Control Number: 51415

Item Number: 11

Addendum StartPage: 0

DUGGINS
WREN
MANN &
ROMERO, LLP

One American Center
600 Congress
Suite 1900
Austin, TX 78701

P O Box 1149
Austin, TX 78767

p 512 744 9300
f 512 744 9399
www dwmrlaw com

October 22, 2020

Ms. Ana Treviño
Public Utility Commission of Texas
Central Records
1701 N. Congress Avenue
Austin, Texas 78701

RE: PUC Docket No. 51415; *Application of Southwestern Electric Power Company for Authority to Change Rates*

Dear Ms. Treviño:

On October 13, 2020, Southwestern Electric Power Company (SWEPCO) filed a petition with the Public Utility Commission of Texas (Commission) seeking authority to change the company's base rates. SWEPCO submitted with its petition a rate filing package (RFP) in accordance with the Commission's *Electric Utility Rate Filing Package for Generating Utilities.* The following RFP Schedules were submitted as part of this filing as individual files and can be located in the Native Files links for Item 1 in Docket No. 51415 on the Commission's Interchange:

- Schedule A-3 (Proforma Adjustments);
- Schedule G-10 Attachment 3 (Factoring Benefit);
- Schedule G-14.2 (Rate Case Expense – Prior Rate Applications);
- Schedule H-13.1a (Voltage Surveys);
- Schedule H-13.2 (1E-417R Reports);
- Schedule J (Cash Flow), Schedule J (Income Statement), and Schedule J (Statement of Changes in Equity and Comp Income);
- Schedule J-1 (Entity Financial Statements), in its entirety;
- Schedule P (and all related sub-schedules); and
- Schedule Q-8.8 SWEPCO Tariff Schedules.[1]

In addition, the following RFP schedules and workpapers were inadvertently omitted from SWEPCO's RFP:

- Schedule G-10;
- WP/E-4 (Cash Working Capital); and

[1] RFP Schedule Q-8.8, which SWEPCO filed on October 14, can be located in the Native File links for Item 6 on the Commission's Interchange.

- WP/G-12 (Below the Line Expense).

Copies of these items are attached to this letter.

Further, SWEPCO has identified an error in the filed version of RFP Schedule G-14.2. A corrected version of the schedule is attached to this letter. SWEPCO requests that the parties replace the as-filed version of RFP Schedule G-14.2 in its entirety with the corrected version provided hereto.

SWEPCO has also determined that Appendix A to the Direct Testimony and Exhibits of Dylan D'Ascendis as well as Mr. D'Ascendis's Workpaper No. 19 were inadvertently excluded from SWEPCO's filing. Copies of both of these items are attached to this letter.

Finally, SWEPCO has determined that it provided two versions of RFP Schedule G-7.3. The correct version is found at Bates pages 3088-3090. Two native versions of Schedule G-7.3 were also filed and can be located in the Native Files links for Item 1 on the Commission's Interchange for this docket. The correct native version is the Excel file named "G-7.3 (Consolidated Taxes)." SWEPCO requests that the parties disregard the versions of the schedule found at Bates pages 2985-2994, and in the tabs titled "G-7.3," "Attachment G-7.3," "G-7.3a," "G-7.3b," and "G-7-3b-1" of the native Excel file named "G-7 – NC Federal Income Tax."

Respectfully submitted,

Patrick Pearsall
State Bar No. 24047492
DUGGINS WREN MANN & ROMERO, LLP
P.O. Box 1149
Austin, Texas 78767
(512) 744-9300
(512) 744-9399 (fax)

ATTORNEY FOR SOUTHWESTERN ELECTRIC POWER COMPANY

cc: All Parties of Record

SOUTHWESTERN ELECTRIC POWER COMPANY
Factoring Expense
For the Test Year Ended March 31, 2020

1. Please see Schedule G-10, Attachment 1 (Purchased Agreement) and Attachment 2 (Agency Agreement) for the agreements between AEP Credit and Southwestern Electric Power Company.

2. Exhibit B of Attachment 1 describes the factoring discount calculation. SWEPCO is requesting that the factoring discount expense, based on the carrying charge and a bad debt allowance, be included in cost of service.

