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BEFORE THE ARIZONA CORPORATION COMMISSION

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BOB STUMP  
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BOB BURNS  
COMMISSIONER

ARIZONA CORPORATION COMMISSION  
DOCKET CONTROL

Arizona Corporation Commission

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IN THE MATTER OF THE APPLICATION  
OF CHAPARRAL CITY WATER  
COMPANY FOR A DETERMINATION OF  
THE CURRENT FAIR VALUE OF ITS  
UTILITY PLANT AND PROPERTY AND  
FOR INCREASE IN ITS RATES AND  
CHARGES BASED THEREON

DOCKET NO. W-02113A-13-0118

NOTICE OF FILING  
REJOINDER TESTIMONY

Attached is the Rejoinder Testimony of Sheryl L. Hubbard, Jeffrey W. Stuck, and Pauline M. Ahern filed on behalf of Chaparral City Water Company.

RESPECTFULLY SUBMITTED this 12th day of February, 2014.

LEWIS ROCA ROTHGERBER, LLP

By   
Thomas H. Campbell  
Michael T. Hallam  
40 N. Central Avenue  
Phoenix, Arizona 85004  
Attorneys Chaparral City Water Company

ORIGINAL and thirteen (13) copies  
of the foregoing filed  
this 12th day of February, 2014, with:

The Arizona Corporation Commission  
Utilities Division – Docket Control  
1200 W. Washington Street  
Phoenix, Arizona 85007

1 Copy of the foregoing hand-delivered  
2 this 12th day of February, 2014, to:

3 Steve Olea  
4 Utilities Division  
5 Arizona Corporation Commission  
6 1200 W. Washington Street  
7 Phoenix, Arizona 85007

8 Lyn Farmer  
9 Chief Administrative Law Judge, Hearing Division  
10 Arizona Corporation Commission  
11 1200 West Washington Street  
12 Phoenix, AZ 85007

13 Janice Alward, Chief Counsel  
14 Legal Department  
15 Arizona Corporation Commission  
16 1200 W. Washington Street  
17 Phoenix, Arizona 85007

18 Copy of the foregoing mailed  
19 this 12th day of February, 2014, to

20 Daniel W. Pozefsky, Chief Counsel  
21 Residential Utility Consumer Office  
22 1110 West Washington, Suite 220  
23 Phoenix, Arizona 85007

24 Andrew J. McGuire  
25 David A. Pennartz  
26 Landon W. Loveland  
27 Gust Rosenfeld, P.L.C.  
28 One East Washington, Suite 1600  
29 Phoenix, AZ 85004  
30 Attorneys for Town of Fountain Hills

31 Lina Bellenir  
32 Vince Cannarsa  
33 16301 E. Jacklin Drive  
34 Fountain Hills, AZ 85268

35 Gale Evan  
36 Patricia Huffman  
37 16218 E. Palisades Blvd  
38 Fountain Hills, AZ 85268

39 Leigh M. Oberfeld-Berger  
40 16623 E. Ashbrook Drive, Unite #2  
41 Fountain Hills, AZ 85268

42 Tracey Holland  
43 16224 E. Palisades Blvd.  
44 Fountain Hills, AZ 85268

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Leonora m. Hebenstreit  
16632 E. Ashbrook Drive, Unit A  
Fountain Hills, AZ 85268

*Cindy Appell*

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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

BOB STUMP, Chairman  
GARY PIERCE  
BRENDA BURNS  
SUSAN BITTER SMITH  
BOB BURNS

IN THE MATTER OF THE APPLICATION OF  
CHAPARRAL CITY WATER COMPANY FOR A  
DETERMINATION OF THE CURRENT FAIR  
VALUE OF ITS UTILITY PLANT AND  
PROPERTY AND FOR INCREASE IN ITS  
RATES AND CHARGES BASED THEREON

DOCKET NO. W-02113A-13-0118

**REJOINDER TESTIMONY  
OF  
SHERYL L. HUBBARD  
ON BEHALF OF  
CHAPARRAL CITY WATER COMPANY  
FEBRUARY 12, 2014**

**REJOINDER TESTIMONY  
OF  
SHERYL L. HUBBARD  
ON BEHALF OF  
CHAPARRAL CITY WATER COMPANY  
FEBRUARY 12, 2014**

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1 **EXECUTIVE SUMMARY**

2  
3 Ms. Hubbard testifies that:

- 4
- 5 • The Company's total revised requested annual revenue increase remains at
  - 6 the filed rebuttal request of \$3,089,039 or a 34.3% increase.
  - 7
  - 8 • She is sponsoring the following exhibits:
  - 9 • Exhibit SLH-R1 – Summary of the Parties' Positions

10 I **INTRODUCTION AND QUALIFICATIONS**

11 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND**

12 **TELEPHONE NUMBER.**

13 A. My name is Sheryl L. Hubbard. My business address is 2355 W. Pinnacle

14 Peak Road, Suite 300, Phoenix, Arizona 85027, and my business phone is

15 (623) 445-2419.

16 **Q. ARE YOU THE SAME SHERYL L. HUBBARD WHO PROVIDED**

17 **DIRECT TESTIMONY AND REBUTTAL TESTIMONY IN THIS**

18 **CASE?**

19 A. Yes.

20 II **PURPOSE OF TESTIMONY**

21 **Q. WHAT IS THE PURPOSE OF YOUR REJOINDER TESTIMONY**

22 **IN THIS CASE?**

23 A. The purpose of my testimony in this phase of the Chaparral City Water

24 Company ("CCWC" or "Company") rate application is to respond to

25 several of the Arizona Corporation Commission Staff's ("ACC Staff") and

26 the Residential Utility Consumer Office's ("RUCO") recommendations as

1           they pertain to specific adjustments to the Company's rebuttal case filing  
2           as discussed below.

3           In addition, my rejoinder testimony will respond to recommendations for  
4           adjustments by the ACC Staff and RUCO witnesses to Rate Base  
5           components and revenue and expense categories sponsored in my rebuttal  
6           testimony. My rejoinder testimony is organized by subject matter  
7           primarily focusing on adjustments to CCWC's Adjusted Test Year Rate  
8           Base including cash working capital calculations, followed by Adjusted  
9           Test Year Operating Income adjustments proposed by witnesses for the  
10          ACC Staff and RUCO. In addition, I will respond to the ACC Staff's  
11          recommendation to implement a change in depreciation methodology for  
12          some assets.

13

14    **III       REVENUE REQUIREMENT**

15    **Q.       IS CCWC REVISING ITS REQUESTED REVENUE INCREASE IN**  
16    **THIS CASE IN THIS REJOINDER PHASE OF THE CASE?**

17    **A.       No. CCWC's requested revenue increase for purposes of the rejoinder**  
18    **phase of this case is the same as requested in its rebuttal request which is**  
19    **summarized in Table 1 below.**

20

21

1 **Table 1. Requested Revenue Requirement**

2

	CCWC	
	Direct	Rebuttal
Original Cost Rate Base	\$ 27,269,321	\$ 27,769,023
Adjusted Operating Income	\$ 889,596	\$ 865,297
Current Rate of Return	3.26%	3.12%
Required Operating Income	\$ 2,783,254	\$ 2,738,026
Required Rate of Return	10.21%	9.86%
Operating Income Deficiency	\$ 1,893,658	\$ 1,872,729
Gross Revenue Conversion Factor	1.6587	1.6495
Increase in Gross Revenue Requirement	\$ 3,141,028	\$ 3,089,039

3

4 **Q. HAVE YOU PREPARED AN EXHIBIT SUMMARIZING THE**  
 5 **PARTIES' RECOMMENDATIONS IN THEIR SURREBUTTAL**  
 6 **TESTIMONY?**

7 **A.** Yes. CCWC's requested revenue increase, rate base, and operating  
 8 expense are summarized on Exhibit SLH-1RJ, Summary of Parties'  
 9 Positions Including CCWC's Requested Revenue Increase.

