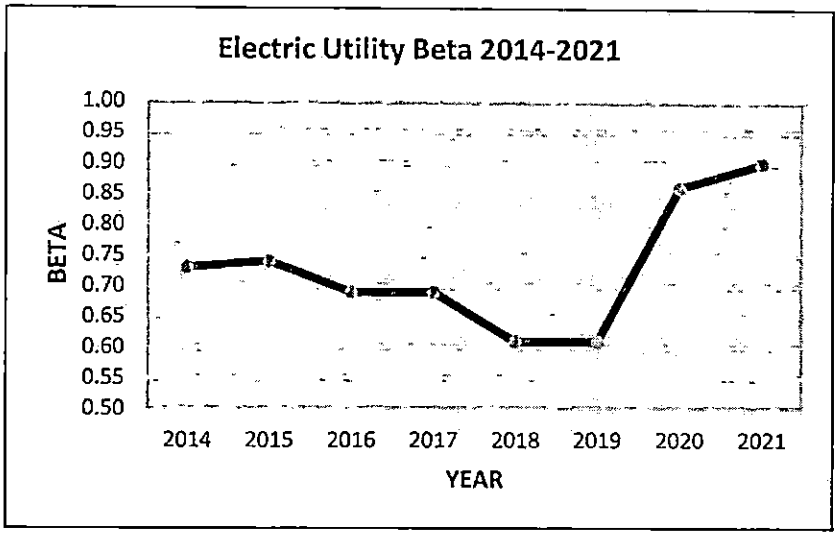


Q: TO WHAT DO YOU ATTRIBUTE THIS QUANTUM INCREASE IN THE RISK COMPLEXION OF THE ELECTRIC UTILITY INDUSTRY?

A: Four major challenges today are facing electric utilities like Cleco Power and have resulted in a "Perfect Storm," and hence higher risks.

First, U.S. economic growth has outpaced energy consumption growth over the past decade. Due to improvements in energy science and productivity, growth in energy consumption has slowed. Society as a whole is doing more with less energy. Clearly, the century-old model of an industry founded on the thesis of uninterrupted rising energy demand is becoming somewhat archaic.

Second, and this is certainly the case for Cleco Power, at the same time that energy consumption growth is receding, record amounts of new capital are required for replacing aging infrastructure, improving reliability, and delivering renewable generation. The



Q: TO WHAT DO YOU ATTRIBUTE THIS QUANTUM INCREASE IN THE RISK COMPLEXION OF THE ELECTRIC UTILITY INDUSTRY?

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Second, and this is certainly the case for Cleco Power, at the same time that energy consumption growth is receding, record amounts of new capital are required for replacing aging infrastructure, improving reliability, and delivering renewable generation. The

utility industry's cost of replacing generation assets, transformers, and power lines is estimated to be in excess of $4.8 trillion over the next decades.[16]

The shift in generation mix to renewable sources of energy, possibly hydrogen as a fuel source, and away from fossil fuels is accelerating. As a result, utility companies look to upgrade and modernize the country's aging energy infrastructure and accommodate the expansion of electric vehicles, energy efficiency, battery storage and smart grid technologies that facilitate the transition toward decarbonization.

There is also an urgent need for capital investments in new transmission infrastructure in order to interconnect the new renewable energy resources to the grid and to strengthen the grid in light of unprecedented and unpredictable extreme weather events which have challenged the grid's reliability and resiliency,

Third, utility companies are facing higher business risks. Electric utilities are witnessing the emergence of 'prosumers,' that is, customers (residential, commercial, industrial) who are both consumers and producers. This paradigm shift from a consumer-centric model to a prosumer-centric model adds to the industry's business risk because prosumers who generate their own energy and feed it back to the grid not only create bypass risks but also operational complexity at the grid level because of added difficulties for utility companies to forecast supply and demand. To illustrate, companies such as Google, Amazon, Apple and Walmart will increase utility companies' business risks and forecasting risks by setting up their own solar and wind farms.

[16] Clean Capital, D. Daly, Director of Investments & Capital Markets, "Four challenges that will shape electric utilities this decade," Feb. 6, 2019.

Adding to bypass risks, distributed energy resources are experiencing exponential growth which is expected to double by 2023[17]. The declining costs of distributed solar, energy storage, smart thermostats, electric vehicles, and small-scale combined heat and power will continue to propel this growth. To quote the trade journal Transmission & Distribution World: *"The century-old, one-way electricity delivery model that has been serving the utility industry traditionally, is proving to be inadequate to support the rising demand and diverse energy options being explored by today's consumers."*

Fourth, operating costs (labor, materials, commodities, etc.) are trending upward due to rising inflation and supply chain bottlenecks.

Q: WHAT DO YOU CONCLUDE FROM THIS PARADIGM SHIFT IN THE INDUSTRY'S RISK PROFILE.

A: Given the new paradigm shift in the industry, it is apparent that state regulatory support, including adequate returns on equity, will be instrumental to ensure ongoing capital attraction in the utility sector at reasonable costs.

Q: WERE EXHIBITS RAM-1 TO RAM-9 AND APPENDICES A AND B PREPARED BY YOU AND UNDER YOUR DIRECTION?

A: Yes, they were.

Q: DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A: Yes, it does at this time.

[17] Clean Capital, op. cit.

PROVINCE OF NOVA SCOTIA

COUNTY OF HALIFAX

AFFIDAVIT

BE IT KNOWN, that before me, the undersigned Notary Public, duly commissioned and qualified for the state and parish/county aforesaid, personally came and appeared:

ROGER A. MORIN, PhD

("Affiant"), who after being duly sworn did depose and say:

1. Affiant has prepared Direct Testimony on behalf of Cleco Power LLC, dated June 30, 2023, in support of the Application of Cleco Power LLC for: (1) Implementation of Changes in Rates to be Effective July 1, 2024; and (2) Extension of Existing Formula Rate Plan.

2. To the best of Affiant's knowledge, information, and belief, Affiant's Direct Testimony is true, accurate, and complete in all material respects as of the date of this Affidavit.

Roger A. Morin

Roger A. Morin, PhD
222 Paddys Head Road
Indian Harbour, Nova Scotia
Canada B3Z 3N8

SWORN TO AND SUBSCRIBED
BEFORE ME, NOTARY PUBLIC,
THIS 8 DAY OF JUNE, 2023.

NOTARY PUBLIC
BAR ROLL/NOTARY ID NO.:_____
MY COMMISSION EXPIRES: N/A

RESUME OF ROGER A. MORIN

(SUMMER 2022)

NAME: Roger A. Morin

ADDRESS: 1547 Piper Dunes Place
Fernandina Beach, FL 32034

222 Paddys Head Rd
Indian Harbour
Nova Scotia, Canada B3Z 3N8

TELEPHONE: (904) 844-2412 business office
(404) 229-2857 cellular
(902) 823-0000 summer office

E-MAIL ADDRESS: profmorin@mac.com

EMPLOYER 1980-2022: Georgia State University
Robinson College of Business
University Plaza
Atlanta, GA 30303

RANK: Emeritus Professor of Finance

HONORS: Distinguished Professor of Finance for Regulated Industry, Director Center for the Study of Regulated Industry, Robinson College of Business, Georgia State University.

EDUCATIONAL HISTORY

- Bachelor of Electrical Engineering, McGill University, Montreal, Canada, 1967.
- Master of Business Administration, McGill University, Montreal, Canada, 1969.
- PhD in Finance & Econometrics, Wharton School of Finance, University of Pennsylvania, 1976.

EMPLOYMENT HISTORY

- Lecturer, Wharton School of Finance, Univ. of Pennsylvania, 1972-3
- Assistant Professor, University of Montreal School of Business, 1973-1976.
- Associate Professor, University of Montreal School of Business, 1976-1979.
- Professor of Finance, Georgia State University, 1979-2012

- Emeritus Professor of Finance, Georgia State University 2012-present

- Distinguished Professor of Finance for Regulated Industry and Director, Center for the Study of Regulated Industry, Robinson College of Business, Georgia State University, 1985-2011

- Visiting Professor of Finance, Amos Tuck School of Business, Dartmouth College, Hanover, N.H., 1986

OTHER BUSINESS ASSOCIATIONS

- Communications Engineer, Bell Canada, 1962-1967.

- Member Board of Directors, Financial Research Institute of Canada, 1974-1980.

- Co-founder and Director Canadian Finance Research Foundation, 1977.

- Vice-President of Research, Garmaise-Thomson & Associates, Investment Management Consultants, 1980-1981.

- Member Board of Directors, Executive Visions Inc., 1985-2021

- Board of External Advisors, College of Business, Georgia State University, Member 1987-1991.

- Member Board of Directors, Hotel Equities Inc., 2009-2022

PROFESSIONAL CLIENTS

AGL Resources
AT & T Communications
Alagasco - Energen
Alaska Anchorage Municipal Light & Power
Alberta Power Ltd.
Allete
Alliant Energy
AmerenUE
American Water
Ameritech
Arkansas Western Gas
ATC Transmission
Baltimore Gas & Electric – Constellation Energy
Bangor Hydro-Electric
B.C. Telephone
B C GAS
Bell Canada

Bellcore
Bell South Corp.
Bruncor (New Brunswick Telephone)
Burlington-Northern
C & S Bank
California Pacific
Cajun Electric
Canadian Radio-Television & Telecomm. Commission
Canadian Utilities
Canadian Western Natural Gas
Cascade Natural Gas
Centel
Centra Gas
Central Illinois Light & Power Co
Central Telephone
Central & South-West Corp.
CH Energy
Chattanooga Gas Company
Cincinnatti Gas & Electric
Cinergy Corp.
Citizens Utilities
City Gas of Florida
Cleco Power
CN-CP Telecommunications
Commonwealth Telephone Co.
Columbia Gas System
Consolidated Edison
Consolidated Natural Gas
Constellation Energy
Delmarva Power & Light Co
Deerpath Group
Detroit Edison Company
Dayton Power & Light Co.
DPL Energy
Duke Energy Indiana
Duke Energy Kentucky
Duke Energy Ohio
Duke Energy Progress South Carolina
Duke Energy Progress North Carolina
DTE Energy
Edison International
Edmonton Power Company
Elizabethtown Gas Co.
Emera
Energen
Engraph Corporation

Entergy Corp.
Entergy Arkansas Inc.
Entergy Gulf States, Inc.
Entergy Louisiana, Inc.
Entergy Mississippi Power
Entergy New Orleans, Inc.
Federal Energy Regulatory Commission
First Energy
Florida Water Association
Fortis
Garmaise-Thomson & Assoc., Investment Consultants
Gaz Metropolitain
General Public Utilities
Georgia Broadcasting Corp.
Georgia-Pacific
Georgia Power Company
GTE California - Verizon
GTE Northwest Inc. - Verizon
GTE Service Corp. - Verizon
GTE Southwest Incorporated - Verizon
Gulf Power Company
Havasu Water Inc.
Hawaiian Electric Company
Hawaiian Elec & Light Co
Heater Utilities – Aqua - America
Hope Gas Inc.
Hydro-Quebec
ICG Utilities
Interstate Power & Light
Illinois Commerce Commission
Interstate Power & Light
Island Telephone
ITC Holdings
Jersey Central Power & Light
Kansas Power & Light
KeySpan Energy
Maine Public Service
Manitoba Hydro
Maritime Telephone
Maui Electric Co.
Metropolitan Edison Co.
Minister of Natural Resources Province of Quebec
Minnesota Power & Light
Mississippi Power Company
Missouri Gas Energy
Mountain Bell

National Grid PLC
Nevada Power Company
New Brunswick Power
Newfoundland Power Inc. - Fortis Inc.
New Market Hydro
New Mexico Gas Co.
New Tel Enterprises Ltd.
New York Telephone Co.
NextEra Energy
Niagara Mohawk Power Corp
Norfolk-Southern
Northeast Utilities
Northern Telephone Ltd.
Northwestern Bell
Northwestern Utilities Ltd.
Nova Scotia Power
Nova Scotia Utility and Review Board
NUI Corp.
NV Energy
NYNEX
Oklahoma Gas & Electric
Ontario Telephone Service Commission
Orange & Rockland
PNM Resources
PPL Corp
PacifiCorp
Pacific Northwest Bell
People's Gas System Inc.
People's Natural Gas
Pennsylvania Electric Co.
Pepco Holdings
Potomac Electric Power Co.
PSI Energy
Public Service Electric & Gas
Public Service of New Hampshire
Public Service of New Mexico
Puget Sound Energy
Quebec Telephone
Regie de l'Energie du Quebec
Rockland Electric
Rochester Telephone
SNL Center for Financial Execution
San Diego Gas & Electric
SaskPower
Sempra
Sierra Pacific Power Company

Southern California Gas Company
Source Gas
Southern Bell
Southern California Gas
Southern States Utilities
Southern Union Gas
South Central Bell
Sun City Water Company
TECO Energy
The Southern Company
Touche Ross and Company
TransEnergie
Trans-Quebec & Maritimes Pipeline
TXU Corp
US WEST Communications
Union Heat Light & Power
Utah Power & Light
Vermont Gas Systems Inc.
Wisconsin Power & Light

MANAGEMENT DEVELOPMENT AND PROFESSIONAL EXECUTIVE EDUCATION

- Canadian Institute of Marketing, Corporate Finance, 1971-73
- Hydro-Quebec, "Capital Budgeting Under Uncertainty," 1974-75
- Institute of Certified Public Accountants, Mergers & Acquisitions, 1975-78
- Investment Dealers Association of Canada, 1977-78
- Financial Research Foundation, bi-annual seminar, 1975-79
- Advanced Management Research (AMR), faculty member, 1977-80
- Financial Analysts Federation, Educational chapter: "Financial Futures Contracts" seminar
- The Management Exchange Inc., faculty member 1981-2008:

  National Seminars: *Risk and Return on Capital Projects*
  Cost of Capital for Regulated Utilities
  Capital Allocation for Utilities
  Alternative Regulatory Frameworks
  Utility Directors' Workshop
  Shareholder Value Creation for Utilities
  Fundamentals of Utility Finance
  Contemporary Issues in Utility Finance

- SNL Center for Financial Education faculty member 2008-2018

- S&P Global Intelligence, faculty member 2015 -2022
  National Seminars: *Essentials of Utility Finance*

EXPERT TESTIMONY & UTILITY CONSULTING AREAS OF EXPERTISE

Corporate Finance
Rate of Return
Capital Structure
Generic Cost of Capital
Costing Methodology
Depreciation
Flow-Through vs Normalization
Revenue Requirements Methodology
Utility Capital Expenditures Analysis
Risk Analysis
Capital Allocation
Divisional Cost of Capital, Unbundling
Incentive Regulation & Alternative Regulatory Plans
Shareholder Value Creation
Value-Based Management