   The carrying charge component includes a debt factor, an equity factor, and an average days outstanding factor. AEP Credit's capital structure as approved by the SEC is 95% debt and 5% equity The debt factor, which compensates AEP Credit for its interest cost in obtaining funding from external sources, is the daily interest rate times the 95% debt ratio. The equity factor, which provides a return to AEP Credit for the equity provided by AEP, is the return on equity approved by the PUCT grossed up for income taxes times the 5% equity ratio. The average days outstanding factor is the average daily balance of outstanding receivables divided by the average receivables purchased per day based on the previous month's transactions. This factor is reset monthly on the fifth business day. The total carrying cost component is determined by: 1) combining the debt factor and the equity factor for an overall annual carrying charge rate, 2) dividing the annual carrying charge rate by 360 to obtain the daily rate, and 3) multiplying the daily rate by the average days outstanding factor.

   The collection experience component (i.e., bad debt allowance) compensates AEP Credit for uncollectible receivables and is reset monthly on the fifth business day. The bad debt expense component is calculated by dividing the net amount of receivables charged-off over the last 12 months by the amount of receivables purchased for the same time period. The net amount of receivables charged-off is the dollar amount charged-off as uncollectible less any recoveries previously charged-off plus an excess of 90-day past due receivables. The 90-day surcharge penalizes SWEPCO's failure to charge off a receivable by adding excessive aged accounts to the collection experience factoring rate.

   The face amount purchased from SWEPCO is multiplied by the sum of the carrying cost component and the collection experience component to derive the discount amount. The total discount amount is subtracted from the total face amount purchased resulting in the price AEP Credit pays SWEPCO for the receivables.
   The agency fee component provides AEP Credit with additional protection from excessive charge-offs. This fee is not recorded as factoring expense by SWEPCO. At the time receivables are purchased by AEP Credit, 2% of the cash is withheld from SWEPCO until collection. Upon collection of the receivables, AEP Credit returns the 2% withheld to SWEPCO.

3. SWEPCO's factoring agreement with AEP Credit results in a much lower overall cost of financing than would otherwise be incurred if SWEPCO's capital structure

Sponsored by: Renee Hawkins / Michael Baird

SOUTHWESTERN ELECTRIC POWER COMPANY
Factoring Expense
For the Test Year Ended March 31, 2020

was used to finance its receivables. Schedule G-10, Attachment 3, provides the benefit to the ratepayer of factoring as opposed to SWEPCO financing the carrying costs at its weighted average cost of capital.

4. Please see Schedule G-10, Attachment 4, for the monthly summaries from AEP Credit for the test year.

5. SWEPCO does not record uncollectible expense for the receivables sold to AEP Credit.

Sponsored by: Renee Hawkins / Michael Baird

SOUTHWESTERN ELECTRIC POWER COMPANY
LEAD/LAG STUDY RESULTS
FOR THE TEST YEAR ENDED MARCH 31, 2020

Line No.	Description	Revenue Lag Days *	Expense Lead Days	46449 WP Reference
	(a)	(b)	(c)	(d)
1	**Operation & Maintenance Expense**			
2	Fuel			
3	Coal	4.73	(19.67)	WP/E-4/2
4	Oil	4 73	(26.15)	WP/E-4/3
5	Gas	4.73	(40.12)	WP/E-4/4
6	Lignite	4.73	(30.75)	WP/E-4/5
7	Purchased Power	4.73	(36.54)	WP/E-4/6
8	Other O&M	4.73	(39.92)	WP/E-4/7
9				
10	**Federal Income Tax**			
11	Current	4.73	(36 50)	WP/E-4/8
12	Deferred	0.00	0 00	
13				
14	**State Income Tax**			
15	Current	4.73	(36.50)	WP/E-4/9
16	Deferred	0.00	0 00	
17				
18	**Taxes Other Than Income Taxes**			
19	Payroll Taxes	4.73	(22.36)	WP/E-4/10
20	Local Franchise Tax	4.73	(66.54)	WP/E-4/11
21	Public Utility Commission Tax	4.73	(306.30)	WP/E-4/12
22	Texas State Franchise (GM) Tax	4.73	46.00	WP/E-4/13
23	Ad Valorem Taxes			
24	Arkansas	4 73	(393.65)	WP/E-4/14
25	All Other States	4 73	(188.30)	WP/E-4/15
26	Texas State Gross Receipts Tax	4 73	(75.00)	WP/E-4/16
27	Miscellaneous Taxes Other Than Income Taxes	4 73	(4.73)	
28				
29	Interest on Customer Deposits	4.73	(164.16)	WP/E-4/17
30				
31	Depreciation Expense	0.00	0.00	
32				
33	Return	0.00	0 00	
34				
35	Working Funds and Other		$ (2,706,815)	WP/E-4/18
36				
37	* Reference 46449 WP/E-4/1			

Note. SWEPCO is using the same lead-lag study data as approved in the most recent rate case, Docket 46449.