10 **Q. WHAT OTHER REBUTTAL TESTIMONY WITNESSES ARE**  
 11 **SUPPORTING CCWC'S REQUESTED REVENUE**  
 12 **REQUIREMENT?**

13 **A.** The following persons are also providing rejoinder testimony to respond to  
 14 surrebuttal recommendations of the ACC Staff and RUCO. The topics of  
 15 their rejoinder testimony are indicated in parentheses:

1           **Mr. Jeffrey W. Stuck** (Rejoinder response to RUCO's discussion of tank  
2 maintenance disposition in other company proceedings)

3           **Ms. Pauline Ahern** (Rebuttal of the ACC Staff and RUCO's  
4 recommended return on equity)

5           **Q. PLEASE IDENTIFY THE EXHIBITS YOU ARE SPONSORING.**

6           **A.** I am sponsoring the following exhibits, which are attached to this rebuttal  
7 testimony.

- 8           • Exhibit SLH-RJ1 – Summary of the Parties' Positions

9           **IV RESPONSES TO SURREBUTTAL TESTIMONY OF MR. BECKER**

10          **Q. HAVE YOU REVIEWED THE SURREBUTTAL TESTIMONY OF**  
11          **ACC STAFF WITNESS MR. GERALD W. BECKER?**

12          **A.** Yes.

13          **Q. IN YOUR REBUTTAL TESTIMONY, YOU POINTED OUT THAT**  
14          **ACC STAFF HAD USED A HYPOTHETICAL INTEREST**  
15          **EXPENSE VERSUS AN ACTUAL CASH INTEREST EXPENSE IN**  
16          **ITS CALCULATION OF CASH WORKING CAPITAL. DID THE**  
17          **ACC STAFF RESPOND IN ITS SURREBUTTAL TESTIMONY TO**  
18          **THIS METHOD OF COMPUTING THE CASH WORKING**  
19          **CAPITAL?**

20          **A.** No. The issue was not responded to in Mr. Becker's testimony so it is not  
21 known what justification the ACC Staff had for using a non-cash expense,  
22 if you will, in the calculation of the cash working capital allowance. It is  
23 fundamentally unfair to purposely overstate an element of the cash

1 working capital calculation that is detrimental to the Company when the  
2 actual expense can be measured.

3 **Q. THE ACC STAFF RECOMMENDS A SHARING OF THE AT-RISK**  
4 **COMPENSATION (REFERRED TO BY ACC STAFF AS**  
5 **INCENTIVE COMPENSATION) THAT IS CONTINGENT ON**  
6 **THE ATTAINMENT OF OPERATIONAL GOALS ON THE BASIS**  
7 **THAT ACHIEVEMENT OF OPERATIONAL GOALS RESULT IN**  
8 **BENEFITS TO BOTH THE CUSTOMERS AND THE COMPANY.**  
9 **DO YOU AGREE?**

10 A. I do agree that achievement of operational goals benefit the customers and  
11 the Company, however, the at-risk compensation is part of the employees'  
12 compensation package and by requiring a sharing of the incentive  
13 compensation, labor expense is effectively reduced. Labor expense is a  
14 cost of service. By providing an at-risk compensation package as part of  
15 the compensation package for employees, companies with well-thought  
16 out programs are able to motivate employees to focus their day-to-day job  
17 responsibilities on delivering results that mirror the Company's culture  
18 which is communicated through the goal-setting process. EPCOR Water's  
19 corporate culture stresses the importance of working safely to go home  
20 safely each day and the importance of the culture to the Company can be  
21 seen by reviewing safety records. Whether it is an OSHA Recordable  
22 Incident Rate (ORIR) metric, or a cell phone policy that prohibits the use  
23 of a cell phone while driving, employees are learning and embracing new  
24 operating behaviors. Another one of EPCOR Water's corporate cultures is  
25 the importance of delivering quality customer service whether it is

1 communicating with the customers face-to-face or through accurate  
2 billing. Employees are expected to meet customer service goals and  
3 standards of performance which are monitored and reported to the  
4 employees on a monthly basis. Another operational metric monitors  
5 capital expenditures to motivate employees to complete construction  
6 projects on time and under budget. All of these metrics work in tandem to  
7 provide benefits to the customers and yes, some of the results may  
8 translate into reductions in operating expenses, but the cost of the at-risk  
9 compensation is labor expense.

10 **Q. ON PAGES 9 AND 10 OF MR. BECKER'S SURREBUTTAL**  
11 **TESTIMONY, MR. BECKER REFERS TO YOUR EXHIBIT SLH-**  
12 **2R AND PROCEEDS TO DISCUSS HOW YOU HAVE USED A**  
13 **VINTAGE YEAR DEPRECIATION METHOD ON THAT**  
14 **SCHEDULE. WHAT IS THE SOURCE OF EXHIBIT SLH-2R?**

15 **A.** Exhibit SLH-2R is a workpaper provided by the ACC Staff to their direct  
16 case testimony and exhibits. The initials MJR-1 (d) that appear at the top  
17 of pages 5 through 8 of that exhibit are ACC Staff member Mary J.  
18 Rimback's initials who prepared the schedule except for the two columns  
19 on pages 1 through 4 denoted by the labels "CCWC's Adjustment to  
20 Remove General Office Accumulated Depreciation" recopied below:

	<b>CCWC's Adjustment</b>
	<b>to Remove General Office</b>
	<b>Accumulated Depreciation</b>
	Corrected
	1/1/2007
REMOVE	Accum Deprec
GO	Beginning Balance
ALLOCATION	

1 I assume that the use of this exhibit was inadvertent by Staff. The exhibit  
2 was submitted to illustrate the failure of the ACC Staff to remove the  
3 Accumulated Depreciation balance associated with the General Office  
4 allocation from Golden State Water Company to CCWC in its last rate  
5 case thus resulting in the overstatement of Accumulated Depreciation  
6 balance which resulted in the ACC Staff's agreement to correct the error  
7 in its surrebuttal testimony.

8 **Q. PLEASE EXPLAIN WHY CCWC OPPOSES STAFF'S**  
9 **RECOMMENDATION TO USE THE VINTAGE METHOD OF**  
10 **DEPRECIATION.**

11 **A.** Although both the broad group depreciation method and the vintage  
12 depreciation method are supported by NARUC, switching depreciation  
13 methods has accounting and financial reporting implications. One  
14 accounting reference states:

15 **When a company changes depreciation method, the change**  
16 **will be effective only for assets placed in service after that date. Of**  
17 **course, that means depreciation schedules do not require revision**  
18 **because the change does not affect assets depreciated in prior periods.**  
19 **A disclosure note still is required to provide justification for the**  
20 **change and to report the effect of the change in the current year's**  
21 **income. ([http://connect.mcgraw-](http://connect.mcgraw-hill.com/sites/0077328787/student_view0/ebook/chapter11/chbody1/change_in_depreciation_amortization_or_depletion_method.htm)**  
22 **[hill.com/sites/0077328787/student\\_view0/ebook/chapter11/chbody1/ch](http://connect.mcgraw-hill.com/sites/0077328787/student_view0/ebook/chapter11/chbody1/change_in_depreciation_amortization_or_depletion_method.htm)**  
23 **[ange\\_in\\_depreciation\\_amortization\\_or\\_depletion\\_method.htm](http://connect.mcgraw-hill.com/sites/0077328787/student_view0/ebook/chapter11/chbody1/change_in_depreciation_amortization_or_depletion_method.htm))**

24  
25 Not only will changing from the broad group method (which CCWC has  
26 utilized and the Commission has supported) to the vintage method affect  
27 the cash flow of the company, its income in the year of change will be  
28 affected. Also, the recommendation of the ACC Staff has broad industry

1           implications for all regulated utilities in this state. Surely, this change in  
2           depreciation method should be evaluated on its merits in a forum that  
3           provides an opportunity for all utilities that will be affected by this change  
4           to voice their respective positions and vet all of the pros and cons  
5           associated with the change. Based on the size of and the limited number  
6           of companies that the ACC Staff has imposed this new depreciation  
7           methodology upon, it appears that there may have been extenuating  
8           circumstances or insufficient opportunity for those companies to  
9           adequately voice their opinions.