REGULATORY BODIES

Alabama Public Service Commission
Alaska Regulatory Commission
Alberta Public Service Board
Arizona Corporation Commission
Arkansas Public Service Commission
British Columbia Board of Public Utilities
California Public Service Commission
Canadian Radio-Television & Telecommunications Comm.
City of New Orleans Council
Colorado Public Utilities Commission
Colorado Department of Revenue
Delaware Public Service Commission
District of Columbia Public Service Commission
Federal Communications Commission
Federal Energy Regulatory Commission
Florida Public Service Commission
Georgia Public Service Commission
Georgia Senate Committee on Regulated Industries
Hawaii Public Utilities Commission
Illinois Commerce Commission
Indiana Utility Regulatory Commission
Iowa Utilities Board
Kentucky Public Service Commission
Louisiana Public Service Commission

Maine Public Utilities Commission
Manitoba Board of Public Utilities
Maryland Public Service Commission
Michigan Public Service Commission
Minnesota Public Utilities Commission
Mississippi Public Service Commission
Missouri Public Service Commission
Montana Public Service Commission
National Energy Board of Canada
Nebraska Public Service Commission
Nevada Public Utilities Commission
New Brunswick Board of Public Commissioners
New Hampshire Public Utilities Commission
New Jersey Board of Public Utilities
New Mexico Public Regulation Commission
New Orleans City Council
New York Public Service Commission
Newfoundland Board of Commissioners of Public Utilities
North Carolina Utilities Commission
Nova Scotia Board of Public Utilities
Ohio Public Utilities Commission
Oklahoma Corporation Commission
Ontario Telephone Service Commission
Ontario Energy Board
Oregon Public Utility Service Commission
Pennsylvania Public Utility Commission
Quebec Regie de l'Energie
Quebec Telephone Service Commission
South Carolina Public Service Commission
South Dakota Public Utilities Commission
Tennessee Regulatory Authority
Texas Public Utility Commission
Utah Public Service Commission
Utah State Tax Commission
Vermont Department of Public Services
Virginia State Corporation Commission
Washington Utilities & Transportation Commission
West Virginia Public Service Commission

SERVICE AS EXPERT WITNESS

Southern Bell, So. Carolina PSC, Docket #81-201C
Southern Bell, So. Carolina PSC, Docket #82-294C
Southern Bell, North Carolina PSC, Docket #P-55-816
Metropolitan Edison, Pennsylvania PUC, Docket #R-822249
Pennsylvania Electric, Pennsylvania PUC, Docket #R-822250

Georgia Power, Georgia PSC, Docket # 3270-U, 1981
Georgia Power, Georgia PSC, Docket # 3397-U, 1983
Georgia Power, Georgia PSC, Docket # 3673-U, 1987
Georgia Power, F.E.R.C., Docket # ER 80-326, 80-327
Georgia Power, F.E.R.C., Docket # ER 81-730, 80-731
Georgia Power, F.E.R.C., Docket # ER 85-730, 85-731
Bell Canada, CRTC 1987
Northern Telephone, Ontario PSC
GTE-Quebec Telephone, Quebec PSC, Docket 84-052B
Newtel., Newfoundland Board of Public Commission, PU 11-87
CN-CP Telecommunications, CRTC
Quebec Northern Telephone, Quebec PSC
Edmonton Power Company, Alberta Public Service Board
Kansas Power & Light, F.E.R.C., Docket # ER 83-418
NYNEX, FCC generic cost of capital Docket #84-800
Bell South, FCC generic cost of capital Docket #84-800
American Water Works - Tennessee, Docket #7226
Burlington-Northern - Oklahoma State Board of Taxes
Georgia Power, Georgia PSC, Docket # 3549-U
GTE Service Corp., FCC Docket #84-200
Mississippi Power Co., Miss. PSC, Docket U-4761
Citizens Utilities, Ariz. Corp. Comm., Docket U2334-86020
Quebec Telephone, Quebec PSC, 1986, 1987, 1992
Newfoundland L & P, Nfld. Brd. Publ Comm. 1987, 1991
Northwestern Bell, Minnesota PSC, Docket P-421/CI=86-354
GTE Service Corp., FCC Docket #87-463
Anchorage Municipal Power & Light, Alaska PUC, 1988
New Brunswick Telephone, N.B. PUC, 1988
Trans-Quebec Maritime, Nat'l Energy Brd. of Cda, '88-92
Gulf Power Co., Florida PSC, Docket #88-1167-EI
Mountain States Bell, Montana PSC, #88-1.2
Mountain States Bell, Arizona CC, #E-1051-88-146
Georgia Power, Georgia PSC, Docket # 3840-U, I989
Rochester Telephone, New York PSC, Docket # 89-C-022
Noverco - Gaz Metro, Quebec Natural Gas PSC, #R-3164-89
GTE Northwest, Washington UTC, #U-89-3031
Orange & Rockland, New York PSC, Case 89-E-175
Central Illinois Light Company, ICC, Case 90-0127
Peoples Natural Gas, Pennsylvania PSC, Case
Gulf Power, Florida PSC, Case # 891345-EI
ICG Utilities, Manitoba BPU, Case 1989
New Tel Enterprises, CRTC, Docket #90-15
Peoples Gas Systems, Florida PSC
Jersey Central Pwr & Light, N.J. PUB, Case ER 89110912J
Alabama Gas Co., Alabama PSC, Case 890001
Trans-Quebec Maritime Pipeline, Cdn. Nat'l Energy Board

Mountain Bell, Utah PSC,
Mountain Bell, Colorado PUB
South Central Bell, Louisiana PS
Hope Gas, West Virginia PSC
Vermont Gas Systems, Vermont PSC
Alberta Power Ltd., Alberta PUB
Ohio Utilities Company, Ohio PSC
Georgia Power Company, Georgia PSC
Sun City Water Company
Havasu Water Inc.
Centra Gas (Manitoba) Co.
Central Telephone Co. Nevada
AGT Ltd., CRTC 1992
BC GAS, BCPUB 1992
California Water Association, California PUC 1992
Maritime Telephone 1993
BCE Enterprises, Bell Canada, 1993
Citizens Utilities Arizona gas division 1993
PSI Resources 1993-5
CILCORP gas division 1994
GTE Northwest Oregon 1993
Stentor Group 1994-5
Bell Canada 1994-1995
PSI Energy 1993, 1994, 1995, 1999
Cincinnati Gas & Electric 1994, 1996, 1999, 2004
Southern States Utilities, 1995
CILCO 1995, 1999, 2001
Commonwealth Telephone 1996
Edison International 1996, 1998
Citizens Utilities 1997
Stentor Companies 1997
Hydro-Quebec 1998
Entergy Gulf States Louisiana 1998, 1999, 2001, 2002, 2003
Detroit Edison, 1999, 2003
Entergy Gulf States, Texas, 2000, 2004
Hydro Quebec TransEnergie, 2001, 2004
Sierra Pacific Company, 2000, 2001, 2002, 2007, 2010
Nevada Power Company, 2001
Mid American Energy, 2001, 2002
Entergy Louisiana Inc. 2001, 2002, 2004
Mississippi Power Company, 2001, 2002, 2007
Oklahoma Gas & Electric Company, 2002 -2003
Public Service Electric & Gas, 2001, 2002
NUI Corp (Elizabethtown Gas Company), 2002
Jersey Central Power & Light, 2002
San Diego Gas & Electric, 2002, 2012, 2014

New Brunswick Power, 2002
Entergy New Orleans, 2002, 2008
Hydro-Quebec Distribution 2002
PSI Energy 2003
Fortis – Newfoundland Power & Light 2002
Emera – Nova Scotia Power 2004
Hydro-Quebec TransEnergie 2004
Hawaiian Electric 2004
Missouri Gas Energy 2004
AGL Resources 2004
Arkansas Western Gas 2004
Public Service of New Hampshire 2005
Hawaiian Electric Company 2005, 2008, 2009
Delmarva Power & Light Company 2005, 2009
Union Heat Power & Light 2005
Puget Sound Energy 2006, 2007, 2009
Cascade Natural Gas 2006
Entergy Arkansas 2006-7
Bangor Hydro 2006-7
Delmarva 2006, 2007, 2009
Potomac Electric Power Co. 2006, 2007, 2009
Duke Energy Ohio, 2007, 2008, 2009
Duke Energy Kentucky 2009
Consolidated Edison 2007 Docket 07-E-0523
Duke Energy Ohio Docket 07-589-GA-AIR
Hawaiian Electric Company Docket 05-0315
Sierra Pacific Power Docket ER07-1371-000
Public Service New Mexico Docket 06-00210-UT
Detroit Edison Docket U-15244
Potomac Electric Power Docket FC-1053
Delmarva, Delaware, Docket 09-414
Atlantic City Electric, New Jersey, Docket ER-09080664
Maui Electric Co, Hawaii, Docket 2009-0163, 2011
Niagara Mohawk, New York, Docket 10E-0050
Sierra Pacific Power Docket No. 10-06001
Gaz Metro, Regie de l'Energie (Quebec), Docket 2012 R-3752-2011
California Pacific Electric Co., LLC, California PUC, Docket A-12-02-014
Duke Energy Ohio, Ohio Case No. 11-XXXX-EL-SSO
San Diego Gas & Electric, FERC, 2012, 2014, 2018
San Diego Gas & Electric, California PUC, 2012, Docket A-12-04
Southern California Gas, California PUC, 2012, Docket A-12-04
Puget Sound Electric 2016
Puget Sound Electric 2017
Duke Energy of Ohio 2015, 2018
Duke Energy of Kentucky 2017. 2018
Duke Energy of Ohio 2017

Dayton Power & Light 2016-2018
Missouri American Water
California Power Electric Company
Interstate Power & Light Iowa 2017, 2018
Wisconsin Power & Light 2016
OG&E Electric 2018
Duke Energy Kentucky 2019
IPL Iowa 2019
Puget Sound Electric 2019
SDG&E California 2019
SDG&E FERC 2019
Southern California Gas 2019
Entergy Louisiana Inc. 2020-2021
Cleco Power 2021
PacifiCorp 2021

PROFESSIONAL AND LEARNED SOCIETIES

- Engineering Institute of Canada, 1967-1972
- Canada Council Award, recipient 1971 and 1972
- Canadian Association Administrative Sciences, 1973-80
- American Association of Decision Sciences, 1974-1978
- American Finance Association, 1975-2002
- Financial Management Association, 1978-2002

ACTIVITIES IN PROFESSIONAL ASSOCIATIONS AND MEETINGS

- Chairman of meeting on "New Developments in Utility Cost of Capital", Southern Finance Association, Atlanta, Nov. 1982

- Chairman of meeting on "Public Utility Rate of Return", Southeastern Public Utility Conference, Atlanta, Oct. 1982

- Chairman of meeting on "Current Issues in Regulatory Finance", Financial Management Association, Atlanta, Oct. 1983

- Chairman of meeting on "Utility Cost of Capital", Financial Management Association, Toronto, Canada, Oct. 1984.

- Committee on New Product Development, FMA, 1985

- Discussant, "Tobin's Q Ratio", paper presented at Financial Management Association, New York, N.Y., Oct. 1986

- Guest speaker, "Utility Capital Structure: New Developments", National Society of Rate of Return Analysts 18th Financial Forum, Wash., D.C. Oct. 1986

- Opening address, "Capital Expenditures Analysis: Methodology vs Mythology," Bellcore Economic Analysis Conference, Naples Fl, 1988.

- Guest speaker, "Mythodology in Regulatory Finance", Society of Utility Rate of Return Analysts (SURFA), Annual Conference, Wash., D.C. February 2007.

PAPERS PRESENTED:

"An Empirical Study of Multi-Period Asset Pricing," annual meeting of Financial Management Assoc., Las Vegas Nevada, 1987.

"Utility Capital Expenditures Analysis: Net Present Value vs Revenue Requirements", annual meeting of Financial Management Assoc., Denver, Colorado, October 1985.

"Intervention Analysis and the Dynamics of Market Efficiency", annual meeting of Financial Management Assoc., San Francisco, Oct. 1982

"Intertemporal Market-Line Theory: An Empirical Study," annual meeting of Eastern Finance Assoc., Newport, R.I. 1981

"Option Writing for Financial Institutions: A Cost-Benefit Analysis", 1979 annual meeting Financial Research Foundation

"Free-lunch on the Toronto Stock Exchange", annual meeting of Financial Research Foundation of Canada, l978.

"Simulation System Computer Software SIMFIN", HP International Business Computer Users Group, London, 1975.

"Inflation Accounting: Implications for Financial Analysis." Institute of Certified Public Accountants Symposium, 1979.

OFFICES IN PROFESSIONAL ASSOCIATIONS

- President, International Hewlett-Packard Business Computers Users Group, 1977

- Chairman Program Committee, International HP Business Computers Users Group, London, England, 1975

- Program Coordinator, Canadian Assoc. of Administrative Sciences, 1976

- Member, New Product Development Committee, Financial Mgt Ass, 1985-1986

- Reviewer: Journal of Financial Research, Financial Management
  Financial Review, Journal of Finance

PUBLICATIONS

"Risk Aversion Revisited", Journal of Finance, Sept. 1983

"Hedging Regulatory Lag with Financial Futures," Journal of Finance, May 1983. (with G. Gay, R. Kolb)

"The Effect of CWIP on Cost of Capital," Public Utilities Fortnightly, July 1986.

"The Effect of CWIP on Revenue Requirements" Public Utilities Fortnightly, August 1986.

"Intervention Analysis and the Dynamics of Market Efficiency," Time-Series Applications, New York: North Holland, 1983. (with K. El-Sheshai)

"Market-Line Theory and the Canadian Equity Market," Journal of Business Administration, Jan. 1982, M. Brennan, editor

"Efficiency of Canadian Equity Markets," International Management Review, Feb. 1978.

"Intertemporal Market-Line Theory: An Empirical Test," Financial Review, Proceedings of the Eastern Finance Association, 1981.

BOOKS

Utilities' Cost of Capital, Public Utilities Reports Inc., Arlington, Va., 1984.

Regulatory Finance, Public Utilities Reports Inc., Arlington, Va., 2004

Driving Shareholder Value, McGraw-Hill, January 2001.

The New Regulatory Finance, Public Utilities Reports Inc., Arlington, Va., 2006.

Modern Regulatory Finance, PUR Books, Reston, Va., 2022.

MONOGRAPHS

Determining Cost of Capital for Regulated Industries, Public Utilities Reports, Inc., and The Management Exchange Inc., 1982 - 1993. (with V.L. Andrews)

Alternative Regulatory Frameworks, Public Utilities Reports, Inc., and The Management Exchange Inc., 1993. (with V.L. Andrews)

Risk and Return in Capital Projects, The Management Exchange Inc., 1980. (with B. Deschamps)

Utility Capital Expenditure Analysis, The Management Exchange Inc., 1983.

Regulation of Cable Television: An Econometric Planning Model, Quebec Department of Communications, 1978.

"An Economic & Financial Profile of the Canadian Cablevision Industry," Canadian Radio-Television & Telecommunication Commission (CRTC), 1978.

Computer Users' Manual: Finance and Investment Programs, University of Montreal Press, 1974, revised 1978.

Fiber Optics Communications: Economic Characteristics, Quebec Department of Communications, 1978.

"Canadian Equity Market Inefficiencies", Capital Market Research Memorandum, Garmaise & Thomson Investment Consultants, 1979.