Sponsored By: Michael Baird

SOUTHWESTERN ELECTRIC POWER COMPANY
Below the Line Account 426 Reclassifications to COS
For the Test Year Ended March 31, 2020

	Ref	4261	4264	4265	4210	Total
	G4 1a	-	-	-	-	-
	G4.1b	-	-	-	-	-
	G4 1c	-	-	-	-	-
	G4 1d	-	-	-	-	-
Total G4 1		-	-	-	-	-
	G4.2a	203,637	-	-	-	203,637
	G4.2b	1,927,327	-	53	-	1,927,380
	G4 2c	205,909	-	-	-	205,909
Total G4.2		2,336,873	-	53	-	2,336,926
	G4 3a	5,454	111	5,242	-	10,808
	G4 3b	-	27,389	92,370	-	119,759
	G4 3c	-	1,710	31,170	129	33,009
	G4 3d	-	-	-	-	-
	G4.3e	-	-	-	-	-
Total G4 3		5,454	29,211	128,782	129	163,577
		2,342,328	29,211	128,835	129	2,500,503
				(A)		

Account 4265- Other	53
Account 4265- Business-Economic/Professional Dues	128,782
	128,835
	(A)

Sponsored by: Michael Baird

Schedule G-14.2
Corrected

SOUTHWESTERN ELECTRIC POWER COMPANY
Rate Case Expense - Prior Rate Applications
For the Test Year Ended March 31, 2020

Line	(1) Description	(2) Docket No	(3) Amount Incurred	(4) Company Adjustments	(5) Company Request
1	The materials required by the schedule are provided in the Direct Testimony and Exhibits of Lynn Ferry-Nelson	49042			
2	The materials required by the schedule are provided in the Direct Testimony and Exhibits of Lynn Ferry-Nelson	46449			
3	The materials required by the schedule are provided in the Direct Testimony and Exhibits of Lynn Ferry-Nelson	40443			

Sponsored by Michael Baird

Summary

Dylan is an experienced consultant and a Certified Rate of Return Analyst (CRRA) and Certified Valuation Analyst (CVA). He has served as a consultant for investor-owned and municipal utilities and authorities for 12 years. Dylan has extensive experience in rate of return analyses, class cost of service, rate design, and valuation for regulated public utilities He has testified as an expert witness in the subjects of rate of return, cost of service, rate design, and valuation before 23 regulatory commissions in the U S., one Canadian province, and an American Arbitration Association panel.

He also maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured.

Areas of Specialization

- ☑ Regulation and Rates
- ☑ Utilities
- ☑ Mutual Fund Benchmarking
- ☐ Capital Market Risk
- ☑ Financial Modeling
- ☑ Valuation
- ☐ Regulatory Strategy
- ☐ Rate Case Support
- ☐ Rate of Return
- ☑ Cost of Service
- ☐ Rate Design

Recent Expert Testimony Submission/Appearances

Jurisdiction	***Topic***
☐ Massachusetts Department of Public Utilities	Rate of Return
☐ New Jersey Board of Public Utilities	Rate of Return
☐ Hawaii Public Utilities Commission	Cost of Service, Rate Design
☐ South Carolina Public Service Commission	Return on Common Equity
☐ American Arbitration Association	Valuation

Recent Assignments

- ☐ Provided expert testimony on the cost of capital for ratemaking purposes before numerous state utility regulatory agencies
- ☐ Maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured
- ☐ Sponsored valuation testimony for a large municipal water company in front of an American Arbitration Association Board to justify the reasonability of their lease payments to the City
- ☐ Co-authored a valuation report on behalf of a large investor-owned utility company in response to a new state regulation which allowed the appraised value of acquired assets into rate base