10  
11       **Q.    THE ACC STAFF HAS REQUESTED THAT THE COMPANY**  
12       **REVISIT THE SCHEDULE CONTAINED IN EXHIBIT SLH-2R**  
13       **AND UPDATE IT IN ITS REJOINDER. HAVE YOU DONE**  
14       **THAT?**

15       **A.**    No. There was not sufficient time to thoroughly review the file and get  
16       comfortable with all of the adjustments that were made to reclassify assets  
17       and re-allocate accumulated depreciation to the reclassified assets. I will  
18       attempt to do so prior to the hearings in this case so that CCWC can avoid  
19       an unnecessary change in depreciation methodology. There are benefits to  
20       the customer of keeping plant in service beyond its estimated useful life.  
21       These benefits include both reductions in rate base that result from the  
22       increase in accumulated depreciation that occurs as the assets are  
23       depreciated and also through the cash flow that enables the Company to  
24       continue to invest in maintenance to extend the lives of those assets or to  
25       invest in new assets to maintain safe and reliable service.

1 V **RESPONSES TO SURREBUTTAL TESTIMONY OF MR.**  
2 **MICHLIK**

3 Q. **REGARDING THE COMPANY'S PROPOSED LOW-INCOME**  
4 **PROGRAM, MR. MICHLIK STATES THAT HE IS NOT**  
5 **OPPOSED TO LEAVING THIS DOCKET OPEN SO THAT THE**  
6 **COMPANY CAN IMPLEMENT A PLAN OF ADMINISTRATION.**  
7 **IS THE COMPANY OPPOSED TO FILING A PLAN OF**  
8 **ADMINISTRATION ("POA") FOR ITS PROPOSED LOW-**  
9 **INCOME PROGRAM?**

10 A. No, however, the Company would like the opportunity to work with the  
11 ACC Staff to develop a POA for CCWC and if the Commission includes a  
12 compliance item to that effect in the decision in this case CCWC will  
13 submit a POA for the low-income program.

14 Q. **ON PAGE 40 OF MR MICHLIK'S TESTIMONY, HE REFERS TO**  
15 **AN ACC STAFF ADJUSTMENT TO INCREASE ACCUMULATED**  
16 **DEPRECIATION BY \$413,339. HAS THE ACC STAFF**  
17 **WITHDRAWN THAT ADJUSTMENT IN ITS SURREBUTTAL**  
18 **TESTIMONY?**

19 A. Yes. Mr. Becker acknowledges that the beginning balance used by the  
20 ACC Staff was incorrect and accordingly has reversed this adjustment.

1 **Q. BEGINNING ON PAGE 41 OF MR. MICHLIK'S TESTIMONY, HE**  
2 **CONTRASTS THE GROUP DEPRECIATION METHODOLOGY**  
3 **WITH THE VINTAGE DEPRECIATION METHODOLOGY. ARE**  
4 **THERE OTHER CONSIDERATIONS THE COMMISSION**  
5 **SHOULD CONSIDER IN ORDERING CCWC TO CHANGE ITS**  
6 **DEPRECIATION METHOD?**

7 A. Yes. In addition to the discussion above, I would like to point out one  
8 benefit customers receive from utilities using the broad group depreciation  
9 method. Assets that are still operating continue providing service to  
10 customers at a cost based upon the in-service date. Replacement of those  
11 assets would be at the current cost which in most cases would be higher  
12 than their historical costs. Replacement of these assets will have the effect  
13 of increasing rate base which may in turn lead to increased rates. On the  
14 other hand, although an asset may be "fully depreciated", the continuation  
15 of the depreciation afforded under the broad group depreciation  
16 methodology has the effect of actually reducing rate base because the  
17 additional depreciation expense also reduces net plant in service.

18 **Q. ARE THERE ANY COSTS TO UTILITIES TO CHANGE FROM**  
19 **THE GROUP DEPRECIATION METHODOLOGY TO THE**  
20 **VINTAGE DEPRECIATION METHODOLOGY?**

21 A. Yes. Fixed Asset accounting systems will require programming changes  
22 to enable the system to recognize the vintage that each asset was placed in  
23 service. In addition, as I understand it, the depreciation recorded to date  
24 will need to be categorized likewise to enable the cessation of depreciation

1 expense at the end of the average service life of the asset class. These  
2 efforts can by time consuming and costly and will be a recoverable  
3 expense if utilities are ordered to change their depreciation method.

4 **Q. WHAT IS YOUR RECOMMENDATION TO THE COMMISSION**  
5 **REGARDING THE ACC STAFF'S AND RUCO'S**  
6 **RECOMMENDATION TO CHANGE THE DEPRECIATION**  
7 **METHODOLOGY USED THROUGHOUT THE INDUSTRY IN**  
8 **THE STATE OF ARIZONA?**

9 A. Because a change of this nature can have unintended consequences, it  
10 would be prudent for the Commission to commence a workshop to allow  
11 all potentially affected utilities an opportunity to voice their concerns or  
12 support of such a change.

13 **Q. IN HIS SURREBUTTAL TESTIMONY, MR. MICHLIK MAKES A**  
14 **NEW PROPOSAL REGARDING THE SIB AND THE USE OF A**  
15 **DEPRECIATION FUND. PLEASE COMMENT ON THAT**  
16 **PROPOSAL.**

17 A. Very simply, this is bad public policy. This issue was first discussed  
18 during the Arizona Water Company proceeding relating to the initial  
19 adoption of the SIB Mechanism and for good reason was not adopted as  
20 part of that proceeding.

21 **Q. ARE YOU FAMILIAR WITH THE STATUTE CITED BY MR.**  
22 **MICHLIK?**

23 A. I have reviewed it, but I am not aware of the Commission ever utilizing  
24 that authority to require such depreciation funds.

1 **Q. WHY WOULD ITS USE BY BAD POLICY?**

2 A. Most importantly, it would cause higher rates. The recovery of  
3 depreciation expense provides the utility with cash flow. If depreciation  
4 funds are required for some other purpose, then this necessary cash flow  
5 would need to be made up through rates. It is also important to note that  
6 this approach is not practical. Because depreciation is based on original  
7 cost and plant costs undoubtedly increase over time, such a fund would  
8 not be sufficient to cover the cost of replacement.

9 **Q. ARE THERE OTHER ISSUES WITH THE USE OF THIS**  
10 **APPROACH?**

11 A. I am not a lawyer, but I understand that there are also legal issues with its  
12 use. Those issues were addressed during the Arizona Water Company  
13 proceeding noted above, and CCWC will address them in its briefing in  
14 this case.

15 **Q. HAS THE COMPANY REVIEWED THE PLAN OF**  
16 **ADMINISTRATION (“POA”) FOR THE SIB THAT WAS**  
17 **ATTACHED TO MS. STUKOV’S TESTIMONY?**

18 A. Yes, CCWC has reviewed it and is generally in agreement with the POA.  
19 As recommend by Staff, the Company will submit the POA within 30  
20 days of the effective date of a decision in this matter. Ms. Coleman can  
21 address that issue further at the hearing.