MISCELLANEOUS CONSULTING REPORTS

"Operational Risk Analysis: California Water Utilities," Calif. Water Association, 1993.

"Cost of Capital Methodologies for Independent Telephone Systems", Ontario Telephone Service Commission, March 1989.

"The Effect of CWIP on Cost of Capital and Revenue Requirements", Georgia Power Company, 1985.

"Costing Methodology and the Effect of Alternate Depreciation and Costing Methods on Revenue Requirements and Utility Finances", Gaz Metropolitan Inc., 1985.

"Simulated Capital Structure of CN-CP Telecommunications: A Critique", CRTC, 1977.

"Telecommunications Cost Inquiry: Critique," CRTC, 1977.

"Social Rate of Discount in the Public Sector", CRTC Policy Statement, 1974.

"Technical Problems in Capital Projects Analysis", CRTC Policy Statement, 1974.

RESEARCH GRANTS

"Econometric Planning Model of the Cablevision Industry," International Institute of Quantitative Economics, CRTC.

"Application of the Averch-Johnson Model to Telecommunications Utilities," Canadian Radio-Television Commission. (CRTC)

"Economics of the Fiber Optics Industry", Quebec Dept. of Communications.

"Intervention Analysis and the Dynamics of Market Efficiency", Georgia State Univ. College of Business, 1981.

"Firm Size and Beta Stability", Georgia State University College of Business, 1982.

"Risk Aversion and the Demand for Risky Assets", Georgia State University College of Business, 1981.

Proxy Group for Cleco Power

	Company	Ticker
1	Alliant Energy	LNT
2	Amer. Elec. Power	AEP
3	Ameren Corp.	AEE
4	Avista Corp.	AVA
5	Black Hills	BKH
6	CenterPoint Energy	CNP
7	CMS Energy Corp.	CMS
8	Dominion Energy	D
9	DTE Energy	DTE
10	Duke Energy	DUK
11	Edison Int'l	EIX
12	Entergy Corp.	ETR
13	Evergy Inc.	EVRG
14	Eversource Energy	ES
15	FirstEnergy Corp.	FE
16	IDACORP Inc.	IDA
17	NorthWestern Corp.	NWE
18	OGE Energy	OGE
19	Otter Tail Corp.	OTTR
20	Portland General	POR
21	Sempra Energy	SRE
22	Southern Co.	SO

Vertically-Integrated Elec Utilities
DCF Analysis Value Line Growth Rates

Line No.	(1) Company Name	(2) Current Dividend Yield	(3) Projected EPS Growth	(4) % Expected Divid Yield	(5) Cost of Equity
1	Alliant Energy	3.09	6.00	3.28	9.28
2	Amer. Elec. Power	3.64	6.50	3.88	10.38
3	Ameren Corp.	2.74	6.50	2.92	9.42
4	Avista Corp.	4.52	3.00	4.66	7.66
5	Black Hills	3.66	6.00	3.88	9.88
6	CenterPoint Energy	2.43	6.50	2.59	9.09
7	CMS Energy Corp.	3.07	6.50	3.27	9.77
8	Dominion Energy	4.51	5.50	4.76	10.26
9	DTE Energy	3.09	4.50	3.23	7.73
10	Duke Energy	3.90	6.00	4.13	10.13
11	Edison Int'l	4.54	16.00	5.27	21.27
12	Entergy Corp.	3.82	4.00	3.97	7.97
13	Evergy Inc.	4.18	7.50	4.49	11.99
14	Eversource Energy	3.20	6.50	3.41	9.91
15	FirstEnergy Corp.	4.05	3.00	4.17	7.17
16	IDACORP Inc.	2.99	4.00	3.11	7.11
17	NorthWestern Corp.	4.54	2.50	4.65	7.15
18	OGE Energy	4.22	6.50	4.49	10.99
19	Otter Tail Corp.	2.95	4.50	3.08	7.58
20	Portland General	3.84	4.50	4.01	8.51
21	Sempra Energy	2.90	7.00	3.10	10.10
22	Southern Co.	4.15	6.50	4.42	10.92
23	WEC Energy Group	3.04	6.00	3.22	9.22
24	Xcel Energy Inc.	2.85	6.00	3.02	9.02
26	**AVERAGE**	**3.58**	**5.90**	**3.79**	**9.69**

Notes:

29 Column 2: Zacks Investment Reports 12/01/2022
30 Column 3: Value Line Investment Reports 12/2022
31 Column 4 = Column 2 times (1 + Column 3/100)
32 Column 5 = Column 4 + Column 3

Vertically-Integrated Elec Utilities
DCF Analysis Value Line Growth Rates

Line No.	(1) Company Name	(2) Current Dividend Yield	(3) Projected EPS Growth	(4) % Expected Divid Yield	(5) Cost of Equity	(6) Return on Equity
1	Alliant Energy	3.09	6.00	3.28	9.28	9.45
2	Amer. Elec. Power	3.64	6.50	3.88	10.38	10.58
3	Ameren Corp.	2.74	6.50	2.92	9.42	9.57
4	Avista Corp.	4.52	3.00	4.66	7.66	7.90
5	Black Hills	3.66	6.00	3.88	9.88	10.08
6	CenterPoint Energy	2.43	6.50	2.59	9.09	9.22
7	CMS Energy Corp.	3.07	6.50	3.27	9.77	9.94
8	Dominion Energy	4.51	5.50	4.76	10.26	10.51
9	DTE Energy	3.09	4.50	3.23	7.73	7.90
10	Duke Energy	3.90	6.00	4.13	10.13	10.35
11	Edison Int'l	4.54	16.00	5.27	21.27	
12	Entergy Corp.	3.82	4.00	3.97	7.97	8.18
13	Evergy Inc.	4.18	7.50	4.49	11.99	12.23
14	Eversource Energy	3.20	6.50	3.41	9.91	10.09
15	FirstEnergy Corp.	4.05	3.00	4.17	7.17	7.39
16	IDACORP Inc.	2.99	4.00	3.11	7.11	7.27
17	NorthWestern Corp.	4.54	2.50	4.65	7.15	7.40
18	OGE Energy	4.22	6.50	4.49	10.99	11.23
19	Otter Tail Corp.	2.95	4.50	3.08	7.58	7.75
20	Portland General	3.84	4.50	4.01	8.51	8.72
21	Sempra Energy	2.90	7.00	3.10	10.10	10.27
22	Southern Co.	4.15	6.50	4.42	10.92	11.15
23	WEC Energy Group	3.04	6.00	3.22	9.22	9.39
24	Xcel Energy Inc.	2.85	6.00	3.02	9.02	9.18
26	**AVERAGE**	**3.58**	**5.90**	**3.79**	**9.69**	**9.38**

Notes:

29 Column 2: Zacks Investment Reports 12/01/2022
30 Column 3: Value Line Investment Reports 12/2022
31 Column 4 = Column 2 times (1 + Column 3/100)
32 Column 5 = Column 4 + Column 3
33 Column 6 = Column 4/0.95 + Column 3

Vertically Integrated Elec Utilities
DCF Analysis Analysts' Growth Forecasts

Line No.	(1) Company Name	(2) Current Dividend Yield	(3) Analysts' Growth Forecast	(4) % Expected Divid Yield	(5) Cost of Equity
1	Alliant Energy	3.09	5.92	3.27	9.19
2	Amer. Elec. Power	3.64	6.20	3.87	10.07
3	Ameren Corp.	2.74	7.20	2.94	10.14
4	Avista Corp.	4.52	5.18	4.75	9.93
5	Black Hills	3.66	5.37	3.86	9.23
6	CenterPoint Energy	2.43	3.53	2.52	6.05
7	CMS Energy Corp.	3.07	8.04	3.32	11.36
8	Dominion Energy	4.51	5.72	4.77	10.49
9	DTE Energy	3.09	6.00	3.28	9.28
10	Duke Energy	3.90	5.50	4.11	9.61
11	Edison Int'l	4.54	2.57	4.66	7.23
12	Entergy Corp.	3.82	6.76	4.08	10.84
13	Evergy Inc.	4.18	5.24	4.40	9.64
14	Eversource Energy	3.20	6.21	3.40	9.61
15	FirstEnergy Corp.	4.05	6.70	4.32	11.02
16	IDACORP Inc.	2.99	3.38	3.09	6.47
17	NorthWestern Corp.	4.54	1.74	4.62	6.36
18	OGE Energy	4.22	5.00	4.43	9.43
19	Otter Tail Corp.	2.95	4.50	3.08	7.58
20	Portland General	3.84	5.35	4.05	9.40
21	Sempra Energy	2.90	5.71	3.07	8.78
22	Southern Co.	4.15	4.00	4.32	8.32
23	WEC Energy Group	3.04	6.16	3.23	9.39
24	Xcel Energy Inc.	2.85	6.47	3.03	9.50
26	**AVERAGE**	**3.58**	**5.35**	**3.77**	**9.12**

28 Notes:
29 Column 2, 3: Zacks Investment Research 11/17/22
30 Column 4 = Column 2 times (1 + Column 3/100)
31 Column 5 = Column 4 + Column 3

Vertically-Integrated Elec Utilities Beta Estimates

Line No.	Company Name	(1) Beta
1	Alliant Energy	0.85
2	Amer. Elec. Power	0.75
3	Ameren Corp.	0.85
4	Avista Corp.	0.90
5	Black Hills	0.95
6	CenterPoint Energy	1.15
7	CMS Energy Corp.	0.80
8	Dominion Energy	0.85
9	DTE Energy	0.95
10	Duke Energy	0.85
11	Edison Int'l	0.95
12	Entergy Corp.	0.95
13	Evergy Inc.	0.90
14	Eversource Energy	0.90
15	FirstEnergy Corp.	0.85
16	IDACORP Inc.	0.80
17	NorthWestern Corp.	0.90
18	OGE Energy	1.05
19	Otter Tail Corp.	0.85
20	Portland General	0.85
21	Sempra Energy	0.95
22	Southern Co.	0.95
23	WEC Energy Group	0.80
24	Xcel Energy Inc.	0.80
26	**AVERAGE**	**0.89**

28 Source: Value Line Investment Reports 12/22

PROSPECTIVE DCF MARKET RISK PREMIUM ANALYSIS
S&P 500 DIVIDEND-PAYING COMPANIES

	Company Name	Ticker	% Curr Div Yield	Proj EPS Gth
1	3M Company	MMM	4.5	6.5
2	Abbott Labs.	ABT	1.7	8.0
3	AbbVie Inc.	ABBV	3.8	4.5
4	Accenture Plc	ACN	1.5	12.5
5	Activision Blizzard	ATVI	0.7	12.5
6	Advance Auto Parts	AAP	3.1	16.0
7	AES Corp.	AES	3.2	
8	Aflac Inc.	AFL	3.1	9.0
9	Agilent Technologies	A	0.7	11.5
10	Air Products & Chem.	APD	2.8	11.0
11	Albemarle Corp.	ALB	0.7	15.0
12	Alexandria Real Estate	ARE	3.2	10.0
13	Allegion plc	ALLE	1.6	10.5
14	Alliant Energy	LNT	3.1	6.0
15	Allstate Corp.	ALL	2.8	2.5
16	Altria Group	MO	8.5	5.5
17	Amcor plc	AMCR	3.8	14.0
18	Amer. Elec. Power	AEP	3.5	6.5
19	Amer. Express	AXP	1.4	10.0
20	Amer. Tower 'A'	AMT	2.4	9.0
21	Amer. Water Works	AWK	1.8	3.0
22	Ameren Corp.	AEE	2.8	6.5
23	Ameriprise Fin'l	AMP	2.1	12.5
24	AmerisourceBergen	ABC	1.3	8.5
25	AMETEK Inc.	AME	0.8	10.0
26	Amgen	AMGN	3.3	5.5
27	Amphenol Corp.	APH	1.2	12.5
28	Analog Devices	ADI	1.9	14.0
29	Aon plc	AON	0.8	7.5
30	Apple Inc.	AAPL	0.6	14.0
31	Applied Materials	AMAT	1.0	14.5
32	Archer Daniels Midl'd	ADM	2.1	13.0
33	Assurant Inc.	AIZ	1.8	14.0
34	AT&T Inc.	T	5.4	0.5
35	Atmos Energy	ATO	2.6	7.5
36	Automatic Data Proc.	ADP	2.1	9.0
37	AvalonBay Communities	AVB	3.4	6.5
38	Avery Dennison	AVY	1.8	12.0
39	Baker Hughes	BKR	2.8	
40	Bank of America	BAC	2.6	9.5

PROSPECTIVE DCF MARKET RISK PREMIUM ANALYSIS
S&P 500 DIVIDEND-PAYING COMPANIES

	Company Name	Ticker	% Curr Div Yield	Proj EPS Gth
41	Bank of New York Mellon	BK	3.4	6.5
42	Baxter Int'l Inc.	BAX	1.8	10.0
43	Becton Dickinson	BDX	1.5	5.5
44	Berkley (W.R.)	WRB	0.6	15.5
45	Best Buy Co.	BBY	4.5	7.0
46	Bio-Techne Corp.	TECH	0.4	17.5
47	BlackRock Inc.	BLK	3.2	10.0
48	BorgWarner	BWA	1.9	9.5
49	Boston Properties	BXP	4.4	-1.0
50	Broadridge Fin'l	BR	1.7	9.0
51	Brown & Brown	BRO	0.7	8.0
52	Brown-Forman 'B'	BF/B	1.1	14.0
53	C.H. Robinson	CHRW	2.2	8.0
54	Camden Property Trust	CPT	2.9	2.5
55	Campbell Soup	CPB	3.1	5.0
56	Capital One Fin'l	COF	2.1	-1.0
57	Cardinal Health	CAH	3.6	5.0
58	Carrier Global	CARR	1.6	
59	Caterpillar Inc.	CAT	2.7	10.0
60	Cboe Global Markets	CBOE	1.6	10.0
61	CDW Corp.	CDW	1.2	8.5
62	Celanese Corp.	CE	2.4	7.5
63	CenterPoint Energy	CNP	2.5	6.5
64	Chubb Ltd.	CB	1.8	11.0
65	Church & Dwight	CHD	1.1	6.0
66	Cigna Corp.	CI	1.7	9.5
67	Cincinnati Financial	CINF	2.5	7.0
68	Cintas Corp.	CTAS	1.0	13.5
69	Cisco Systems	CSCO	3.4	8.0
70	Citigroup Inc.	C	4.0	5.5
71	Citizens Fin'l Group	CFG	4.5	9.0
72	Clorox Co.	CLX	3.1	4.5
73	CME Group	CME	2.0	8.5
74	CMS Energy Corp.	CMS	3.0	6.5
75	Coca-Cola	KO	2.9	7.5
76	Cognizant Technology	CTSH	1.6	7.5
77	Colgate-Palmolive	CL	2.5	6.5
78	Comcast Corp.	CMCSA	2.6	9.5
79	Comerica Inc.	CMA	3.4	6.0
80	Conagra Brands	CAG	3.8	4.0
81	ConocoPhillips	COP	2.0	20.0