Recent Publications and Speeches

- ☐ Co-Author of: "Decoupling, Risk Impacts and the Cost of Capital", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University and Pauline M. Ahern. The Electricity Journal, March, 2020.
- ☐ Co-Author of: "Decoupling Impact and Public Utility Conservation Investment", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University and Pauline M. Ahern. Energy Policy Journal, 130 (2019), 311-319.
- ☐ "Establishing Alternative Proxy Groups", before the Society of Utility and Regulatory Financial Analysts: 51st Financial Forum, April 4, 2019, New Orleans, LA.
- ☐ "Past is Prologue: Future Test Year", Presentation before the National Association of Water Companies 2017 Southeast Water Infrastructure Summit, May 2, 2017, Savannah, GA
- ☐ Co-author of: "Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model", co-authored with Richard A Michelfelder, Ph.D., Rutgers University, Pauline M. Ahern, and Frank J. Hanley, The Electricity Journal, May, 2013.
- ☐ "Decoupling: Impact on the Risk and Cost of Common Equity of Public Utility Stocks", before the Society of Utility and Regulatory Financial Analysts: 45th Financial Forum, April 17-18, 2013, Indianapolis, IN.

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Regulatory Commission of Alaska				
Alaska Power Company	09/20	Alaska Power Company; Goat Lake Hydro, Inc.; BBL Hydro, Inc	Tariff Nos. TA886-2; TA6-521; TA4-573	Capital Structure
Alaska Power Company	07/16	Alaska Power Company	Docket No. TA857-2	Rate of Return
Alberta Utilities Commission				
AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	01/20	AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	2021 Generic Cost of Capital, Proceeding ID. 24110	Rate of Return
Arizona Corporation Commission				
EPCOR Water Arizona, Inc.	06/20	EPCOR Water Arizona, Inc.	Docket No. WS-01303A-20-0177	Rate of Return
Arizona Water Company	12/19	Arizona Water Company – Western Group	Docket No. W-01445A-19-0278	Rate of Return
Arizona Water Company	08/18	Arizona Water Company – Northern Group	Docket No. W-01445A-18-0164	Rate of Return
Colorado Public Utilities Commission				
Summit Utilities, Inc.	04/18	Colorado Natural Gas Company	Docket No. 18AL-0305G	Rate of Return
Atmos Energy Corporation	06/17	Atmos Energy Corporation	Docket No. 17AL-0429G	Rate of Return
Delaware Public Service Commission				
Delmarva Power & Light Co.	10/20	Delmarva Power & Light Co.	Docket No. 20-0150	Rate of Return
Tidewater Utilities, Inc.	11/13	Tidewater Utilities, Inc.	Docket No. 13-466	Capital Structure
Public Service Commission of the District of Columbia				
Washington Gas Light Company	09/20	Washington Gas Light Company	Formal Case No. 1162	Rate of Return
Florida Public Service Commission				
Peoples Gas System	09/20	Peoples Gas System	Docket No. 20200051-GU	Rate of Return
Utilities, Inc. of Florida	06/20	Utilities, Inc. of Florida	Docket No. 20200139-WS	Rate of Return
Hawaii Public Utilities Commission				
Lanai Water Company, Inc.	12/19	Lanai Water Company, Inc.	Docket No. 2019-0386	Cost of Service / Rate Design
Manele Water Resources, LLC	08/19	Manele Water Resources, LLC	Docket No. 2019-0311	Cost of Service / Rate Design
Kaupulehu Water Company	02/18	Kaupulehu Water Company	Docket No. 2016-0363	Rate of Return
Aqua Engineers, LLC	05/17	Puhi Sewer & Water Company	Docket No. 2017-0118	Cost of Service / Rate Design
Hawaii Resources, Inc.	09/16	Laie Water Company	Docket No. 2016-0229	Cost of Service / Rate Design
Illinois Commerce Commission				
Ameren Illinois Company d/b/a Ameren Illinois	07/20	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 20-0308	Return on Equity
Utility Services of Illinois, Inc.	11/17	Utility Services of Illinois, Inc.	Docket No. 17-1106	Cost of Service / Rate Design
Aqua Illinois, Inc.	04/17	Aqua Illinois, Inc.	Docket No. 17-0259	Rate of Return
Utility Services of Illinois, Inc.	04/15	Utility Services of Illinois, Inc.	Docket No. 14-0741	Rate of Return
Indiana Utility Regulatory Commission				