22 **Q. DOES YOUR SILENCE ON ANY ISSUE RAISED BY ANY PARTY**  
23 **IN SURREBUTTAL TESTIMONY INDICATE YOUR**  
24 **ACCEPTANCE OF THEIR POSITION?**

1 A. No.

2 **Q. DOES THIS CONCLUDE YOUR REJOINDER TESTIMONY IN**  
3 **THIS CASE?**

4 A. Yes.

CHAPARRAL CITY WATER COMPANY  
Test Year Ended December 31, 2012  
Summary of Computation of Increase in Gross Revenue Requirement (Schedule A-1)

Line No.	Summary of Schedule A-1s	Chaparral City Water Company			ACC		ACC Staff		RUCO			
		Direct	Rebuttal	Adjustments to CCWC's	ACC Staff	ACC Staff	ACC Staff	RUCO Adjustments to CCWC's	RUCO Adjustments to CCWC's	RUCO		
1	Original Cost Rate Base	\$ 27,269,321	\$ 499,702	\$ 27,769,023	\$ (2,102,962)	\$ 25,666,359	\$ 1,910,419	\$ 27,076,778	\$ (2,499,696)	\$ 24,762,495	\$ 7,130	\$ 24,769,625
2	Adjusted Operating Income	\$ 889,596	\$ (24,299)	\$ 865,297	\$ 497,204	\$ 1,386,800	\$ (47,349)	\$ 1,339,451	\$ 306,009	\$ 1,162,080	\$ 33,525	\$ 1,195,605
3	Current Rate of Return	3.26%		3.12%	2.25%	5.51%	-2.48%	4.95%	1.56%	4.69%	470.20%	4.83%
4	Required Operating Income	\$ 2,783,254	\$ (45,228)	\$ 2,738,026	\$ (769,945)	\$ 2,013,309	\$ 150,923	\$ 2,139,065	\$ (806,638)	\$ 2,154,337	\$ (51)	\$ 1,976,616
5	Required Rate of Return	10.21%		9.86%	-2.21%	8.00%	7.90%	7.90%	-2.23%	8.70%	-0.72%	7.98%
6	Operating Income Deficiency	\$ 1,893,658	\$ (20,929)	\$ 1,872,729	\$ (1,267,149)	\$ 626,509	\$ 198,272	\$ 799,614	\$ (1,112,647)	\$ 992,257	\$ (33,576)	\$ 781,011
7	Gross Revenue Conversion Factor	1.6587	\$ (0)	1.6495		1.6492	1.6492	1.6492	1.6496	1.6496	1.6496	1.6496
8	Increase in Gross Revenue Requirement	\$ 3,141,028	\$ (51,989)	\$ 3,089,039	\$ (2,107,793)	\$ 1,033,235	\$ 285,485	\$ 1,318,720	\$ (1,852,687)	\$ 1,636,808	\$ (348,467)	\$ 1,288,341
9	Test Year Adjusted Present Rate Revenue	\$ 9,014,985	\$ 0	\$ 9,014,985	\$ -	\$ 9,014,985	\$ 9,014,985	\$ 9,014,985	\$ 65,960	\$ 9,080,945	\$ 9,080,945	\$ 9,080,945
10	Percent Rate Increase	34.84%		-0.58%	-23.38%	11.46%	3.17%	14.63%	-20.65%	18.02%	-3.84%	14.19%
11	Return on Common Equity	11.05%		10.50%	-1.75%	9.30%	9.30%	9.30%	-1.70%	9.35%	9.35%	9.35%

CHAPARRAL CITY WATER COMPANY  
Test Year Ended December 31, 2012  
Summary of Fair Value Rate Base (Schedule B-1)

Line No.	Summary of Schedule B-1s	Chaparral City Water Company		CCWC		CCWC Rebuttal		CCWC Adjustments to CCWC's		ACC Staff		ACC Staff		ACC Staff		RUCO		RUCO		
		Direct	Surrebuttal	Rebuttal	Adjustments to CCWC's	Direct	Adjustments to CCWC's	Direct	Adjustments to CCWC's	Direct	Adjustments to CCWC's	Direct	Adjustments to CCWC's	Direct	Adjustments to CCWC's	Direct	Adjustments to CCWC's	Direct	Adjustments to CCWC's	
1	Gross Utility Plant in Service	\$ 69,502,064	\$ 704,921	\$ 70,206,985	\$ (938,986)	\$ 68,563,078	\$ 1,534,193	\$ 70,097,271	\$ (1,770,756)	\$ 67,731,308	\$ (5,252)	\$ 67,726,056								
2	Less: Accumulated Depreciation	25,734,123	39,065	25,773,188	413,339	26,147,462	(347,673)	25,799,789	(38,739)	25,695,384	(4,364)	25,691,020								
3																				
4	Net Utility Plant in Service	\$ 43,767,941	\$ 665,856	\$ 44,433,797	\$ (1,352,325)	\$ 42,415,616	\$ 1,881,866	\$ 44,297,482	\$ (1,732,017)	\$ 42,035,924	\$ (888)	\$ 42,035,036								
5																				
6	Less:																			
7	Advances in Aid of Construction	\$ 4,008,916	\$ 0	\$ 4,008,916	\$ -	\$ 4,008,916	\$ -	\$ 4,008,916	\$ -	\$ 4,008,916	\$ -	\$ 4,008,916								
8																				
9	Contributions in Aid of Construction - Net	12,461,921	(0)	12,461,921	0	12,461,921	0	12,461,921	0	12,461,921	0	12,461,921								
10																				
11	Customer Meter Deposits	1,950	0	1,950	0	1,950	0	1,950	3,791	5,741	(3,791)	1,950								
12																				
13	Deferred Income Taxes & Credits	1,271,696	0	1,271,696	0	1,271,696	0	1,271,696	0	1,271,696	0	1,271,696								
14																				
15	FHSD Settlement	449,580	0	449,580	0	449,580	0	449,580	0	449,580	0	449,580								
16																				
17	Plus:																			
18	Deferred Debits	686,104	(134,436)	551,668	(607,898)	78,206	0	78,206	(686,104)	0	0	0								
19	Cash Working Capital	(19,817)	(31,719)	(51,536)	(142,738)	(162,555)	28,552	(134,003)	(84,916)	(104,733)	4,226	(100,507)								
20	Bank Balances, Prepayments, Inventory	1,029,157	-	1,029,157	0	1,029,157	0	1,029,157	0	1,029,157	0	1,029,157								
21	Utility Plant Acquisition Adjustment	0	0	0	0	0	0	0	0	0	0	0								
22																				
23	<b>Total Rate Base</b>	\$ 27,269,322	\$ 499,701	\$ 27,769,023	\$ (2,102,961)	\$ 25,166,359	\$ 1,910,419	\$ 27,076,780	\$ (2,506,828)	\$ 24,762,495	\$ 7,130	\$ 24,769,624								

CHAPARRAL CITY WATER COMPANY  
Test Year Ended December 31, 2012  
Summary of Adjusted Test Year Income Statement (Schedule C-1)