PROSPECTIVE DCF MARKET RISK PREMIUM ANALYSIS
S&P 500 DIVIDEND-PAYING COMPANIES

	Company Name	Ticker	% Curr Div Yield	Proj EPS Gth
82	Consol. Edison	ED	3.5	4.5
83	Constellation Brands	STZ	1.3	5.0
84	Constellation Energy	CEG	1.0	
85	Corning Inc.	GLW	3.1	17.5
86	Corteva Inc.	CTVA	1.1	16.5
87	Costco Wholesale	COST	0.7	10.5
88	Crown Castle Int'l	CCI	3.5	12.0
89	CSX Corp.	CSX	1.3	10.5
90	Cummins Inc.	CMI	3.1	8.5
91	CVS Health	CVS	2.3	6.0
92	Danaher Corp.	DHR	0.4	16.5
93	Darden Restaurants	DRI	4.0	19.5
94	Deere & Co.	DE	1.4	15.0
95	Dentsply Sirona	XRAY	1.4	10.0
96	Diamondback Energy	FANG	2.5	
97	Digital Realty Trust	DLR	4.1	-3.5
98	Discover Fin'l Svcs.	DFS	2.2	8.5
99	Dollar General	DG	0.9	10.0
100	Dominion Energy	D	3.6	14.0
101	Domino's Pizza	DPZ	1.1	16.0
102	Dover Corp.	DOV	1.6	8.0
103	Dow Inc.	DOW	5.5	15.0
104	DTE Energy	DTE	3.0	4.5
105	Duke Energy	DUK	3.9	6.0
106	Duke Realty Corp.	DRE	2.0	-2.5
107	DuPont de Nemours	DD	2.4	10.0
108	Eastman Chemical	EMN	3.3	9.5
109	Eaton Corp. plc	ETN	2.4	12.0
110	eBay Inc.	EBAY	1.9	15.5
111	Ecolab Inc.	ECL	1.3	10.5
112	Edison Int'l	EIX	4.6	15.5
113	Electronic Arts	EA	0.6	11.5
114	Elevance Health	ELV	1.1	12.5
115	Emerson Electric	EMR	2.5	10.0
116	Entergy Corp.	ETR	3.9	4.0
117	Equifax Inc.	EFX	0.8	10.0
118	Equinix Inc.	EQIX	2.0	15.0
119	Equity Residential	EQR	3.5	-6.0
120	Essex Property Trust	ESS	3.4	-4.0
121	Everest Re Group Ltd.	RE	2.5	9.5
122	Evergy Inc.	EVRG	3.8	7.5

PROSPECTIVE DCF MARKET RISK PREMIUM ANALYSIS
S&P 500 DIVIDEND-PAYING COMPANIES

	Company Name	Ticker	% Curr Div Yield	Proj EPS Gth
123	Eversource Energy	ES	3.1	6.0
124	Exelon Corp.	EXC	3.2	3.5
125	Expeditors Int'l	EXPD	1.3	6.5
126	Extra Space Storage	EXR	3.5	4.0
127	FactSet Research	FDS	0.9	10.0
128	Fastenal Co.	FAST	2.6	8.5
129	Federal Rlty. Inv. Trust	FRT	4.2	
130	FedEx Corp.	FDX	2.0	10.5
131	Fifth Third Bancorp	FITB	3.7	11.0
132	First Republic Bank	FRC	0.7	11.0
133	FirstEnergy Corp.	FE	4.2	7.5
134	FMC Corp.	FMC	2.1	11.0
135	Fortive Corp.	FTV	0.5	11.5
136	Fortune Brands Home	FBHS	1.7	10.5
137	Fox Corp. 'A'	FOXA	1.4	11.0
138	Franklin Resources	BEN	4.6	4.0
139	Gallagher (Arthur J.)	AJG	1.2	16.0
140	Garmin Ltd.	GRMN	2.7	8.0
141	Gen'l Dynamics	GD	2.3	8.5
142	Gen'l Mills	GIS	2.9	3.5
143	Genuine Parts	GPC	2.5	9.0
144	Gilead Sciences	GILD	4.7	13.5
145	Global Payments	GPN	0.8	17.0
146	Globe Life Inc.	GL	0.8	8.5
147	Goldman Sachs	GS	3.1	5.0
148	Grainger (W.W.)	GWW	1.5	8.5
149	Hartford Fin'l Svcs.	HIG	2.4	8.5
150	Hasbro Inc.	HAS	3.4	9.0
151	HCA Healthcare	HCA	1.3	11.0
152	Healthpeak Properties	PEAK	4.6	17.0
153	Henry (Jack) & Assoc.	JKHY	1.0	9.0
154	Hershey Co.	HSY	1.7	7.0
155	Hess Corp.	HES	1.4	
156	Hewlett Packard Ent.	HPE	3.5	7.5
157	Home Depot	HD	2.6	9.0
158	Honeywell Int'l	HON	2.2	11.0
159	Hormel Foods	HRL	2.2	8.0
160	Horton D.R.	DHI	1.3	13.0
161	Howmet Aerospace	HWM	0.2	17.0
162	HP Inc.	HPQ	3.0	12.5
163	Humana Inc.	HUM	0.7	10.5

PROSPECTIVE DCF MARKET RISK PREMIUM ANALYSIS
S&P 500 DIVIDEND-PAYING COMPANIES

	Company Name	Ticker	% Curr Div Yield	Proj EPS Gth
164	Hunt (J.B.)	JBHT	0.9	11.5
165	Huntington Bancshs.	HBAN	4.9	12.5
166	Huntington Ingalls	HII	2.3	10.0
167	IDEX Corp.	IEX	1.3	10.5
168	Illinois Tool Works	ITW	2.6	11.0
169	Ingersoll Rand Inc.	IR	0.2	
170	Int'l Business Mach.	IBM	5.1	3.0
171	Int'l Flavors & Frag.	IFF	2.6	7.5
172	Int'l Paper	IP	4.3	12.5
173	Intel Corp.	INTC	3.6	2.5
174	Intercontinental Exch.	ICE	1.5	6.5
175	Interpublic Group	IPG	4.0	10.0
176	Intuit Inc.	INTU	0.6	17.5
177	Invesco Ltd.	IVZ	4.5	11.5
178	Iron Mountain	IRM	5.4	11.0
179	Jacobs Engineering	J	0.7	12.0
180	Johnson & Johnson	JNJ	2.6	8.0
181	Johnson Ctrls. Int'l plc	JCI	2.8	12.5
182	JPMorgan Chase	JPM	3.8	7.0
183	Juniper Networks	JNPR	2.9	9.0
184	Kellogg	K	3.4	3.5
185	Keurig Dr Pepper	KDP	2.2	12.0
186	KeyCorp	KEY	4.3	9.0
187	Kimberly-Clark	KMB	3.5	5.5
188	Kimco Realty	KIM	3.9	8.5
189	Kinder Morgan Inc.	KMI	6.4	19.0
190	Kraft Heinz Co.	KHC	4.2	3.0
191	Kroger Co.	KR	2.2	6.5
192	L3Harris Technologies	LHX	2.0	18.5
193	Laboratory Corp.	LH	1.2	1.5
194	Lam Research	LRCX	1.3	17.0
195	Lamb Weston Holdings	LW	1.3	5.0
196	Lauder (Estee)	EL	1.0	14.0
197	Leidos Hldgs.	LDOS	1.4	9.0
198	Lennar Corp.	LEN	2.0	9.0
199	Lilly (Eli)	LLY	1.2	11.5
200	Lincoln Nat'l Corp.	LNC	3.7	11.5
201	Linde plc	LIN	1.7	12.0
202	LKQ Corp.	LKQ	1.9	11.0
203	Lockheed Martin	LMT	2.9	7.0
204	Loews Corp.	L	0.4	16.0

PROSPECTIVE DCF MARKET RISK PREMIUM ANALYSIS
S&P 500 DIVIDEND-PAYING COMPANIES

	Company Name	Ticker	% Curr Div Yield	Proj EPS Gth
205	Lowe's Cos.	LOW	2.2	12.5
206	Lumen Technologies	LUMN	9.1	1.5
207	LyondellBasell Inds.	LYB	5.3	3.5
208	M&T Bank Corp.	MTB	3.0	8.0
209	Marathon Petroleum	MPC	2.6	
210	MarketAxess Holdings	MKTX	1.0	10.5
211	Marsh & McLennan	MMC	1.5	11.5
212	Martin Marietta	MLM	0.8	5.5
213	Masco Corp.	MAS	2.1	8.5
214	MasterCard Inc.	MA	0.6	13.5
215	McCormick & Co.	MKC	1.8	6.0
216	McDonald's Corp.	MCD	2.2	10.5
217	McKesson Corp.	MCK	0.6	11.5
218	Medtronic plc	MDT	3.0	8.0
219	Merck & Co.	MRK	3.1	8.0
220	MetLife Inc.	MET	3.3	5.0
221	Microchip Technology	MCHP	1.7	10.0
222	Microsoft Corp.	MSFT	1.0	16.5
223	Mid-America Apt.	MAA	2.9	
224	Mondelez Int'l	MDLZ	2.3	8.0
225	Moody's Corp.	MCO	1.0	8.0
226	Morgan Stanley	MS	3.8	9.0
227	Motorola Solutions	MSI	1.5	8.0
228	MSCI Inc.	MSCI	1.0	14.5
229	Nasdaq Inc.	NDAQ	1.4	6.0
230	NetApp Inc.	NTAP	3.0	8.0
231	Newell Brands	NWL	4.6	
232	Newmont Corp.	NEM	4.2	9.5
233	News Corp. 'A'	NWSA	1.2	
234	NextEra Energy	NEE	2.2	12.5
235	NiSource Inc.	NI	3.3	9.5
236	Nordson Corp.	NDSN	1.0	12.0
237	Norfolk Southern	NSC	2.1	10.5
238	Northern Trust Corp.	NTRS	2.9	8.0
239	Northrop Grumman	NOC	1.5	6.5
240	NortonLifeLock Inc.	NLOK	2.0	9.5
241	NRG Energy	NRG	3.9	-10.5
242	Nucor Corp.	NUE	1.7	-0.5
243	NXP Semi. NV	NXPI	1.9	12.0
244	Occidental Petroleum	OXY	0.9	
245	Old Dominion Freight	ODFL	0.4	10.5

PROSPECTIVE DCF MARKET RISK PREMIUM ANALYSIS
S&P 500 DIVIDEND-PAYING COMPANIES

	Company Name	Ticker	% Curr Div Yield	Proj EPS Gth
246	Omnicom Group	OMC	4.1	6.5
247	ONEOK Inc.	OKE	6.4	11.5
248	Oracle Corp.	ORCL	1.8	9.0
249	Otis Worldwide	OTIS	1.6	
250	PACCAR Inc.	PCAR	3.4	9.5
251	Packaging Corp.	PKG	3.6	11.0
252	Paramount Global	PARA	3.7	7.5
253	Parker-Hannifin	PH	2.0	13.5
254	Paychex Inc.	PAYX	2.6	9.5
255	Pentair plc	PNR	1.7	12.5
256	PepsiCo Inc.	PEP	2.6	6.0
257	PerkinElmer Inc.	PKI	0.2	5.0
258	Pfizer Inc.	PFE	3.1	6.5
259	Philip Morris Int'l	PM	5.6	5.0
260	Pinnacle West Capital	PNW	5.0	0.5
261	PNC Financial Serv.	PNC	3.7	12.0
262	Pool Corp.	POOL	1.0	14.0
263	PPG Inds.	PPG	2.0	4.0
264	PPL Corp.	PPL	3.5	-0.5
265	Price (T. Rowe) Group	TROW	4.1	8.0
266	Principal Fin'l Group	PFG	4.0	6.5
267	Procter & Gamble	PG	2.6	6.5
268	Progressive Corp.	PGR	0.4	6.5
269	Prologis	PLD	2.6	6.0
270	Prudential Fin'l	PRU	5.0	5.0
271	Public Serv. Enterprise	PEG	3.7	4.0
272	Public Storage	PSA	2.6	8.0
273	PulteGroup Inc.	PHM	1.4	11.0
274	PVH Corp.	PVH	0.2	13.5
275	Qualcomm Inc.	QCOM	2.0	19.0
276	Quanta Services	PWR	0.2	16.0
277	Quest Diagnostics	DGX	2.0	3.5
278	Ralph Lauren	RL	3.1	12.5
279	Raymond James Fin'l	RJF	1.4	14.5
280	Raytheon Technologies	RTX	2.3	7.0
281	Realty Income Corp.	O	4.3	6.0
282	Regency Centers Corp.	REG	4.0	12.5
283	Regions Financial	RF	3.7	10.0
284	Republic Services	RSG	1.4	12.5
285	ResMed Inc.	RMD	0.7	13.5
286	Robert Half Int'l	RHI	2.1	10.5

PROSPECTIVE DCF MARKET RISK PREMIUM ANALYSIS
S&P 500 DIVIDEND-PAYING COMPANIES

	Company Name	Ticker	% Curr Div Yield	Proj EPS Gth
287	Rockwell Automation	ROK	2.1	9.5
288	Rollins Inc.	ROL	1.1	9.5
289	Roper Tech.	ROP	0.6	3.5
290	Ross Stores	ROST	1.6	13.5
291	S&P Global	SPGI	0.9	12.5
292	Schwab (Charles)	SCHW	1.3	9.0
293	Seagate Technology plc	STX	3.4	15.0
294	Sealed Air	SEE	1.4	10.0
295	Sempra Energy	SRE	3.1	7.5
296	Sherwin-Williams	SHW	1.0	11.5
297	Simon Property Group	SPG	6.8	3.0
298	Skyworks Solutions	SWKS	2.1	14.5
299	Smith (A.O.)	AOS	1.9	11.5
300	Smucker (J.M.)	SJM	3.2	4.0
301	Snap-on Inc.	SNA	3.0	-16.0
302	Southern Co.	SO	3.8	6.5
303	Stanley Black & Decker	SWK	2.9	8.5
304	Starbucks Corp.	SBUX	2.5	16.5
305	State Street Corp.	STT	3.6	9.5
306	STERIS plc	STE	0.8	11.5
307	Stryker Corp.	SYK	1.4	8.5
308	Synchrony Financial	SYF	2.6	6.0
309	Sysco Corp.	SYY	2.2	16.5
310	Tapestry Inc.	TPR	3.0	15.0
311	Target Corp.	TGT	2.8	12.0
312	TE Connectivity	TEL	1.8	10.5
313	Teleflex Inc.	TFX	0.5	10.0
314	Teradyne Inc.	TER	0.4	9.0
315	Texas Instruments	TXN	2.8	9.0
316	Textron Inc.	TXT	0.1	10.5
317	Thermo Fisher Sci.	TMO	0.2	10.0
318	TJX Companies	TJX	1.9	17.0
319	Tractor Supply	TSCO	1.9	12.5
320	Trane Technologies plc	TT	2.0	
321	Travelers Cos.	TRV	2.4	6.5
322	Truist Fin'l	TFC	4.1	6.5
323	Tyson Foods 'A'	TSN	2.2	4.5
324	U.S. Bancorp	USB	4.3	6.0
325	UDR Inc.	UDR	3.4	10.5
326	Union Pacific	UNP	2.4	9.5
327	United Parcel Serv.	UPS	3.3	11.0