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Aqua Indiana, Inc.	03/16	Aqua Indiana, Inc. Aboite Wastewater Division	Docket No. 44752	Rate of Return
Twin Lakes, Utilities, Inc.	08/13	Twin Lakes, Utilities, Inc.	Docket No. 44388	Rate of Return
Kansas Corporation Commission				
Atmos Energy	07/19	Atmos Energy	19-ATMG-525-RTS	Rate of Return
Louisiana Public Service Commission				
Atmos Energy	04/20	Atmos Energy	Docket No. U-35535	Rate of Return
Louisiana Water Service, Inc.	06/13	Louisiana Water Service, Inc	Docket No. U-32848	Rate of Return
Maryland Public Service Commission				
Washington Gas Light Company	08/20	Washington Gas Light Company	Case No. 9651	Rate of Return
FirstEnergy, Inc.	08/18	Potomac Edison Company	Case No. 9490	Rate of Return
Massachusetts Department of Public Utilities				
Unitil Corporation	12/19	Fitchburg Gas & Electric Co. (Elec.)	D.P.U. 19-130	Rate of Return
Unitil Corporation	12/19	Fitchburg Gas & Electric Co. (Gas)	D.P.U. 19-131	Rate of Return
Liberty Utilities	07/15	Liberty Utilities d/b/a New England Natural Gas Company	Docket No. 15-75	Rate of Return
Mississippi Public Service Commission				
Atmos Energy	03/19	Atmos Energy	Docket No. 2015-UN-049	Capital Structure
Atmos Energy	07/18	Atmos Energy	Docket No. 2015-UN-049	Capital Structure
Missouri Public Service Commission				
Indian Hills Utility Operating Company, Inc.	10/17	Indian Hills Utility Operating Company, Inc.	Case No. SR-2017-0259	Rate of Return
Raccoon Creek Utility Operating Company, Inc.	09/16	Raccoon Creek Utility Operating Company, Inc.	Docket No SR-2016-0202	Rate of Return
Public Utilities Commission of Nevada				
Southwest Gas Corporation	08/20	Southwest Gas Corporation	Docket No. 20-02023	Return on Equity
New Jersey Board of Public Utilities				
FirstEnergy	02/20	Jersey Central Power & Light Co.	Docket No. ER20020146	Rate of Return
Aqua New Jersey, Inc.	12/18	Aqua New Jersey, Inc.	Docket No. WR18121351	Rate of Return
Middlesex Water Company	10/17	Middlesex Water Company	Docket No. WR17101049	Rate of Return
Middlesex Water Company	03/15	Middlesex Water Company	Docket No. WR15030391	Rate of Return
The Atlantic City Sewerage Company	10/14	The Atlantic City Sewerage Company	Docket No. WR14101263	Cost of Service / Rate Design
Middlesex Water Company	11/13	Middlesex Water Company	Docket No. WR1311059	Capital Structure
North Carolina Utilities Commission				
Duke Energy Carolinas, LLC	07/20	Duke Energy Carolinas, LLC	Docket No. E-7, Sub 1214	Return on Equity
Duke Energy Progress, LLC	07/20	Duke Energy Progress, LLC	Docket No E-2, Sub 1219	Return on Equity
Aqua North Carolina, Inc.	12/19	Aqua North Carolina, Inc.	Docket No. W-218 Sub 526	Rate of Return
Carolina Water Service, Inc.	06/19	Carolina Water Service, Inc.	Docket No. W-354 Sub 364	Rate of Return
Carolina Water Service, Inc.	09/18	Carolina Water Service, Inc.	Docket No. W-354 Sub 360	Rate of Return
Aqua North Carolina, Inc.	07/18	Aqua North Carolina, Inc.	Docket No. W-218 Sub 497	Rate of Return