Line No.	Description	Chaparral City Water Company		ACC		ACC Staff		RUCO		RUCO	
		Direct	Other	Rebuttal	Adjustments to CCWC's	Direct	Adjustments to CCWC's	Direct	Adjustments to CCWC's	Direct	Adjustments to CCWC's
1	Revenues										
2	Water or Sewer Revenues	\$ 8,915,656	\$ (0)	\$ 8,915,656	\$ -	\$ 8,915,656	\$ -	\$ 8,915,656	\$ 65,960	\$ -	\$ 8,981,616
3	Other Revenues	99,329	0	99,329	-	99,329	-	99,329	-	-	99,329
4		\$ 9,014,985	\$ 0	\$ 9,014,985	\$ -	\$ 9,014,985	\$ -	\$ 9,014,985	\$ 65,960	\$ -	\$ 9,080,945
5	<b>Total Revenue</b>										
6	Operating Expenses										
7	Labor	\$ 1,024,112	\$ 0	\$ 1,024,112	\$ -	\$ 1,024,112	\$ -	\$ 1,024,112	\$ (14,090)	\$ -	\$ 1,010,022
8	Purchased Water	1,065,953	90,524	1,156,477	50,926	1,116,879	-	1,116,879	100,874	-	1,166,827
9	Fuel & Power	605,885	0	605,885	(20,746)	585,139	-	585,139	7,501	-	613,386
10	Chemicals	119,266	0	119,266	(4,084)	115,182	-	115,182	1,476	-	120,742
11	Waste Disposal & Other Utilities	7,113	-	7,113	-	7,113	-	7,113	-	-	7,113
12	Intercompany Support Services	94,150	-	94,150	-	94,150	-	94,150	-	-	94,150
13	Corporate Allocation	500,330	(57,921)	442,409	(89,517)	410,813	(17,721)	393,092	(139,155)	-	359,073
14	Outside Services	508,106	(0)	508,106	-	508,106	-	508,106	-	-	508,106
15	Group Insurance	178,067	-	178,067	-	178,067	-	178,067	-	-	178,067
16	Pensions	85,086	0	85,086	-	85,086	-	85,086	-	-	85,086
17	Regulatory Expense	91,668	-	91,668	-	91,668	-	91,668	-	-	91,668
18	Insurance Other Than Group	73,025	-	73,025	-	73,025	-	73,025	-	-	73,025
19	Customer Accounting	318,959	(0)	318,959	-	318,959	-	318,959	-	-	318,959
20	Rents	1,504	-	1,504	-	1,504	-	1,504	-	-	1,504
21	General Office Expense	164,179	-	164,179	-	164,179	-	164,179	-	-	164,179
22	Miscellaneous	158,553	0	158,553	-	158,553	-	158,553	(7,079)	-	151,474
23	Maintenance Expense	388,614	(0)	388,614	-	388,614	-	388,614	(202,184)	-	186,430
24	Depreciation & Amortization	2,014,048	1,492	2,015,540	(511,261)	1,502,787	72,495	1,575,282	(121,036)	(131)	1,892,881
25	General Taxes-Property	251,038	(12,552)	238,486	(18,828)	232,210	-	232,210	(10,822)	-	240,216
26	General Taxes-Other	86,320	(0)	86,320	-	86,320	-	86,320	-	-	86,320
27	Income Taxes	389,412	2,756	392,168	96,306	485,718	(7,425)	478,293	177,992	-	567,404
28											
29											
30	<b>Total Operating Expenses</b>	\$ 8,125,388	\$ 24,300	\$ 8,149,688	\$ (497,204)	\$ 7,628,184	\$ 47,349	\$ 7,675,533	\$ (206,523)	\$ -	\$ 7,918,865
31	Utility Operating Income	889,596	(24,300)	865,297	497,204	1,386,800	(47,349)	1,339,452	272,483	-	1,162,080
32	<b>Other Income &amp; Deductions</b>										
33	Other Income & Deductions	270,179	(36,919)	233,260	333,814	603,993	(35,381)	568,612	13,381	-	283,560
34	Interest Expense										
35	Other Expense										
36	Gain/Loss Sale of Fixed Assets										
37	<b>Total Other Income &amp; Deductions</b>	\$ (270,179)	\$ 36,919	\$ (233,260)	\$ (333,814)	\$ (603,993)	\$ 35,381	\$ (568,612)	\$ (13,381)	\$ -	\$ (283,560)
38	<b>Net Profit (Loss)</b>	\$ 619,417	\$ 12,619	\$ 632,037	\$ 163,390	\$ 782,807	\$ (11,968)	\$ 770,840	\$ 259,102	\$ -	\$ 912,045

**Chaparral City Water Company**  
 Test Year Ended December 31, 2012  
 Summary of Cost of Capital (Schedule D-1)

Line No.	Item of Capital	CCWC Direct			CCWC Rebuttal			(e) Cost Rate	Weighted Cost
		Dollar Amount	Percent of Total	Cost Rate	Dollar Amount	Percent of Total	Cost Rate		
1	Long-Term Debt	\$ 4,545,000	16.60%	5.97%	\$ 4,545,000	14.11%	5.97%	0.84%	
2	Short-Term Debt	\$ -	0.00%	0.72%	\$ -	0.00%	0.72%	0.00%	
3									
4									
5	Stockholder's Equity	\$ 22,837,590	83.40%	11.05%	\$ 27,665,533	85.89%	10.50%	9.02%	
6									
7	Totals	\$ 27,382,590	100.00%	10.21%	\$ 32,210,533	100.00%		9.86%	

**Chaparral City Water Company**  
Test Year Ended December 31, 2012  
Summary of Cost of Capital

Line No.	Item of Capital	ACC STAFF			Staff and Intervenor Surrebuttal			RUCO		
		Dollar Amount	Percent of Total	Cost Rate	Dollar Amount	Percent of Total	Cost Rate	Dollar Amount	Percent of Total	Cost Rate
1	Long-Term Debt	\$ 4,935,000	40.00%	5.15%	\$ 4,935,000	40.00%	5.92%	\$ 4,935,000	40.00%	5.92%
2	Short-Term Debt	\$ -	0.00%	0.41%	\$ 135,057	0.00%	0.72%	\$ 135,057	0.00%	0.72%
4	Stockholder's Equity	\$ 22,837,590	60.00%	9.60%	\$ 22,837,590	60.00%	9.35%	\$ 22,837,590	60.00%	9.35%
6	Totals	\$ 27,382,590	100.00%	7.90%	\$ 27,907,647	100.00%	7.98%	\$ 27,907,647	100.00%	7.98%

Line No.	Item of Capital	ACC STAFF			Staff and Intervenor Direct			RUCO		
		Dollar Amount	Percent of Total	Cost Rate	Dollar Amount	Percent of Total	Cost Rate	Dollar Amount	Percent of Total	Cost Rate
1	Long-Term Debt	\$ 4,935,000	40.00%	5.97%	\$ 4,935,000	17.68%	5.92%	\$ 4,935,000	17.68%	5.92%
2	Short-Term Debt	\$ -	0.00%	0.41%	\$ 135,057	0.48%	0.72%	\$ 135,057	0.48%	0.72%
4	Stockholder's Equity	\$ 22,837,590	60.00%	9.30%	\$ 22,837,590	81.83%	9.35%	\$ 22,837,590	81.83%	9.35%
6	Totals	\$ 27,772,590	100.00%	8.00%	\$ 27,907,647	100.00%	8.70%	\$ 27,907,647	100.00%	8.70%

Chaparral City Water Company  
Test Year Ended December 31, 2012  
Computation of Working Capital (Schedule B-5)

Line No.	Chaparral City Water Company		CCWC		ACC		ACC Staff		RUCO		RUCO	
	Direct	Adjustments	Rebuttal	Adjustments	Adjustments	Staff	Add'l Adjustments	Adjustments	Direct	Adjustments	Direct	Surrebuttal
				to CCWC's	to CCWC's	Staff	to CCWC's	to CCWC's	Direct	to CCWC's	Direct	to CCWC's
				Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct	Direct
1												
2	\$ (19,817)	\$ (31,719)	\$ (31,719)	\$ (51,536)	\$ (142,739)	\$ (162,555)	\$ 28,552	\$ (134,003)	\$ (84,917)	\$ (104,733)	\$ 4,226	\$ (100,507)
3	780,673	-	-	780,673	-	780,673	-	780,673	-	780,673	-	780,673
4	-	-	-	-	-	-	-	-	-	-	-	-
5	248,484	-	-	248,484	-	248,484	-	248,484	-	248,484	-	248,484
6												
7	\$ 1,009,341	\$ (31,719)	\$ (31,719)	\$ 977,621	\$ (142,739)	\$ 866,602	\$ 28,552	\$ 895,154	\$ (84,917)	\$ 924,424	\$ 4,226	\$ 928,650
8												
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<sup>1</sup>Calculated using thirteen-month averages