PROSPECTIVE DCF MARKET RISK PREMIUM ANALYSIS
S&P 500 DIVIDEND-PAYING COMPANIES

	Company Name	Ticker	% Curr Div Yield	Proj EPS Gth
328	UnitedHealth Group	UNH	1.3	12.0
329	Universal Health `B'	UHS	0.7	9.0
330	V.F. Corp.	VFC	4.2	11.0
331	Valero Energy	VLO	3.6	12.5
332	Ventas Inc.	VTR	3.8	10.5
333	Verisk Analytics	VRSK	0.7	13.5
334	Verizon Communic.	VZ	5.3	3.0
335	VICI Properties	VICI	4.4	8.5
336	Visa Inc.	V	0.8	13.5
337	Vornado R'lty Trust	VNO	7.1	-20.5
338	Vulcan Materials	VMC	1.0	8.5
339	Wabtec Corp.	WAB	0.7	9.5
340	Walgreens Boots	WBA	4.9	5.0
341	Walmart Inc.	WMT	1.7	7.5
342	Waste Management	WM	1.7	8.0
343	WEC Energy Group	WEC	3.1	6.0
344	Wells Fargo	WFC	2.5	11.5
345	Welltower Inc.	WELL	3.1	3.5
346	West Pharmac. Svcs.	WST	0.2	17.0
347	WestRock Co.	WRK	2.4	20.0
348	Weyerhaeuser Co.	WY	2.0	8.0
349	Whirlpool Corp.	WHR	4.2	7.0
350	Williams Cos.	WMB	5.2	8.5
351	Willis Towers Wat. plc	WTW	1.6	8.0
352	Xcel Energy Inc.	XEL	3.0	6.0
353	Xylem Inc.	XYL	1.5	9.0
354	Yum! Brands	YUM	1.9	10.5
355	Zimmer Biomet Hldgs.	ZBH	0.9	5.5
356	Zions Bancorp.	ZION	3.0	8.0
357	Zoetis Inc.	ZTS	0.7	11.0
	AVERAGE		**2.4**	**9.1**

Source: Value Line Investment Analyzer 12/2022

ELECTRIC UTILITIES CAPM AND ECAPM RESULTS

Line No.	Company Name	Risk-Free Rate (1)	Beta (2)	MRP (3)	CAPM Cost of Equity (4)	Flotation Cost (5)	CAPM ROE (6)	ECAPM Cost of Equity (7)	Flotation Cost (8)	ECAPM ROE (9)
									0	
1	Alliant Energy	4.30%	0.85	7.30%	10.51%	0.20%	10.71%	10.78%	0.20%	10.98%
2	Amer. Elec. Power	4.30%	0.75	7.30%	9.78%	0.20%	9.98%	10.23%	0.20%	10.43%
3	Ameren Corp.	4.30%	0.85	7.30%	10.51%	0.20%	10.71%	10.78%	0.20%	10.98%
4	Avista Corp.	4.30%	0.90	7.30%	10.87%	0.20%	11.07%	11.05%	0.20%	11.25%
5	Black Hills	4.30%	0.95	7.30%	11.24%	0.20%	11.44%	11.33%	0.20%	11.53%
6	CenterPoint Energy	4.30%	1.15	7.30%	12.70%	0.20%	12.90%	12.42%	0.20%	12.62%
7	CMS Energy Corp.	4.30%	0.80	7.30%	10.14%	0.20%	10.34%	10.51%	0.20%	10.71%
8	Dominion Energy	4.30%	0.85	7.30%	10.51%	0.20%	10.71%	10.78%	0.20%	10.98%
9	DTE Energy	4.30%	0.95	7.30%	11.24%	0.20%	11.44%	11.33%	0.20%	11.53%
10	Edison Int'l	4.30%	0.95	7.30%	11.24%	0.20%	11.44%	11.33%	0.20%	11.53%
11	Entergy Corp.	4.30%	0.95	7.30%	11.24%	0.20%	11.44%	11.33%	0.20%	11.53%
12	Evergy Inc.	4.30%	0.90	7.30%	10.87%	0.20%	11.07%	11.05%	0.20%	11.25%
13	Eversource Energy	4.30%	0.90	7.30%	10.87%	0.20%	11.07%	11.05%	0.20%	11.25%
14	FirstEnergy Corp.	4.30%	0.85	7.30%	10.51%	0.20%	10.71%	10.78%	0.20%	10.98%
15	IDACORP Inc.	4.30%	0.80	7.30%	10.14%	0.20%	10.34%	10.51%	0.20%	10.71%
16	NorthWestern Corp.	4.30%	0.90	7.30%	10.87%	0.20%	11.07%	11.05%	0.20%	11.25%
17	OGE Energy	4.30%	1.05	7.30%	11.97%	0.20%	12.17%	11.87%	0.20%	12.07%
18	Otter Tail Corp.	4.30%	0.85	7.30%	10.51%	0.20%	10.71%	10.78%	0.20%	10.98%
19	Portland General	4.30%	0.85	7.30%	10.51%	0.20%	10.71%	10.78%	0.20%	10.98%
20	Sempra Energy	4.30%	0.95	7.30%	11.24%	0.20%	11.44%	11.33%	0.20%	11.53%
21	Southern Co.	4.30%	0.95	7.30%	11.24%	0.20%	11.44%	11.33%	0.20%	11.53%
22	WEC Energy Group	4.30%	0.80	7.30%	10.14%	0.20%	10.34%	10.51%	0.20%	10.71%
23	Xcel Energy Inc.	4.30%	0.80	7.30%	10.14%	0.20%	10.34%	10.51%	0.20%	10.71%
26	**AVERAGE**						**11.02%**			**11.22%**

Notes: Column (1): Risk-free rate
Column (2): see Exhibit RAM-5
Column (3): Market Risk Premium
Column (4): Column (1) + Column (2) x Column (3)
Column (5): Flotation cost allowance
Column (6): Column (4) + Column (5)
Column (7): Column (1) + 0.25 x Column (3) + 0.75 x Column (2) x Column (3) + Column (8)

2021 Utility Industry Historical Risk Premium

Line No	Year	(1) Long-Term Government Bond Yield	(2) Long-Term Government Income Component Bond Yield	(3) 20 year Maturity Bond Value	(4) Gain/Loss	(5) Interest	(6) Bond Total Return	(7) S&P Utility Index Return	(8) Utility Equity Risk Premium Over Bond Returns	(9) Utility Equity Risk Premium Over Bond Return Income Component
1	1931	4.07%	3.33%	1,000.00						
2	1932	3.15%	3.69%	1,135.75	135.75	40.70	17.64%	-0.54%	-18.18%	-4.23%
3	1933	3.36%	3.12%	969.60	-30.40	31.50	0.11%	-21.87%	-21.98%	-24.99%
4	1934	2.93%	3.18%	1,064.73	64.73	33.60	9.83%	-20.41%	-30.24%	-23.59%
5	1935	2.76%	2.81%	1,025.99	25.99	29.30	5.53%	76.63%	71.10%	73.82%
6	1936	2.56%	2.77%	1,031.15	31.15	27.60	5.88%	20.69%	14.81%	17.92%
7	1937	2.73%	2.66%	973.93	-26.07	25.60	-0.05%	-37.04%	-36.99%	-39.70%
8	1938	2.52%	2.64%	1,032.83	32.83	27.30	6.01%	22.45%	16.44%	19.81%
9	1939	2.26%	2.40%	1,041.65	41.65	25.20	6.68%	11.26%	4.58%	8.86%
10	1940	1.94%	2.23%	1,052.84	52.84	22.60	7.54%	-17.15%	-24.69%	-19.38%
11	1941	2.04%	1.94%	983.64	-16.36	19.40	0.30%	-31.57%	-31.87%	-33.51%
12	1942	2.46%	2.46%	933.97	-66.03	20.40	-4.56%	15.39%	19.95%	12.93%
13	1943	2.48%	2.44%	996.86	-3.14	24.60	2.15%	46.07%	43.92%	43.63%
14	1944	2.46%	2.46%	1,003.14	3.14	24.80	2.79%	18.03%	15.24%	15.57%
15	1945	1.99%	2.34%	1,077.23	77.23	24.60	10.18%	53.33%	43.15%	50.99%
16	1946	2.12%	2.04%	978.90	-21.10	19.90	-0.12%	1.26%	1.38%	-0.78%
17	1947	2.43%	2.13%	951.13	-48.87	21.20	-2.77%	-13.16%	-10.39%	-15.29%
18	1948	2.37%	2.40%	1,009.51	9.51	24.30	3.38%	4.01%	0.63%	1.61%
19	1949	2.09%	2.25%	1,045.58	45.58	23.70	6.93%	31.39%	24.46%	29.14%
20	1950	2.24%	2.12%	975.93	-24.07	20.90	-0.32%	3.25%	3.57%	1.13%
21	1951	2.69%	2.38%	930.75	-69.25	22.40	-4.69%	18.63%	23.32%	16.25%
22	1952	2.79%	2.66%	984.75	-15.25	26.90	1.17%	19.25%	18.08%	16.59%
23	1953	2.74%	2.84%	1,007.66	7.66	27.90	3.56%	7.85%	4.29%	5.01%
24	1954	2.72%	2.79%	1,003.07	3.07	27.40	3.05%	24.72%	21.67%	21.93%
25	1955	2.95%	2.75%	965.44	-34.56	27.20	-0.74%	11.26%	12.00%	8.51%
26	1956	3.45%	2.99%	928.19	-71.81	29.50	-4.23%	5.06%	9.29%	2.07%
27	1957	3.23%	3.44%	1,032.23	32.23	34.50	6.67%	6.36%	-0.31%	2.92%
28	1958	3.82%	3.27%	918.01	-81.99	32.30	-4.97%	40.70%	45.67%	37.43%
29	1959	4.47%	4.01%	914.65	-85.35	38.20	-4.71%	7.49%	12.20%	3.48%
30	1960	3.80%	4.26%	1,093.27	93.27	44.70	13.80%	20.26%	6.46%	16.00%
31	1961	4.15%	3.83%	952.75	-47.25	38.00	-0.92%	29.33%	30.25%	25.50%
32	1962	3.95%	4.00%	1,027.48	27.48	41.50	6.90%	-2.44%	-9.34%	-6.44%
33	1963	4.17%	3.89%	970.35	-29.65	39.50	0.99%	12.36%	11.37%	8.47%
34	1964	4.23%	4.15%	991.96	-8.04	41.70	3.37%	15.91%	12.54%	11.76%
35	1965	4.50%	4.19%	964.64	-35.36	42.30	0.69%	4.67%	3.98%	0.48%
36	1966	4.55%	4.49%	993.48	-6.52	45.00	3.85%	-4.48%	-8.33%	-8.97%
37	1967	5.56%	4.59%	879.01	-120.99	45.50	-7.55%	-0.63%	6.92%	-5.22%
38	1968	5.98%	5.50%	951.38	-48.62	55.60	0.70%	10.32%	9.62%	4.82%
39	1969	6.87%	5.96%	904.00	-96.00	59.80	-3.62%	-15.42%	-11.80%	-21.38%
40	1970	6.48%	6.74%	1,043.38	43.38	68.70	11.21%	16.56%	5.35%	9.82%
41	1971	5.97%	6.32%	1,059.09	59.09	64.80	12.39%	2.41%	-9.98%	-3.91%
42	1972	5.99%	5.87%	997.69	-2.31	59.70	5.74%	8.15%	2.41%	2.28%
43	1973	7.26%	6.51%	867.09	-132.91	59.90	-7.30%	-18.07%	-10.77%	-24.58%
44	1974	7.60%	7.27%	965.33	-34.67	72.60	3.79%	-21.55%	-25.34%	-28.82%
45	1975	8.05%	7.99%	955.63	-44.37	76.00	3.16%	44.49%	41.33%	36.50%
46	1976	7.21%	7.89%	1,088.25	88.25	80.50	16.87%	31.81%	14.94%	23.92%
47	1977	8.03%	7.14%	919.03	-80.97	72.10	-0.89%	8.64%	9.53%	1.50%
48	1978	8.98%	7.90%	912.47	-87.53	80.30	-0.72%	-3.71%	-2.99%	-11.61%
49	1979	10.12%	8.86%	902.99	-97.01	89.80	-0.72%	13.58%	14.30%	4.72%
50	1980	11.99%	9.97%	859.23	-140.77	101.20	-3.96%	15.08%	19.04%	5.11%
51	1981	13.34%	11.55%	906.45	-93.55	119.90	2.63%	11.74%	9.11%	0.19%
52	1982	10.95%	13.50%	1,192.38	192.38	133.40	32.58%	26.52%	-6.06%	13.02%
53	1983	11.97%	10.38%	923.12	-76.88	109.50	3.26%	20.01%	16.75%	9.63%
54	1984	11.70%	11.74%	1,020.70	20.70	119.70	14.04%	26.04%	12.00%	14.30%
55	1985	9.56%	11.25%	1,189.27	189.27	117.00	30.63%	33.05%	2.42%	21.80%
56	1986	7.89%	8.98%	1,166.63	166.63	95.60	26.22%	28.53%	2.31%	19.55%
57	1987	9.20%	7.92%	881.17	-118.83	78.90	-3.99%	-2.92%	1.07%	-10.84%
58	1988	9.19%	8.97%	1,000.91	0.91	92.00	9.29%	18.27%	8.98%	9.30%
59	1989	8.16%	8.81%	1,100.73	100.73	91.90	19.26%	47.80%	28.54%	38.99%
60	1990	8.44%	8.19%	973.17	-26.83	81.60	5.48%	-2.57%	-8.05%	-10.76%
61	1991	7.30%	8.22%	1,118.94	118.94	84.40	20.33%	14.61%	-5.72%	6.39%
62	1992	7.26%	7.26%	1,004.19	4.19	73.00	7.72%	8.10%	0.38%	0.84%
63	1993	6.54%	7.17%	1,079.70	79.70	72.60	15.23%	14.41%	-0.82%	7.24%
64	1994	7.99%	6.59%	856.40	-143.60	65.40	-7.82%	-7.94%	-0.12%	-14.53%
65	1995	6.03%	7.60%	1,225.98	225.98	79.90	30.59%	42.15%	11.56%	34.55%