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Public Utilities Commission of Ohio				
Aqua Ohio, Inc.	05/16	Aqua Ohio, Inc.	Docket No. 16-0907-WW-AIR	Rate of Return
Pennsylvania Public Utility Commission				
Valley Energy, Inc.	07/19	C&T Enterprises	Docket No. R-2019-3008209	Rate of Return
Wellsboro Electric Company	07/19	C&T Enterprises	Docket No. R-2019-3008208	Rate of Return
Citizens' Electric Company of Lewisburg	07/19	C&T Enterprises	Docket No. R-2019-3008212	Rate of Return
Steelton Borough Authority	01/19	Steelton Borough Authority	Docket No. A-2019-3006880	Valuation
Mahoning Township, PA	08/18	Mahoning Township, PA	Docket No. A-2018-3003519	Valuation
SUEZ Water Pennsylvania Inc.	04/18	SUEZ Water Pennsylvania Inc.	Docket No. R-2018-000834	Rate of Return
Columbia Water Company	09/17	Columbia Water Company	Docket No. R-2017-2598203	Rate of Return
Veolia Energy Philadelphia, Inc.	06/17	Veolia Energy Philadelphia, Inc.	Docket No. R-2017-2593142	Rate of Return
Emporium Water Company	07/14	Emporium Water Company	Docket No. R-2014-2402324	Rate of Return
Columbia Water Company	07/13	Columbia Water Company	Docket No R-2013-2360798	Rate of Return
Penn Estates Utilities, Inc.	12/11	Penn Estates, Utilities, Inc.	Docket No. R-2011-2255159	Capital Structure / Long-Term Debt Cost Rate
South Carolina Public Service Commission				
Blue Granite Water Co.	12/19	Blue Granite Water Company	Docket No. 2019-292-WS	Rate of Return
Carolina Water Service, Inc.	02/18	Carolina Water Service, Inc.	Docket No. 2017-292-WS	Rate of Return
Carolina Water Service, Inc.	06/15	Carolina Water Service, Inc.	Docket No. 2015-199-WS	Rate of Return
Carolina Water Service, Inc.	11/13	Carolina Water Service, Inc.	Docket No. 2013-275-WS	Rate of Return
United Utility Companies, Inc.	09/13	United Utility Companies, Inc.	Docket No. 2013-199-WS	Rate of Return
Utility Services of South Carolina, Inc	09/13	Utility Services of South Carolina, Inc.	Docket No. 2013-201-WS	Rate of Return
Tega Cay Water Services, Inc.	11/12	Tega Cay Water Services, Inc.	Docket No. 2012-177-WS	Capital Structure
Tennessee Public Utility Commission				
Piedmont Natural Gas Company	07/20	Piedmont Natural Gas Company	Docket No. 20-00086	Return on Equity
Virginia State Corporation Commission				
Aqua Virginia, Inc.	07/20	Aqua Virginia, Inc.	PUR-2020-00106	Rate of Return
WGL Holdings, Inc.	07/18	Washington Gas Light Company	PUR-2018-00080	Rate of Return
Atmos Energy Corporation	05/18	Atmos Energy Corporation	PUR-2018-00014	Rate of Return
Aqua Virginia, Inc.	07/17	Aqua Virginia, Inc.	PUR-2017-00082	Rate of Return
Massanutten Public Service Corp.	08/14	Massanutten Public Service Corp.	PUE-2014-00035	Rate of Return / Rate Design

NEW

REGULATORY

FINANCE

Roger A. Morin, PhD

2006
PUBLIC UTILITIES REPORTS, INC.
Vienna, Virginia

First Printing, June 2006

Library of Congress Cataloging-in-Publication Data
Morin, Roger A.
New regulatory finance/Roger A. Morin.
p. cm.
Rev. ed. of: Regulatory finance. 1994.
Includes bibliographical references and index.
ISBN-13: 978-0-910325-05-9
ISBN-10: 0-910325-05-7
1. Public utilities—United States—Finance. 2. Public utilities—Rate of return. 3. Public utilities—Law and legislation—United States. 4. Capital costs—United States. I. Morin, Roger A. Regulatory finance. II. Public Utilities Reports, Inc. III. Title.

HD2766.M62 2006
363.6068'1—dc22

2006018026

Printed in the United States of America

Chapter 6
Alternative Asset Pricing Models

6.1 Empirical Validity of the CAPM

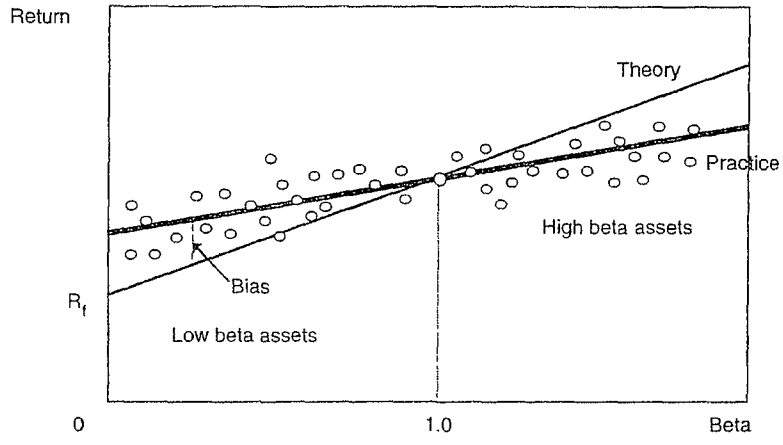
The last chapter showed that the practical difficulties of implementing the CAPM approach are surmountable. Conceptual and empirical problems remain, however.