Supporting Schedules:

E-1

Workpapers & Supporting Documents:

Common\Workpapers\Downloads\13-Month Balances by Account - 2012.xlsx

\2013 Chaparral Water Sch. A-F.xls

Recap Schedules:

B-1

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

BOB STUMP, Chairman  
GARY PIERCE  
BRENDA BURNS  
SUSAN BITTER SMITH  
BOB BURNS

IN THE MATTER OF THE APPLICATION OF  
CHAPARRAL CITY WATER COMPANY FOR A  
DETERMINATION OF THE CURRENT FAIR  
VALUE OF ITS UTILITY PLANT AND  
PROPERTY AND FOR INCREASE IN ITS  
RATES AND CHARGES BASED THEREON

DOCKET NO. W-02113A-13-0118

**REJOINDER TESTIMONY  
OF  
JEFFREY W. STUCK  
ON BEHALF OF  
CHAPARRAL CITY WATER COMPANY  
FEBRUARY 12, 2014**

**REJOINDER TESTIMONY  
OF  
JEFFREY W. STUCK  
ON BEHALF OF  
CHAPARRAL CITY WATER COMPANY  
FEBRUARY 12, 2014**

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**EXECUTIVE SUMMARY**

Jeffrey W. Stuck responds to RUCO's opposition to CCWC's inclusion of tank maintenance expense.

1 **I INTRODUCTION AND QUALIFICATIONS**

2 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE**  
3 **NUMBER.**

4 A. My name is Jeffrey W. Stuck. My business address is 15626 N. Del Webb Boulevard,  
5 Sun City, AZ, and my business phone is 623-445-3125.

6 **Q. ARE YOU THE SAME JEFFREY W. STUCK WHO PROVIDED DIRECT AND**  
7 **REBUTTAL TESTIMONY IN THIS CASE?**

8 A. Yes.

9 **II TANK MAINTENANCE**

10 **Q. HAVE YOU REVIEWED RUCO'S WITNESS'S SURREBUTTAL TESTIMONY**  
11 **REGARDING CCWC'S REQUEST FOR TANK MAINTENANCE EXPENSE?**

12 A. Yes, I have reviewed Mr. Michlik's surrebuttal testimony regarding tank maintenance  
13 expense.

14 **Q. WHAT IS YOUR RESPONSE TO THE FURTHER ARGUMENTS MADE BY**  
15 **MR. MICHLIK?**

16 A. There seems to be some confusion about the company's requests and the Commission's  
17 decisions regarding tank maintenance. If I mischaracterized RUCO's positions in those  
18 prior cases, that was not my intent. What is important to note, however, is that the  
19 Commission approved the same type of tank maintenance expense for the water districts  
20 at issue in Decision No. 71410 and for the Sun City Water District as part of Decision  
21 No. 72047. That approach has been an effective means to address the tank maintenance  
22 issues in those districts.

23 **Q. DID THE COMMISSION APPROVE TANK MAINTENANCE EXPENSE FOR**  
24 **THE WATER DISTRICTS AT ISSUE IN DECISION NO. 71410?**

1 A. Yes, the Commission approved tank maintenance expense as recommended by Staff and  
2 accepted by the Company in that case. In the case referred to by Mr. Michlik, the  
3 proposal requested a tank maintenance reserve, which is not what has been requested by  
4 CCWC in this case. In this case, CCWC has proposed, and Commission Staff has  
5 recommended, the same type of approach as approved in Decision 71410.

6 **Q. DID THE COMMISSION ALSO APPROVE TANK MAINTENANCE EXPENSE**  
7 **FOR THE SUN CITY WATER DISTRICT IN DECISION NO. 72047?**

8 A. Yes, and if I misstated RUCO's position, as set forth in the Decision, that was not my  
9 intent. What I can state definitively is that the condition of the tanks in the Sun City  
10 Water District is very similar to the condition of those in CCWC's service territory. As  
11 with Sun City, these tanks must be maintained, and the tank maintenance program  
12 proposed for CCWC will bring the same "long term system benefits" that the  
13 Commission cited to for the Sun City District. (Decision No. 72047 at 58).

14 **Q. MR. MICHLIK NOTES THAT A DEFERRAL ACCOUNT WAS USED FOR**  
15 **ANTHEM. HOW DO YOU RESPOND?**

16 A. He is correct. However, the tanks in Anthem are much newer than those in the CCWC  
17 district. A regular tank maintenance program was not required or necessary in that  
18 district, so the use of a deferral account was recommended by the Commission Staff and  
19 ordered by the Commission to be more appropriate.

20 **Q. MR. MICHLIK STATES A CONCERN THAT THE TANK MAINTENANCE**  
21 **WILL NOT GET DONE. IS THAT A VALID CONCERN?**

1 A. Absolutely not. EPCOR is committed to completing necessary maintenance to the  
2 facilities of this and all other utilities it owns. I believe we have demonstrated this  
3 commitment through the activities I have discussed in my testimony pertaining to post-  
4 test year plant additions. We have completed several maintenance related projects at the  
5 SWTP that went unaddressed for many years prior to EPCOR ownership. EPCOR has  
6 also completed tank maintenance as approved in the prior decisions for the other districts  
7 discussed above. Maintenance of these tanks is critical to the continued sound operation  
8 of this utility and completion of this maintenance work is a top priority.

9  
10 **Q. DO YOU HAVE ANY ADDITIONAL COMMENTS?**

11 A. Yes. The fact that I have not addressed any issue raised by RUCO or Staff in its  
12 surrebuttal testimony does not mean that CCWC concurs with those positions.

13 **Q. DOES THIS CONCLUDE YOUR REJOINDER TESTIMONY IN THIS CASE?**

14 A. Yes.

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

BOB STUMP, Chairman  
GARY PIERCE  
BRENDA BURNS  
SUSAN BITTER SMITH  
BOB BURNS

IN THE MATTER OF THE APPLICATION OF  
CHAPARRAL CITY WATER COMPANY FOR  
A DETERMINATION OF THE CURRENT FAIR  
VALUE OF ITS UTILITY PLANT AND  
PROPERTY AND FOR INCREASE IN ITS  
RATES AND CHARGES BASED THEREON

DOCKET NO. W-02113A-13-0118

REJOINDER TESTIMONY

OF

PAULINE M. AHERN, CRRA  
PRINCIPAL  
AUS CONSULTANTS

ON BEHALF OF

CHAPARRAL CITY WATER COMPANY

FEBRUARY 12, 2014

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**EXECUTIVE SUMMARY**  
**CHAPARRAL CITY WATER COMPANY**  
**DOCKET NO. W-02113A-13-0118**

Ms. Ahern's rejoinder testimony responds to certain aspects of the surrebuttal testimonies of ACC Staff Witness John A. Cassidy and RUCO Witness David C. Parcell on the following issue:

Capital Structure

Ms. Ahern provides evidence that Mr. Cassidy's and now Mr. Parcell's recommended hypothetical capital structure of 40% debt and 60% equity remains inappropriate for ratemaking purposes for Chaparral City Water Company for all the reasons provided in her rebuttal testimony.

In addition, Ms. Ahern addresses the concept of double leverage which Mr. Cassidy has introduced in his surrebuttal testimony as an additional reason for recommending a hypothetical capital structure for Chaparral City Water Company.