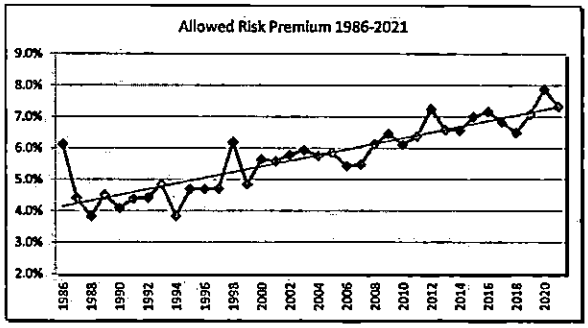
Line No	Year	(1) Long-Term Government Bond Yield	(2) Long-Term Government Income Component Bond Yield	(3) 20 year Maturity Bond Value	(4) Gain/Loss	(5) Interest	(6) Bond Total Return	(7) S&P Utility Index Return	(8) Utility Equity Risk Premium Over Bond Returns	(9) Utility Equity Risk Premium Over Bond Return Income Component
66	1996	6.73%	6.18%	923.67	-76.33	60.30	-1.60%	3.14%	4.74%	-3.04%
67	1997	6.02%	6.64%	1,081.92	81.92	67.30	14.92%	24.69%	9.77%	18.05%
68	1998	5.42%	5.83%	1,072.71	72.71	60.20	13.29%	14.82%	1.53%	8.99%
69	1999	6.82%	5.57%	848.41	-151.59	54.20	-9.74%	-8.85%	0.89%	-14.42%
70	2000	5.58%	6.50%	1,148.30	148.30	68.20	21.65%	59.70%	38.05%	53.20%
71	2001	5.75%	5.53%	979.95	-20.05	55.80	3.57%	-30.41%	-33.98%	-35.94%
72	2002	4.84%	5.59%	1,115.77	115.77	57.50	17.33%	-30.04%	-47.37%	-35.63%
73	2003	5.11%	4.80%	966.42	-33.58	48.40	1.48%	26.11%	24.63%	21.31%
74	2004	4.84%	5.02%	1,034.35	34.35	51.10	8.54%	24.22%	15.68%	19.20%
75	2005	4.61%	4.69%	1,029.84	29.84	48.40	7.82%	16.79%	8.97%	12.10%
76	2006	4.91%	4.68%	962.06	-37.94	46.10	0.82%	20.95%	20.13%	16.27%
77	2007	4.50%	4.86%	1,053.70	53.70	49.10	10.28%	19.36%	9.08%	14.50%
78	2008	3.03%	4.45%	1,219.28	219.28	45.00	26.43%	-28.99%	-55.42%	-33.44%
79	2009	4.58%	3.47%	798.39	-201.61	30.30	-17.13%	11.94%	29.07%	8.47%
80	2010	4.14%	4.25%	1,059.45	59.45	45.80	10.52%	5.49%	-5.03%	1.24%
81	2011	2.55%	3.82%	1,247.89	247.89	41.40	28.93%	19.88%	-9.05%	16.06%
82	2012	2.46%	2.46%	1,014.15	14.15	25.50	3.96%	1.29%	-2.67%	-1.17%
83	2013	3.78%	2.88%	815.92	-184.08	24.60	-15.95%	13.26%	29.21%	10.38%
84	2014	2.46%	3.41%	1,207.53	207.53	37.80	24.53%	28.61%	4.08%	25.20%
85	2015	2.68%	2.47%	966.11	-33.89	24.60	-0.93%	1.38%	2.31%	-1.09%
86	2016	2.72%	2.30%	993.86	-6.14	26.80	2.07%	16.27%	14.20%	13.97%
87	2017	2.54%	2.67%	1,028.09	28.09	27.20	5.53%	12.11%	6.58%	9.44%
88	2018	2.84%	2.82%	954.46	-45.54	25.40	-2.01%	4.11%	6.12%	1.29%
89	2019	2.25%	2.55%	1,094.60	94.60	28.40	12.30%	31.48%	19.18%	28.93%
90	2020	1.37%	1.53%	1,153.49	153.49	22.50	17.60%	0.05%	-17.55%	-1.48%
91	2021	1.88%	1.73%	915.31	-84.69	13.70	-7.10%	4.20%	11.30%	2.47%
93	Mean								**5.5%**	**6.3%**

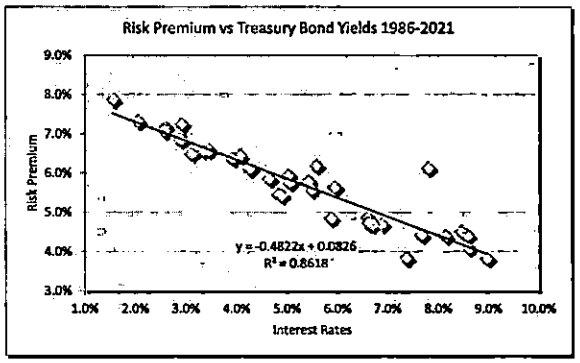
95—Source: Bloomberg Web site: Standard & Poors Utility Stock Index % Annual Change, Jan. to Dec.
96 Long-Term Government Bond yield data from Duff & Phelps 2022 Valuation Yearbook Appendices A7 and A9

ALLOWED RISK PREMIUM ANALYSIS

Line	Date	Treasury Bond Yield[1]	Authorized Electric Returns[2]	Indicated Risk Premium
		(1)	(2)	(3)
1	1986	7.80%	13.93%	6.1%
2	1987	8.58%	12.99%	4.4%
3	1988	8.96%	12.79%	3.8%
4	1989	8.45%	12.97%	4.5%
5	1990	8.61%	12.70%	4.1%
6	1991	8.14%	12.54%	4.4%
7	1992	7.67%	12.09%	4.4%
8	1993	6.60%	11.46%	4.9%
9	1994	7.37%	11.21%	3.8%
10	1995	6.88%	11.58%	4.7%
11	1996	6.70%	11.40%	4.7%
12	1997	6.61%	11.33%	4.7%
13	1998	5.58%	11.77%	6.2%
14	1999	5.87%	10.72%	4.9%
15	2000	5.94%	11.58%	5.6%
16	2001	5.49%	11.07%	5.6%
17	2002	5.42%	11.21%	5.8%
18	2003	5.02%	10.96%	5.9%
19	2004	5.05%	10.81%	5.8%
20	2005	4.65%	10.51%	5.9%
21	2006	4.88%	10.32%	5.4%
22	2007	4.83%	10.30%	5.5%
23	2008	4.28%	10.41%	6.1%
24	2009	4.07%	10.52%	6.5%
25	2010	4.25%	10.37%	6.1%
26	2011	3.91%	10.29%	6.4%
27	2012	2.92%	10.17%	7.3%
28	2013	3.45%	10.03%	6.6%
29	2014	3.34%	9.91%	6.6%
30	2015	2.84%	9.84%	7.0%
31	2016	2.60%	9.77%	7.2%
32	2017	2.90%	9.74%	6.8%
33	2018	3.11%	9.60%	6.5%
34	2019	2.58%	9.66%	7.1%
35	2020	1.56%	9.44%	7.9%
36	2021	2.06%	9.38%	7.3%
	Average	5.25%	10.98%	5.73%

Sources:
1 Fed Reserve Board of Governors H.15 Release, 30-Yr Treasury rate
2 S&P Global Intelligence (Regulatory Research Associates)
Major Rate Case Decisions 1986-2021





IF YIELD =	4.3%
THEN RP =	6.2%
Ke =	10.5%

APPENDIX A
CAPM, EMPIRICAL CAPM

The Capital Asset Pricing Model (CAPM) is a fundamental paradigm of finance. Simply put, the fundamental idea underlying the CAPM is that risk-averse investors demand higher returns for assuming additional risk, and higher-risk securities are priced to yield higher expected returns than lower-risk securities. The CAPM quantifies the additional return, or risk premium, required for bearing incremental risk. It provides a formal risk-return relationship anchored on the basic idea that only market risk matters, as measured by beta. According to the CAPM, securities are priced such that their:

EXPECTED RETURN = RISK-FREE RATE + RISK PREMIUM

Denoting the risk-free rate by R_F and the return on the market as a whole by R_M, the CAPM is:

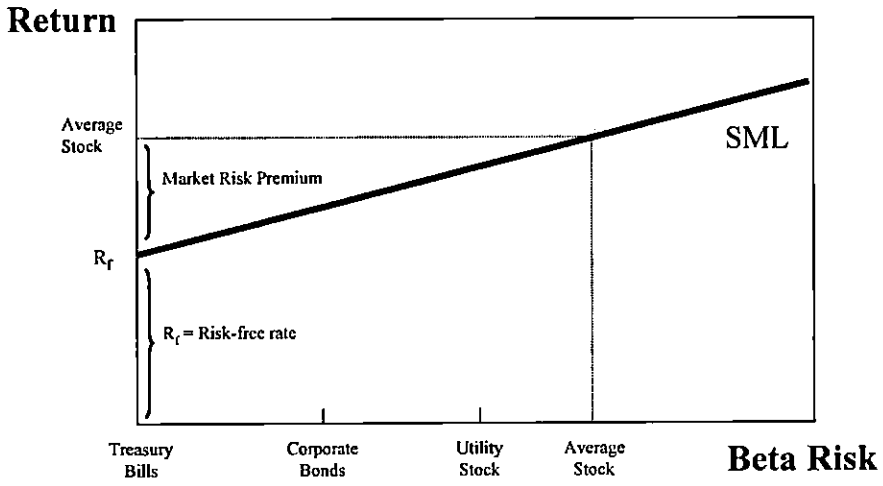
$$K = R_F + \beta(R_M - R_F) \quad (1)$$

Equation 1 is the CAPM expression which asserts that an investor expects to earn a return, K, that could be gained on a risk-free investment, R_F, plus a risk premium for assuming risk, proportional to the security's market risk, also known as beta, β, and the market risk premium, $(R_M - R_F)$, where R_M is the market return . The market risk premium $(R_M - R_F)$ can be abbreviated MRP so that the CAPM becomes:

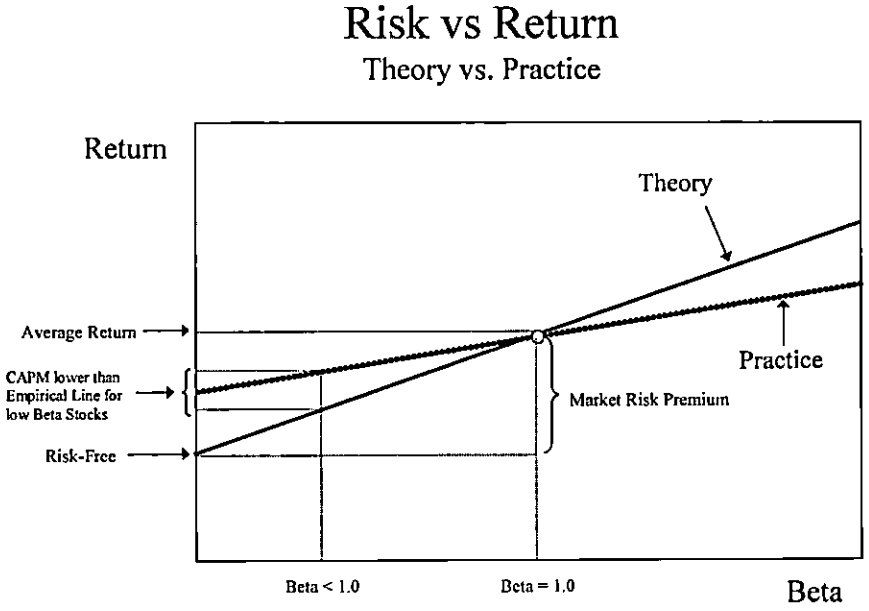
$$K = R_F + \beta \times MRP \quad (2)$$

The CAPM risk-return relationship is depicted in the figure below and is typically labeled as the Security Market Line (SML) by the investment community.

CAPM and Risk - Return in Capital Markets



A myriad empirical tests of the CAPM have shown that the risk-return tradeoff is not as steeply sloped as that predicted by the CAPM, however. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. In other words, the CAPM tends to overstate the actual sensitivity of the cost of capital to beta: low-beta stocks tend to have higher returns and high-beta stocks tend to have lower risk returns than predicted by the CAPM. The difference between the CAPM and the type of relationship observed in the empirical studies is depicted in the figure below. This is one of the most widely known empirical findings of the finance literature. This extensive literature is summarized in Chapter 13 of Dr. Morin's book [The New Regulatory Finance, Public Utilities Report Inc., Arlington, VA, 2006].



A number of refinements and expanded versions of the original CAPM theory have been proposed to explain the empirical findings. These revised CAPMs typically produce a risk-return relationship that is flatter than the standard CAPM prediction. The following equation makes use of these empirical findings by flattening the slope of the risk-return relationship and increasing the intercept:

$$K = R_F + \alpha + \beta (MRP - \alpha) \quad (3)$$

where α is the "alpha" of the risk-return line, a constant determined empirically, and the other symbols are defined as before. Alternatively, Equation 3 can be written as follows:

$$K = R_F + a\,MRP + (1-a)\,\beta\,MRP \quad (4)$$

where a is a fraction to be determined empirically. Comparing Equations 3 and 4, it is easy to see that alpha equals 'a' times MRP, that is, $\alpha = a \times MRP$

Theoretical Underpinnings

The obvious question becomes what would produce a risk return relationship which is flatter than the CAPM prediction, or in other words, how do you explain the presence of "alpha" in the above equation. The exclusion of variables aside from beta would produce this result. Three such variables are noteworthy: dividend yield, skewness, and hedging potential.

The dividend yield effects stem from the differential taxation on corporate dividends and capital gains. The standard CAPM does not consider the regularity of dividends received by investors. Utilities generally maintain high dividend payout ratios relative to the market, and by ignoring dividend yield, the CAPM provides biased cost of capital estimates. To the extent that dividend income is taxed at a higher rate than capital gains, investors will require higher pre-tax returns in order to equalize the after-tax returns provided by high-yielding stocks (e.g. utility stocks) with those of low-yielding stocks. In other words, high-yielding stocks must offer investors higher pre-tax returns. Even if dividends and capital gains are undifferentiated for tax purposes, there is still a tax bias in favor of earnings retention (lower dividend payout), as capital gains taxes are paid only when gains are realized.

Empirical studies by Litzenberger and Ramaswamy (1979) and Litzenberger et al. (1980) find that security returns are positively related to dividend yield as well as to beta. These results are consistent with after-tax extensions of the CAPM developed by Breenan (1973) and Litzenberger and Ramaswamy (1979) and suggest that the relationship between return, beta, and dividend yield should be estimated and employed to calculate the cost of equity capital.

In order to rectify the CAPM's basic shortcomings, Litzenberger, Ramaswamy, and Sosin (1980) not only summarize the criticisms of the CAPM insofar as they affect public utilities, but they also describe the econometric intricacies involved and the methods of circumventing the statistical problems[1]. Essentially, the average monthly returns over a lengthy time period on a large cross-section of securities grouped into portfolios, are related to their corresponding betas by statistical regression techniques;

[1] Litzenberger, R.H., Ramaswamy, K., and Sosin, H. "On the CAPM Approach to the Estimation of a Public Utility's Cost of Equity Capital." *Journal of Finance*, May 1980, 369-383.

that is, Equation (3) is estimated from market data. The utility's beta value is substituted into the equation to produce the cost of equity figure. Their results demonstrate how the standard CAPM underestimates the cost of equity of public utilities because of utilities' high dividend yield and return skewness.