At the conceptual level, the CAPM has been submitted to criticisms by academicians and practitioners. Contrary to the core assumption of the CAPM, investors may choose not to diversify, and bear company-specific risk if abnormal returns are expected. A substantial percentage of individual investors are indeed inadequately diversified. Short selling is somewhat restricted, in violation of CAPM assumptions. Factors other than market risk (beta) may also influence investor behavior, such as taxation, firm size, and restrictions on borrowing.

At the empirical level, there have been countless tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as predicted by the CAPM. With few exceptions, the empirical studies agree that the implied intercept term exceeds the risk-free rate and the slope term is less than predicted by the CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. This is shown pictorially in Figure 6-1. A CAPM-based estimate of cost of capital underestimates the return required from low-beta securities and overstates the return required from high-beta securities, based on the empirical evidence. Brealey, Myers, and Allen (2006), among many others,[1] provide recent empirical evidence very similar to the relationship depicted in Figure 6-1. This is one of the most

[1] For a summary of the empirical evidence on the CAPM, see Jensen (1972) and Ross (1978). The major empirical tests of the CAPM were published by Friend and Blume (1975), Black, Jensen, and Scholes (1972), Miller and Scholes (1972), Blume and Friend (1973), Blume and Husic (1973), Fama and Macbeth (1972), Basu (1977), Reinganum (1981B), Litzenberger and Ramaswamy (1979), Banz (1981), Gibbons (1982), Stambaugh (1982), Shanken (1985), Black (1993), and Brealey, Myers, and Allen (2006). Evidence in the Canadian context is available in Morin (1980, 1981).

FIGURE 6-1
PREDICTED VS. OBSERVED CAPM RETURN ESTIMATES



well-known results in finance. This result is particularly pertinent for public utilities whose betas are typically less than 1.00. Based on the evidence, as shown in Figure 6-1, a CAPM-based estimate of the cost of capital underestimates the return required from such securities.

The empirical evidence also demonstrates that the SML is highly unstable over short periods and differs significantly from the long-run relationship. This evidence underscores the potential for error in cost of capital estimates that apply the CAPM using historical data over short time periods. The evidence[2] also shows that the addition of specific company risk, as measured by standard deviation, adds explanatory power to the risk-return relationship.

In short, the currently available empirical evidence indicates that the simple version of the CAPM does not provide a perfectly accurate description of the process determining security returns. Explanations for this shortcoming include some or all of the following:

1. The CAPM excludes other important variables that are important in determining security returns, such as size, skewness, and taxes.
2. The market index used in the tests excludes important classes of securities, such as bonds, mortgages, and business investments. There is a further argument that the CAPM can never be really tested and that such a test is infeasible. This is because the market index proxy used

[2] See Friend, Westerfield, and Granito (1978) and Morin (1980).

The model is analogous to the standard CAPM, but with the return on a minimum risk portfolio that 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 find a flatter than predicted SML, consistent with the model and other researchers' findings. An updated version of the Black-Jensen-Scholes study is available in Brealey, Myers, and Allen (2006) and reaches similar conclusions.

The zero-beta CAPM cannot be literally employed to estimate the cost of capital, since the zero-beta portfolio is a statistical construct difficult to replicate. Attempts to estimate the model are formally equivalent to estimating the constants, a and b, in Equation 6-2. A practical alternative is to employ the Empirical CAPM, to which we now turn.