Ms. Ahern demonstrates that no equity has been infused into Chaparral City Water Company since its acquisition by EPCOR Arizona Water, Inc. Therefore, no debt at the parent could have been used to finance a non-existent equity infusion.

In addition, Ms. Ahern addresses the concept of double leverage, demonstrating that it is flawed for several reasons:

- 1) Double leverage violates the basis financial principle of risk and return;
- 2) Double leverage is inconsistent with the concept of the opportunity cost of capital
- 3) Double leverage discriminates against the investors, i.e., the parent, of the regulated operating utility, thus violating both the concept of fairness and the capital attraction standard;
- 4) Double leverage is based upon some highly problematic assumptions; and,
- 5) Double leverage is a tautology - an unnecessary redundancy, i.e., saying the same thing twice.

1  
2 **CHAPARRAL CITY WATER COMPANY**  
3

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4 **Rebuttal Testimony of**  
5 **Pauline M. Ahern**

6 **Introduction**

7 **Q. Please state your name, occupation and business address.**

8 A. My name is Pauline M. Ahern. I am a Principal of AUS Consultants. My business  
9 address is 155 Gaither Drive, Suite A, Mt. Laurel, New Jersey 08054.  
10

11 **Q. Are you the same Pauline M. Ahern who provided both direct and rebuttal**  
12 **testimony in this case?**

13 A. Yes.

14 **Purpose**

15 **Q. What is the purpose of your testimony?**

16 A. The purpose is to provide testimony on behalf of Chaparral City Water Company  
17 ("CCWC" or "the Company") in response to certain aspects of the surrebuttal  
18 testimony of John A. Cassidy, Witness for the Staff of the Arizona Corporation  
19 Commission (the "ACC" or "the Commission") and the surrebuttal testimony of  
20 David C. Parcell, witness for the Residential Utility Consumers Office ("RUCO").  
21 With regard to both Mr. Cassidy's and Mr. Parcell's testimonies, I will address  
22 their proposed hypothetical capital structure ratios, specifically Mr. Cassidy's  
23 unsupported assumption that double leverage exists between EPCOR Arizona  
24 Water, Inc. ("EWAZ") and EPCOR Utilities, Inc. (EPCOR Utilities). Finally, I will  
25 respond to comments on the Company's rebuttal testimony by Mr. Parcell.  
26

27 **Q. Have you prepared an exhibit which supports your rejoinder testimony?**  
28

1 A. Yes. It has been designated as Exhibit PMA-3 and consists of Schedules 1  
2 through 6.

3 **Capital Structure**

4 **ACC Staff Witness Cassidy**

5 Q. Mr. Cassidy provides four reasons why Staff is recommending a  
6 hypothetical capital structure for CCWC on page 3, lines 3 - 15. Please  
7 comment.

8 A. Staff's first reason is "the need to give recognition to CCWC's reduced exposure  
9 to financial risk relative to Staff's proxy group of companies" (lines 4-5).  
10 Curiously, Staff's recommended capital structure ratios actually introduce greater  
11 financial risk to CCWC than is contained in CCWC's proposed capital structure  
12 ratios of 14.45% long-term debt and 85.55% common equity.  
13

14 Staff's second reason is to "encourage CCWC to move towards a more  
15 balanced capital structure going forward" (lines 5-6). However, Staff has provided  
16 no empirical support in either its direct or surrebuttal testimony to demonstrate  
17 that setting rates in past rate cases based upon CCWC's actual capital structure  
18 ratios has been detrimental to its customers, i.e., ratepayers.  
19

20 Staff's third reason is that it "considers a balanced capital structure for a  
21 Class 'A' utility to be one in which the debt components lies within a range of 40-  
22 60 percent" (lines 6-8). Again, Staff has provided no empirical support in either its  
23 direct or surrebuttal testimony to demonstrate why such its recommended  
24 hypothetical capital structure would benefit CCWC's customers to a greater  
25 extent than the actual capital structure ratios upon which CCWC's rates have  
26 historically been set.  
27  
28

1 Staff's fourth reason is that "this CCWC docket marks the first rate case in  
2 which Staff has relied on estimates derived from its DCF cost of equity models  
3 only" (lines 8-9). However, Staff did not provide this as a reason for  
4 recommending a hypothetical capital structure for CCWC in its direct testimony.

5 Mr. Cassidy continues by noting "with some interest that the Company did  
6 not choose to dispute or challenge this aspect of Staff's current recommendation"  
7 (lines 9-11). This statement is a clear mischaracterization of my rebuttal  
8 testimony where I discuss at some length on page 14, line 22 through page 23,  
9 line 22 why exclusive reliance upon Discounted Cash Flow ("DCF") analyses is  
10 not appropriate. In addition, I provided an update to my original cost of common  
11 equity analysis in Schedule 11R of Exhibit PMA-2 utilizing the same multiple cost  
12 of common equity models employed in my direct testimony, i.e. DCF, Risk  
13 Premium Model ("RPM") and Capital Asset Pricing Model ("CAPM").  
14

15 Following its litany of the four reasons for recommending hypothetical  
16 capital structure ratios, Mr. Cassidy then proceeds to introduce a discussion on  
17 the subject of double leverage which was not contained in his direct testimony.  
18

19 **Q. Please comment upon Mr. Cassidy's discussion of double leverage.**

20 **A.** Mr. Cassidy naively assumes that double leverage exists between CCWC and its  
21 parent without providing any empirical support for its existence. He has assumed,  
22 without any concrete evidence, that CCWC's "parent company issues debt and  
23 allocates it down" to CCWC "while characterizing this financial support as equity  
24 capital" to paraphrase lines 9 – 10 on page 4 of his surrebuttal testimony. He  
25 then provides as evidence a comparison of the capital structure ratios of CCWC,  
26 EPCOR Utilities, and EWAZ, considering without further investigation that the  
27  
28

1 variances "in capital structure between CCWC and both its ultimate and  
2 immediate parent to be *prima facie* evidence that double leverage is present."

3 However, a review of the Financials of CCWC for 2011 and 2012, after the  
4 acquisition was completed on May 31, 2011, demonstrates that there have been  
5 no equity infusions from either parent. Hence there is no debt at either parent  
6 which has been "allocated down" to CCWC and "characterized" as common  
7 equity capital. Page 5 of the 2011 Financials of CCWC (Schedule 1 of Exhibit  
8 PMA-3) shows no addition to either the common stock or additional paid-in-  
9 capital account. Likewise, on page 5 of the 2012 Financials of CCWC (Schedule  
10 2 of Exhibit PMA-3) shows no addition to the common stock account and a  
11 "Transaction with shareholder" of \$4,047,492 to additional paid-in-capital  
12 account, which I have been informed by the Company is a reclassification of a  
13 portion of retained earnings as requested by the auditors.  
14

15 In view of the foregoing, there is no double leverage between CCWC and its  
16 parents. Thus, Mr. Cassidy's suggestion that such double leverage exists as a  
17 rationale for recommending a hypothetical capital structure is unsupported and  
18 should be rejected by the ACC.  
19

20 In addition, the very concept of double leverage and subsequent use of a  
21 hypothetical capital structure is flawed.

22 **Q. Why is the concept of double leverage flawed?**

23 **A.** The concept of double leverage is flawed for five reasons.

- 24 1. Double leverage violates the basic financial principle of risk and return;  
25 2. It is inconsistent with the concept of the opportunity cost of capital;  
26  
27  
28

1 3. It discriminates against the investor, i.e., the parent, of the regulated  
2 operating utility, thus violating both the concept of fairness and the capital  
3 attraction standard;

4 4. It is based upon some highly problematic assumptions; and,

5 5. As Roger A. Morin states<sup>1</sup>: "[t]he double leverage approach is a tautology."