As far as skewness is concerned, investors are more concerned with losing money than with total variability of return. If risk is defined as the probability of loss, it appears more logical to measure risk as the probability of achieving a return which is below the expected return. The traditional CAPM provides downward-biased estimates of cost of capital to the extent that these skewness effects are significant. As shown by Kraus and Litzenberger (1976), expected return depends on both on a stock's systematic risk (beta) and the systematic skewness. Empirical studies by Kraus and Litzenberger (1976), Friend, Westerfield, and Granito (1978), and Morin (1981) found that, in addition to beta, skewness of returns has a significant negative relationship with security returns. This result is consistent with the skewness version of the CAPM developed by Rubinstein (1973) and Kraus and Litzenberger (1976).

This is particularly relevant for public utilities whose future profitability is constrained by the regulatory process on the upside and relatively unconstrained on the downside in the face of socio-political realities of public utility regulation. The process of regulation, by restricting the upward potential for returns and responding sluggishly on the downward side, may impart some asymmetry to the distribution of returns, and is more likely to result in utilities earning less, rather than more, than their cost of capital. The traditional CAPM provides downward-biased estimates of cost of capital to the extent that these skewness effects are significant.

As far as hedging potential is concerned, investors are exposed to another kind of risk, namely, the risk of unfavorable shifts in the investment opportunity set. Merton (1973) shows that investors will hold portfolios consisting of three funds: the risk-free asset, the market portfolio, and a portfolio whose returns are perfectly negatively correlated with the riskless asset so as to hedge against unforeseen changes in the future risk-free rate. The higher the degree of protection offered by an asset against unforeseen changes in interest rates, the lower the required return, and conversely. Merton argues that low beta assets, like utility stocks, offer little protection against changes in interest rates, and require higher returns than suggested by the standard CAPM.

Another explanation for the CAPM's inability to fully explain the process determining security returns involves the use of an inadequate or incomplete market index. Empirical studies to validate the CAPM invariably rely on some stock market index as a proxy for the true market portfolio. The exclusion of several asset categories from the definition of market index mis-specifies the CAPM and biases the results found using only stock market data. Kolbe and Read (1983) illustrate the biases in beta estimates which result from applying the CAPM to public utilities. Unfortunately, no comprehensive and easily accessible data exist for several classes of assets, such as mortgages and business investments, so that the exact relation between return and stock betas predicted by the CAPM does not exist. This suggests that the empirical relationship between returns and stock betas is best estimated empirically (ECAPM) rather than by relying on theoretical and elegant CAPM models expanded to include missing assets effects. In any event, stock betas may be highly correlated with the true beta measured with the true market index.

Yet another explanation for the CAPM's inability to fully explain the observed risk-return tradeoff involves the possibility of constraints on investor borrowing that run counter to the assumptions of the CAPM. In response to this inadequacy, several versions of the CAPM have been developed by researchers. One of these versions is the so-called zero-beta, or two-factor, CAPM which provides for a risk-free return in a market where borrowing and lending rates are divergent. If borrowing rates and lending rates differ, or there is no risk-free borrowing or lending, or there is risk-free lending but no risk-free borrowing, then the CAPM has the following form:

$$K = R_Z + \beta(R_m - R_F)$$

The model, christened the zero-beta model, is analogous to the standard CAPM, but with the return on a minimum risk portfolio which is unrelated to market returns, R_Z, replacing the risk-free rate, R_F. The model has been empirically tested by Black, Jensen, and Scholes (1972), who found a flatter than predicted CAPM, consistent with the model and other researchers' findings.

The zero-beta CAPM cannot be literally employed in cost of capital projections, since the zero-beta portfolio is a statistical construct difficult to replicate.

Empirical Evidence

A summary of the empirical evidence on the magnitude of alpha is provided in the table below.

Empirical Evidence on the Alpha Factor		
Author	**Range of alpha**	**Period relied**
Black (1993)	-3.6% to 3.6%	1931-1991
Black, Jensen and Scholes (1972)	-9.61% to 12.24%	1931-1965
Fama and McBeth (1972)	4.08% to 9.36%	1935-1968
Fama and French (1992)	10.08% to 13.56%	1941-1990
Litzenberger and Ramaswamy (1979)	5.32% to 8.17%	
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 5.04%	1926-1978
Pettengill, Sundaram and Mathur (1995)	4.6%	
Morin (1994)	2.0%	1926-1984
Harris, Marston, Mishra, and O'Brien (2003)	2.0%	1983-1998

Given the observed magnitude of alpha, the empirical evidence indicates that the risk-return relationship is flatter than that predicted by the CAPM. Typical of the empirical evidence is the findings cited in Morin (1989) over the period 1926-1984 indicating that the observed expected return on a security is related to its risk by the following equation:

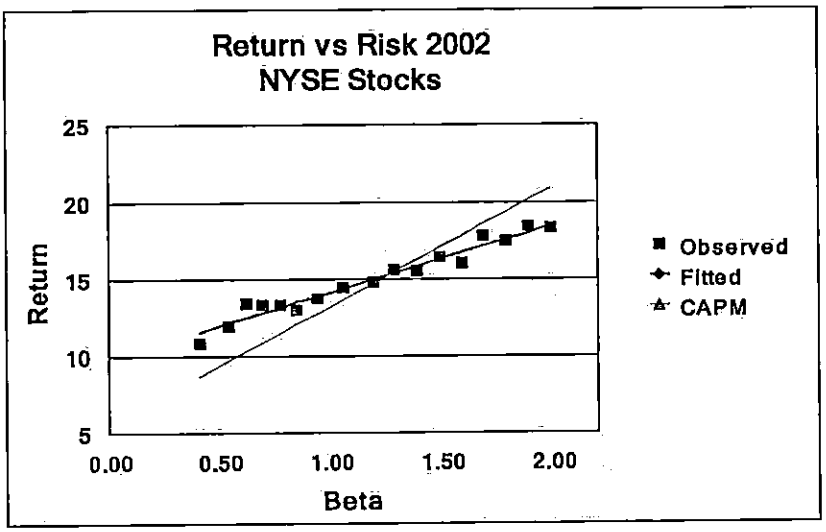
$$K = .0829 + .0520\,\beta$$

Given that the risk-free rate over the estimation period was approximately 6 percent, this relationship implies that the intercept of the risk-return relationship is higher than the 6 percent risk-free rate, contrary to the CAPM's prediction. Given that the average return on an average risk stock exceeded the risk-free rate by about 8.0 percent in that period, that is, the market risk premium (R_M - R_F) = 8 percent, the intercept of the

observed relationship between return and beta exceeds the risk-free rate by about 2 percent, suggesting an alpha factor of 2 percent.

Most of the empirical studies cited in the above table utilize raw betas rather than Value Line adjusted betas because the latter were not available over most of the time periods covered in these studies. A study of the relationship between return and adjusted beta is reported on Table 6-7 in Ibbotson Associates Valuation Yearbook 2001. If we exclude the portfolio of very small cap stocks from the relationship due to significant size effects, the relationship between the arithmetic mean return and beta for the remaining portfolios is flatter than predicted and the intercept slightly higher than predicted by the CAPM, as shown on the graph below. It is noteworthy that the Ibbotson study relies on adjusted betas as stated on page 95 of the aforementioned study.

CAPM vs ECAPM

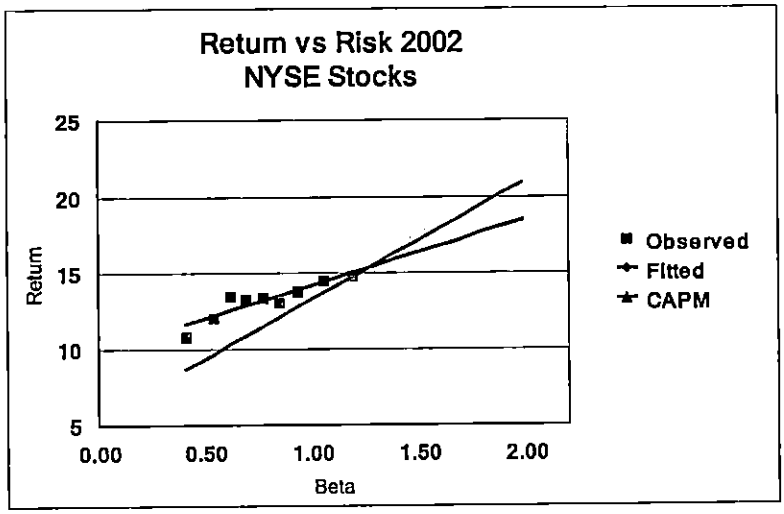


Another study by Morin in May 2002 provides empirical support for the ECAPM. All the stocks covered in the Value Line Investment Survey for Windows for which betas and returns data were available were retained for analysis. There were nearly 2000 such stocks. The expected return was measured as the total shareholder return ("TSR") reported by Value Line over the past ten years. The Value Line adjusted beta was also retrieved from the same data base. The nearly 2000 companies for which all data were available were ranked in ascending order of beta, from lowest to highest. In order to

palliate measurement error, the nearly 2000 securities were grouped into ten portfolios of approximately 180 securities for each portfolio. The average returns and betas for each portfolio were as follows:

Portfolio #	Beta	Return
portfolio 1	0.41	10.87
portfolio 2	0.54	12.02
portfolio 3	0.62	13.50
portfolio 4	0.69	13.30
portfolio 5	0.77	13.39
portfolio 6	0.85	13.07
portfolio 7	0.94	13.75
portfolio 8	1.06	14.53
portfolio 9	1.19	14.78
portfolio 10	1.48	20.78

It is clear from the graph below that the observed relationship between DCF returns and Value Line adjusted betas is flatter than that predicted by the plain vanilla CAPM. The observed intercept is higher than the prevailing risk-free rate of 5.7 percent while the slope is less than equal to the market risk premium of 7.7 percent predicted by the plain vanilla CAPM for that period.

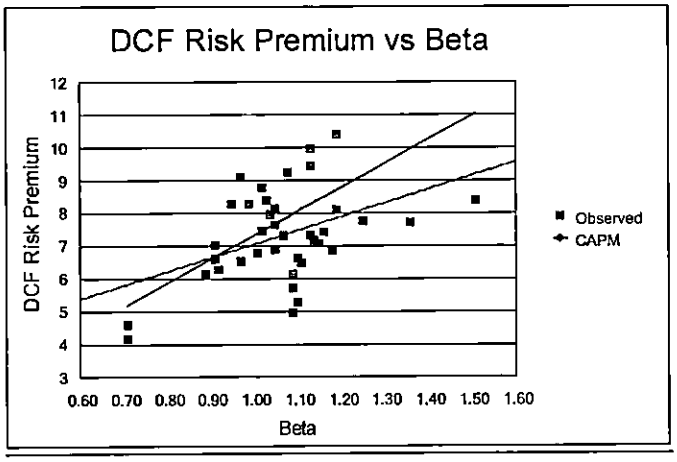


In an article published in Financial Management, Harris, Marston, Mishra, and O'Brien ("HMMO") estimate ex ante expected returns for S&P 500 companies over the

period 1983-1998[2]. HMMO measure the expected rate of return (cost of equity) of each dividend-paying stock in the S&P 500 for each month from January 1983 to August 1998 by using the constant growth DCF model. They then investigate the relation between the risk premium (expected return over the 20-year U.S. Treasury Bond yield) estimates for each month to equity betas as of that same month (5-year raw betas).

The table below, drawn from HMMO Table 4, displays the average estimate prospective risk premium (Column 2) by industry and the corresponding beta estimate for that industry, both in raw form (Column 3) and adjusted form (Column 4). The latter were calculated with the traditional Value Line – Merrill Lynch – Bloomberg adjustment methodology by giving 1/3 weight of to a beta estimate of 1.00 and 2/3 weight to the raw beta estimate.

The observed statistical relationship between expected return and **adjusted beta** is shown in the graph below along with the CAPM prediction:



[2] Harris, R. S., Marston, F. C., Mishra, D. R., and O'Brien, T. J., "*Ex Ante* Cost of Equity Estimates of S&P 500 Firms: The Choice Between Global and Domestic CAPM," Financial Management, Autumn 2003,

Table A-1 Risk Premium and Beta Estimates by Industry

	Industry	DCF Risk Premium	Raw Industry Beta	Adjusted Industry Beta
	(1)	(2)	(3)	(4)
1	Aero	6.63	1.15	1.10
2	Autos	5.29	1.15	1.10
3	Banks	7.16	1.21	1.14
4	Beer	6.60	0.87	0.91
5	BldMat	6.84	1.27	1.18
6	Books	7.64	1.07	1.05
7	Boxes	8.39	1.04	1.03
8	BusSv	8.15	1.07	1.05
9	Chems	6.49	1.16	1.11
10	Chips	8.11	1.28	1.19
11	Clths	7.74	1.37	1.25
12	Cnstr	7.70	1.54	1.36
13	Comps	9.42	1.19	1.13
14	Drugs	8.29	0.99	0.99
15	ElcEq	6.89	1.08	1.05
16	Energy	6.29	0.88	0.92
17	Fin	8.38	1.76	1.51
18	Food	7.02	0.86	0.91
19	Fun	9.98	1.19	1.13
20	Gold	4.59	0.57	0.71
21	Hlth	10.40	1.29	1.19
22	Hsld	6.77	1.02	1.01
23	Insur	7.46	1.03	1.02
24	LabEq	7.31	1.10	1.07
25	Mach	7.32	1.20	1.13
26	Meals	7.98	1.06	1.04
27	MedEq	8.80	1.03	1.02
28	Pap	6.14	1.13	1.09
29	PerSv	9.12	0.95	0.97
30	Retail	9.27	1.12	1.08
31	Rubber	7.06	1.22	1.15
32	Ships	1.95	0.95	0.97
33	Stee	4.96	1.13	1.09
34	Telc	6.12	0.83	0.89
35	Toys	7.42	1.24	1.16
36	Trans	5.70	1.14	1.09
37	Txtls	6.52	0.95	0.97
38	Util	4.15	0.57	0.71
39	Whlsl	8.29	0.92	0.95
	MEAN	**7.19**		

pp. 51-66.

If the plain vanilla version of the CAPM is correct, then the intercept of the graph should be zero, recalling that the vertical axis represents returns in excess of the risk-free rate. Instead, the observed intercept is approximately 2 percent, that is approximately equal to 25 percent of the expected market risk premium of 7.2 percent shown at the bottom of Column 2 over the 1983-1998 period, as predicted by the ECAPM. The same is true for the slope of the graph. If the plain vanilla version of the CAPM is correct, then the slope of the relationship should equal the market risk premium of 7.2 percent. Instead, the observed slope of close to 5 percent is approximately equal to 75 percent of the expected market risk premium of 7.2 percent, as predicted by the ECAPM.

In short, the HMMO empirical findings are quite consistent with the predictions of the ECAPM.

Practical Implementation of the ECAPM

The empirical evidence reviewed above suggests that the expected return on a security is related to its risk by the following relationship:

$$K = R_F + \alpha + \beta\ (MRP - \alpha) \qquad (5)$$

or, alternatively by the following equivalent relationship:

$$K = R_F + a\,MRP + (1\text{-}a)\,\beta\,MRP \qquad (6)$$

The empirical findings support values of α from approximately 2 percent to 7 percent. If one is using the short-term U.S. Treasury Bills yield as a proxy for the risk-free rate, and given that utility stocks have lower than average betas, an alpha in the lower range of the empirical findings, 2 percent - 3 percent is reasonable, albeit conservative.