6.3 Empirical CAPM

As discussed in the previous section, several finance scholars have developed refined and expanded versions of the standard CAPM by relaxing the constraints imposed on the CAPM, such as dividend yield, size, and skewness effects. These enhanced CAPMs typically produce a risk-return relationship that is flatter than the CAPM prediction in keeping with the actual observed risk-return relationship. The ECAPM makes use of these empirical findings. The ECAPM estimates the cost of capital with the equation:

$$K = R_F + \acute{\alpha} + \beta \times (MRP - \acute{\alpha}) \qquad (6\text{-}5)$$

where $\acute{\alpha}$ is the "alpha" of the risk-return line, a constant, and the other symbols are defined as before. All the potential vagaries of the CAPM are telescoped into the constant $\acute{\alpha}$, which must be estimated econometrically from market data. Table 6-2 summarizes[10] the empirical evidence on the magnitude of alpha.[11]

[10] The technique is formally applied by Litzenberger, Ramaswamy, and Sosin (1980) to public utilities in order to rectify the CAPM's basic shortcomings. Not only do they 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. 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; that is, Equation 6-5 is estimated from market data. The utility's beta value is substituted into the equation to produce the cost of equity figure. Their own results demonstrate how the standard CAPM underestimates the cost of equity capital of public utilities because of utilities' high dividend yield and return skewness.

[11] Adapted from Vilbert (2004).

TABLE 6-2
EMPIRICAL EVIDENCE ON THE ALPHA FACTOR

Author	Range of alpha
Fischer (1993)	−3.6% to 3.6%
Fischer, Jensen and Scholes (1972)	−9.61% to 12.24%
Fama and McBeth (1972)	4.08% to 9.36%
Fama and French (1992)	10.08% to 13.56%
Litzenberger and Ramaswamy (1979)	5.32% to 8.17%
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 5.04%
Pettengill, Sundaram and Mathur (1995)	4.6%
Morin (1989)	2.0%

For an alpha in the range of 1%–2% and for reasonable values of the market risk premium and the risk-free rate, Equation 6-5 reduces to the following more pragmatic form:

$$K = R_F + 0.25\ (R_M - R_F) + 0.75\ \beta(R_M - R_F) \qquad (6\text{-}6)$$

Over reasonable values of the risk-free rate and the market risk premium, Equation 6-6 produces results that are indistinguishable from the ECAPM of Equation 6-5.[12]

An alpha range of 1%–2% is somewhat lower than that estimated empirically. The use of a lower value for alpha leads to a lower estimate of the cost of capital for low-beta stocks such as regulated utilities. This is because the use of a long-term risk-free rate rather than a short-term risk-free rate already incorporates some of the desired effect of using the ECAPM. That is, the

[12] Typical of the empirical evidence on the validity of the CAPM is a study by Morin (1989) who found that the relationship between the expected return on a security and beta over the period 1926–1984 was given by:

$$\text{Return} = 0.0829 + 0.0520\ \beta$$

Given that the risk-free rate over the estimation period was approximately 6% and that the market risk premium was 8% during the period of study, the intercept of the observed relationship between return and beta exceeds the risk-free rate by about 2%, or 1/4 of 8%, and that the slope of the relationship is close to 3/4 of 8%. Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

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

where x is a fraction to be determined empirically. The value of x that best explains the observed relationship Return $= 0.0829 + 0.0520\ \beta$ is between 0.25 and 0.30. If $x = 0.25$, the equation becomes:

$$K = R_F + 0.25(R_M - R_F) + 0.75\beta(R_M - R_F)$$

long-term risk-free rate version of the CAPM has a higher intercept and a flatter slope than the short-term risk-free version which has been tested. Thus, it is reasonable to apply a conservative alpha adjustment. Moreover, the lowering of the tax burden on capital gains and dividend income enacted in 2002 may have decreased the required return for taxable investors, steepening the slope of the ECAPM risk-return trade-off and bring it closer to the CAPM predicted returns.[13]

To illustrate the application of the ECAPM, assume a risk-free rate of 5%, a market risk premium of 7%, and a beta of 0.80. The Empirical CAPM equation (6-6) above yields a cost of equity estimate of 11.0% as follows:

$$K = 5\% + 0.25\,(12\% - 5\%) + 0.75 \times 0.80\,(12\% - 5\%)$$
$$= 5.0\% + 1.8\% + 4.2\%$$
$$= 11.0\%$$

As an alternative to specifying alpha, see Example 6-1.

Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend, an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary. Moreover, recall from Chapter 3 that the use of adjusted betas compensates for interest rate sensitivity of utility stocks not captured by unadjusted betas.

[13] The lowering of the tax burden on capital gains and dividend income has no impact as far as non-taxable institutional investors (pension funds, 401K, and mutual funds) are concerned, and such investors engage in very large amounts of trading on security markets. It is quite plausible that taxable retail investors are relatively inactive traders and that large non-taxable investors have a substantial influence on capital markets.