Using the long-term U.S. Treasury yield as a proxy for the risk-free rate, a lower alpha adjustment is indicated. This is because the use of the long-term U.S.

Treasury yield as a proxy for the risk-free rate partially incorporates the desired effect of using the ECAPM[3]. An alpha in the range of 1 percent - 2 percent is therefore reasonable.

To illustrate, consider a utility with a beta of 0.80. The risk-free rate is 5 percent, the MRP is 7 percent, and the alpha factor is 2 percent. The cost of capital is determined as follows:

$$K = R_F + \alpha + \beta\ (MRP - \alpha)$$
$$K = 5\% + 2\% + 0.80(7\% - 2\%)$$
$$= 11\%$$

A practical alternative is to rely on the second variation of the ECAPM:

$$K = R_F + a\,MRP + (1\text{-}a)\,\beta\,MRP$$

With an alpha of 2 percent, a MRP in the 6 percent - 8 percent range, the 'a" coefficient is 0.25, and the ECAPM becomes[4]:

$$K = R_F + 0.25\,MRP + 0.75\,\beta\,MRP$$

Returning to the numerical example, the utility's cost of capital is:

$$K = 5\% + 0.25 \times 7\% + 0.75 \times 0.80 \times 7\%$$
$$= 11\%$$

For reasonable values of beta and the MRP, both renditions of the ECAPM produce results that are virtually identical[5].

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[3] The Security Market Line (SML) using the long-term risk-free rate has a higher intercept and a flatter slope than the SML using the short-term risk-free rate

[4] Recall that alpha equals 'a' times MRP, that is, alpha = a MRP, and therefore a = alpha/MRP. If alpha is 2 percent, then a = 0.25

[5] In the Morin (1994) study, the value of "a" was actually derived by systematically varying the constant "a" in equation 6 from 0 to 1 in steps of 0.05 and choosing that value of 'a' that minimized the mean square error between the observed relationship between return and beta:

$$K = 0.0829 + .0520\,\beta$$

The value of a that best explained the observed relationship was 0.25.

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APPENDIX B

FLOTATION COST ALLOWANCE

To obtain the final cost of equity financing from the investors' expected rate of return, it is necessary to make allowance for underpricing, which is the sum of market pressure, costs of flotation, and underwriting fees associated with new issues. Allowance for market pressure should be made because large blocks of new stock may cause significant pressure on market prices even in stable markets. Allowance must also be made for company costs of flotation (including such items as printing, legal and accounting expenses) and for underwriting fees.

1. MAGNITUDE OF FLOTATION COSTS

According to empirical studies, underwriting costs and expenses average at least 4% of gross proceeds for utility stock offerings in the U.S. (See Logue & Jarrow: "Negotiations vs. Competitive Bidding in the Sale of Securities by Public Utilities", Financial Management, Fall 1978.) A study of 641 common stock issues by 95 electric utilities identified a flotation cost allowance of 5.0%. (See Borum & Malley: "Total Flotation Cost for Electric Company Equity Issues", Public Utilities Fortnightly, Feb. 20, 1986.)

Empirical studies suggest an allowance of 1% for market pressure in U.S. studies. Logue and Jarrow found that the absolute magnitude of the relative price decline due to market pressure was less than 1.5%. Bowyer and Yawitz examined 278 public utility stock issues and found an average market pressure of 0.72%. (See Bowyer & Yawitz, "The Effect of New Equity Issues on Utility Stock Prices", Public Utilities Fortnightly, May 22, 1980.)

Eckbo & Masulis ("Rights vs. Underwritten Stock Offerings: An Empirical Analysis", University of British Columbia, Working Paper No. 1208, Sept., 1987) found an average flotation cost of 4.175% for utility common stock offerings. Moreover, flotation costs increased progressively for smaller size issues. They also found that the relative price decline due to market pressure in the days surrounding the

announcement amounted to slightly more than 1.5%. In a classic and monumental study published in the prestigious Journal of Financial Economics by a prominent scholar, a market pressure effect of 3.14% for industrial stock issues and 0.75% for utility common stock issues was found (see Smith, C.W., "Investment Banking and the Capital Acquisition Process," Journal of Financial Economics 15, 1986). Other studies of market pressure are reported in Logue ("On the Pricing of Unseasoned Equity Offerings, Journal of Financial and Quantitative Analysis, Jan. 1973), Pettway ("The Effects of New Equity Sales Upon Utility Share Prices," Public Utilities Fortnightly, May 10 1984), and Reilly and Hatfield ("Investor Experience with New Stock Issues," Financial Analysts' Journal, Sept.- Oct. 1969). In the Pettway study, the market pressure effect for a sample of 368 public utility equity sales was in the range of 2% to 3%. Adding the direct and indirect effects of utility common stock issues, the indicated total flotation cost allowance is above 5.0%, corroborating the results of earlier studies.

As shown in the table below, a comprehensive empirical study by Lee, Lochhead, Ritter, and Zhao, "The Costs of Raising Capital," Journal of Financial Research, Vol. XIX, NO. 1, Spring 1996, shows average direct flotation costs for equity offerings of 3.5% - 5% for stock issues between $60 and $500 million. Allowing for market pressure costs raises the flotation cost allowance to well above 5%.

In a 2014 study filed before the State of Texas Comptroller of Public Accounts Property Tax Division by Bwembya Chikolwa and Rick Parker, "Capitalization Rate Study Gas And Liquid Pipeline Industry," Appendix C, the average direct flotation cost on more than 100 common stock issuances in the gas and liquid pipeline industry was 3.22% without the market pressure effect.

In a recent comprehensive study, Tegarden Associates (2020) estimate the flotation costs for both debt and common equity issues for several hundred utilities, and find results consistent with the finding of earlier studies, namely that the direct flotation associated with utility common stock issues is 3% without the market pressure effect[1].

[1] Tegarden & Associates, "Appraisal of the Operating Properties of PacifiCorp," Utah State Tax Commission, Appeal No. 20-1050, Jan. 2020.

FLOTATION COSTS: RAISING EXTERNAL CAPITAL

(Percent of Total Capital Raised)

Amount Raised in $ Millions	Average Flotation Cost: Common Stock	Average Flotation Cost: New Debt
$ 2 - 9.99	13.28%	4.39%
10 - 19.99	8.72	2.76
20 - 39.99	6.93	2.42
40 - 59.99	5.87	1.32
60 - 79.99	5.18	2.34
80 - 99.99	4.73	2.16
100 - 199.99	4.22	2.31
200 - 499.99	3.47	2.19
500 and Up	3.15	1.64

Note: Flotation costs for IPOs are about 17 percent of the value of common stock issued if the amount raised is less than $10 million and about 6 percent if more than $500 million is raised. Flotation costs are somewhat lower for utilities than others.

Source: Lee, Inmoo, Scott Lochhead, Jay Ritter, and Quanshui Zhao, "The Costs of Raising Capital," *The Journal of Financial Research,* Spring 1996.

Therefore, based on empirical studies, total flotation costs including market pressure amount to approximately 5% of gross proceeds. It is therefore reasonable to assume a 5% total flotation cost allowance in cost of capital analyses.

2. APPLICATION OF THE FLOTATION COST ADJUSTMENT

The section below shows: 1) why it is necessary to apply an allowance of 5% to the dividend yield component of equity cost by dividing that yield by 0.95 (100% - 5%) to obtain the fair return on equity capital, and 2) why the flotation adjustment is permanently required to avoid confiscation even if no

further stock issues are contemplated. Flotation costs are only recovered if the rate of return is applied to total equity, including retained earnings, in all future years.

Flotation costs are just as real as costs incurred to build utility plant. Fair regulatory treatment absolutely must permit the recovery of these costs. An analogy with bond issues is useful to understand the treatment of flotation costs in the case of common stocks.

In the case of a bond issue, flotation costs are not expensed but are rather amortized over the life of the bond, and the annual amortization charge is embedded in the cost of service. This is analogous to the process of depreciation, which allows the recovery of funds invested in utility plant. The recovery of bond flotation expense continues year after year, irrespective of whether the company issues new debt capital in the future, until recovery is complete. In the case of common stock that has no finite life, flotation costs are not amortized. Therefore, the recovery of flotation cost requires an upward adjustment to the allowed return on equity. Roger A. Morin, Regulatory Finance, Public Utilities Reports Inc., Arlington, Va., 1994, provides numerical illustrations that show that even if a utility does not contemplate any additional common stock issues, a flotation cost adjustment is still permanently required. Examples there also demonstrate that the allowance applies to retained earnings as well as to the original capital.

From the standard DCF model, the investor's required return on equity capital is expressed as:

$$K = D_1/P_o + g$$

If P_o is regarded as the proceeds per share actually received by the company from which dividends and earnings will be generated, that is, P_o equals B_o, the book value per share, then the company's required return is:

$$r = D_1/B_o + g$$

Denoting the percentage flotation costs 'f', proceeds per share B_o are related to market price P_o as follows:

$$P - fP = B_o$$

$$P(1 - f) = B_o$$

Substituting the latter equation into the above expression for return on equity, we obtain:

$$r = D_1/P(1-f) + g$$

that is, the utility's required return adjusted for underpricing. For flotation costs of 5%, dividing the expected dividend yield by 0.95 will produce the adjusted cost of equity capital. For a dividend yield of 6% for example, the magnitude of the adjustment is 32 basis points: .06/.95 = .0632.

In deriving DCF estimates of fair return on equity, it is therefore necessary to apply a conservative after-tax allowance of 5% to the dividend yield component of equity cost.

Even if no further stock issues are contemplated, the flotation adjustment is still permanently required to keep shareholders whole. Flotation costs are only recovered if the rate of return is applied to total equity, including retained earnings, in all future years, even if no future financing is contemplated. This is demonstrated by the numerical example contained in pages 7-9 of this Appendix. Moreover, even if the stock price, hence the DCF estimate of equity return, fully reflected the lack of permanent allowance, the company always nets less than the market price. Only the net proceeds from an equity issue are used to add to the rate base on which the investor earns. A permanent allowance for flotation costs must be authorized in order to insure that in each year the investor earns the required return on the total amount of capital actually supplied.

The example shown on pages 7-9 shows the flotation cost adjustment process using illustrative, yet realistic, market data. The assumptions used in the computation are shown on page 7. The stock is selling in the market for $25, investors expect the firm to pay a dividend of $2.25 that will grow at a rate of 5% thereafter. The traditional DCF cost of equity is thus k = D/P + g = 2.25/25 + .05 = 14%. The firm sells one share stock, incurring a flotation cost of 5%. The traditional DCF cost of equity adjusted for flotation cost is thus ROE = D/P(1-f) + g = .09/.95 + .05 = 14.47%.

The initial book value (rate base) is the net proceeds from the stock issue, which are $23.75, that is, the market price less the 5% flotation costs. The example demonstrates that only if the company is allowed to earn 14.47% on rate base will investors earn their cost of equity of 14%. On page 8, Column 1 shows the initial common stock account, Column 2 the cumulative retained earnings balance, starting at zero, and steadily increasing from the retention of earnings. Total equity in Column 3 is the sum of common stock capital and retained earnings. The stock price in Column 4 is obtained from the seminal DCF formula: $D_1/(k - g)$. Earnings per share in Column 6 are simply the allowed return of 14.47% times

the total common equity base. Dividends start at $2.25 and grow at 5% thereafter, which they must do if investors are to earn a 14% return. The dividend payout ratio remains constant, as per the assumption of the DCF model. All quantities, stock price, book value, earnings, and dividends grow at a 5% rate, as shown at the bottom of the relevant columns. Only if the company is allowed to earn 14.47% on equity do investors earn 14%. For example, if the company is allowed only 14%, the stock price drops from $26.25 to $26.13 in the second year, inflicting a loss on shareholders. This is shown on page 9. The growth rate drops from 5% to 4.53%. Thus, investors only earn 9% + 4.53% = 13.53% on their investment. It is noteworthy that the adjustment is always required each and every year, whether or not new stock issues are sold in the future, and that the allowed return on equity must be earned on total equity, including retained earnings, for investors to earn the cost of equity.

ASSUMPTIONS:

ISSUE PRICE =	$25.00
FLOTATION COST =	5.00%
DIVIDEND YIELD =	9.00%
GROWTH =	5.00%
EQUITY RETURN = (D/P + g)	**14.00%**
ALLOWED RETURN ON EQUITY = (D/P(1-f) + g)	**14.47%**

Yr	COMMON STOCK (1)	RETAINED EARNINGS (2)	TOTAL EQUITY (3)	STOCK PRICE (4)	MARKET / BOOK RATIO (5)	EPS (6)	DPS (7)	PAYOUT (8)
1	$23.75	$0.000	$23.750	$25.000	1.0526	$3.438	$2.250	65.45%
2	$23.75	$1.188	$24.938	$26.250	1.0526	$3.609	$2.363	65.45%
3	$23.75	$2.434	$26.184	$27.563	1.0526	$3.790	$2.481	65.45%
4	$23.75	$3.744	$27.494	$28.941	1.0526	$3.979	$2.605	65.45%
5	$23.75	$5.118	$28.868	$30.388	1.0526	$4.178	$2.735	65.45%
6	$23.75	$6.562	$30.312	$31.907	1.0526	$4.387	$2.872	65.45%
7	$23.75	$8.077	$31.827	$33.502	1.0526	$4.607	$3.015	65.45%
8	$23.75	$9.669	$33.419	$35.178	1.0526	$4.837	$3.166	65.45%
9	$23.75	$11.340	$35.090	$36.936	1.0526	$5.079	$3.324	65.45%
10	$23.75	$13.094	$36.844	$38.783	1.0526	$5.333	$3.490	65.45%
			5.00%	**5.00%**		**5.00%**	**5.00%**	

Yr	COMMON STOCK (1)	RETAINED EARNINGS (2)	TOTAL EQUITY (3)	STOCK PRICE (4)	MARKET/ BOOK RATIO (5)	EPS (6)	DPS (7)	PAYOUT (8)
1	$23.75	$0.000	$23.750	$25.000	1.0526	$3.325	$2.250	67.67%
2	$23.75	$1.075	$24.825	$26.132	1.0526	$3.476	$2.352	67.67%
3	$23.75	$2.199	$25.949	$27.314	1.0526	$3.633	$2.458	67.67%
4	$23.75	$3.373	$27.123	$28.551	1.0526	$3.797	$2.570	67.67%
5	$23.75	$4.601	$28.351	$29.843	1.0526	$3.969	$2.686	67.67%
6	$23.75	$5.884	$29.634	$31.194	1.0526	$4.149	$2.807	67.67%
7	$23.75	$7.225	$30.975	$32.606	1.0526	$4.337	$2.935	67.67%
8	$23.75	$8.627	$32.377	$34.082	1.0526	$4.533	$3.067	67.67%
9	$23.75	$10.093	$33.843	$35.624	1.0526	$4.738	$3.206	67.67%
10	$23.75	$11.625	$35.375	$37.237	1.0526	$4.952	$3.351	67.67%
			4.53%	**4.53%**		**4.53%**	**4.53%**	