6 (See page 5 of Schedule 3)

7 **Q. Please explain how double leverage violates the basic financial principle of**  
8 **risk and return.**

9 **A.** The basic financial principle of risk and return is that the rate of return required by  
10 investors on any investment is dependent upon the risk of that investment and  
11 that investment alone. Since most investors are risk averse, this means that the  
12 higher the investor perceived risk of an investment, the higher the return required  
13 by investors. As Eugene F. Brigham states<sup>2</sup> :

14 *In a market dominated by risk-averse investors, riskier securities will*  
15 *have higher expected returns, as estimated by the average investor,*  
16 *than will less risky securities, for if this situation does not hold,*  
17 *actions will occur in the market to force it to occur. (italics in original)*  
18 (See page 3 of Schedule 4)

19 The risk of any investment, including investment in CCWC, is independent  
20 of the ownership of the capital financing that investment. Hence, the capital  
21 structure of CCWC's parent companies is irrelevant to the risk of any investment  
22 in CCWC. It is a basic financial principle that it is the use of the funds invested  
23

24  
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26  
27 <sup>1</sup> Morin, Roger A., New Regulatory Finance, (Public Utilities Reports 2006) 526.

28 <sup>2</sup> Brigham, Eugene F., Fundamentals of Financial Management, 114 (The Dryden Press, 5<sup>th</sup> Ed. 1989) 114.

1 which gives rise to the risk of the investment, not the source of the funds. As  
2 Richard A. Brealey and Stewart C. Myers state<sup>3</sup>:

3 *The true cost of capital depends on the use to which the capital is*  
4 *put. (italics in original)*

5 \* \* \* \*

6 The company cost of capital is the correct discount rate for projects  
7 that have the same risk as the company's existing business. . . .  
8 In principle, each project should be evaluated at its own opportunity  
9 cost of capital; the true cost of capital depends on the use to which  
10 the capital is put. (See pages 4 and 7 of Schedule 5)

11 For example, if one were to inherit money, free of charge, and then invest it  
12 in a given utility's common stock, one would require a rate of return on that stock  
13 commensurate with the risks to which that common stock investment is exposed.  
14 It would be illogical to state that the required return on investment is zero just  
15 because there was zero cost in acquiring the capital, i.e., inherited money, which  
16 was the source of the investment. Even the Internal Revenue Service places  
17 your cost basis, as an inheritor, on the market value of inherited common stock  
18 on the date of death of the person who willed the stock and not on its zero cost to  
19 you.

20 Just as illogical is the inevitable conclusion that, in the event that the  
21 common shares of the operating water utility subsidiary were held by both a  
22 corporate parent and by an outside investor or investors, that portion of  
23 subsidiary equity supplied by the parent would have one cost rate, i.e., the  
24 parent's weighted overall cost of capital, while the portion supplied by the outside  
25

26  
27 <sup>3</sup> Brealey, Richard A. and Myers, Stewart C., Principles of Corporate Finance (McGraw-Hill  
28 Book Company, 1988) 205, 229.

1 investor or investors would have another, i.e., their investor required return based  
2 upon the risk to which their capital is put. As Roger A. Morin states<sup>4</sup>:

3 Equity is equity, irrespective of its source, and the cost of that equity  
4 is governed by its use, by the risk to which it is exposed. (See page  
5 2 of Schedule 3).

6 In view of the foregoing, the very concept of double leverage violates the  
7 basic financial principle of risk and return.

8 **Q. Please explain how double leverage is inconsistent with the concept of the  
9 opportunity cost of capital.**

10 **A.** The opportunity cost of capital is that the rate of return offered by investments of  
11 comparable risk should be equal. It is called the opportunity cost because it  
12 represents the return which is given up or foregone by investing in one  
13 investment alternative as opposed to an alternative investment of comparable  
14 risk. If the risk-adjusted cost of equity investment in an operating water utility  
15 subsidiary, such as CCWC, is 10.50% (my updated recommended common  
16 equity cost rate) and the authorized return is less than 10.50% through the use of  
17 double leverage in the form of a hypothetical capital structure based upon the  
18 erroneous assumption of double leverage, then there is no incentive for a parent  
19 company, such as EWAZ, to invest in that operating subsidiary. In order to do so,  
20 the parent would have to forego the risk-adjusted return of 10.50% on alternative  
21 investments not subject to such double leverage.  
22

23 In fact, Staff's updated recommended 9.60% common equity cost rate  
24 results in an effective implied authorized return on common equity, ROE, for  
25

---

26  
27 <sup>4</sup> Morin, 523.  
28

1 CCWC of but 7.67% based upon an effective composite Federal and State  
 2 income tax rate of 38.29% and derived as follows:

3 Table 1

	Staff's Ratios	Cost Rate	Weighted Cost Rate	
			After-Inc. Tax	Before Inc. Tax
4 Debt	40.0%	5.2%	2.1%	2.1%
5 Common Equity	60.0%	9.6%	5.8%	9.4%
			<u>7.9%</u>	<u>11.5%</u>

	CCWC's Ratios	Cost Rate	Weighted Cost Rate	
			After-Inc. Tax	Before Inc. Tax
6 Debt	14.45%	5.97%	0.86%	0.86%
7 Common Equity	85.55%	<b>7.67%</b>	6.56%	10.6%
			<u>7.43%</u>	<u>11.5%</u>

8  
 9  
 10  
 11 Hence, the use of double leverage presents an incentive to spin-off the  
 12 subsidiary whose rates are set based upon a hypothetical capital structure due to  
 13 the assumption that double leverage exists, because that utility subsidiary, if  
 14 divested, would then be allowed a return on equity commensurate with its own  
 15 business and financial risks. If such a divestiture were to occur, the cost  
 16 reducing benefits due to economies of scale and diversification would be lost to  
 17 the utility's ratepayers.

18  
 19 Hence, double leverage is inconsistent with the concept of the opportunity  
 20 cost of capital.  
 21  
 22  
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1 Q. How does the use of double leverage discriminate against the parent  
2 holding company as the investor, thus violating the concept of fairness and  
3 the capital attraction standard?

4 A. The holding company's required return on its equity investment in the operating  
5 utility subsidiary is the risk-adjusted cost of common equity of that utility which is  
6 dependent upon that utility's specific business and financial risks as discussed  
7 previously. However, in assuming that double leverage exists and using that  
8 assumption to rationalize the recommendation of hypothetical capital structure  
9 ratios, denies the parent holding company investor of the opportunity to earn its  
10 required rate of return based upon the risk to which its common equity  
11 investment in that utility is exposed. This would not be the case for a utility  
12 whose stock is held not by a holding company, but by individual investors.  
13

14 For example, if there are two operating utilities with identical business and  
15 financial risks, the cost of common equity for both would be identical according to  
16 the basic financial principle of risk and return. However, if one of the utilities is  
17 an operating subsidiary of a parent holding company and its allowed return on  
18 common equity, i.e., cost of common equity, is set based upon a hypothetical  
19 capital structure based upon the assumption of the existence of double leverage,  
20 the parent holding company will not be fairly compensated for the risk it bears by  
21 investing in that subsidiary. This is discriminatory. As Roger A. Morin states<sup>5</sup>:  
22

23 Estimating equity costs by one procedure for publicly held utilities  
24 and by another for utilities owned by a holding company is  
25 inconsistent with financial theory and discriminates against the

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26 <sup>5</sup> Morin, . 525.  
27  
28

1 holding company form of ownership. Two utilities identical in all  
2 respects but their ownership format should have the same set of  
3 rates. Yet, this would not be the case under the double leverage  
4 adjustment. (See page 4 of Schedule 3)

5 In addition, double leverage weakens the regulated utility's ability to attract  
6 capital in violation of the capital attraction standard established in Bluefield<sup>6</sup>  
7 which states that:

8 A public utility is entitled to such rates as will permit it to earn a return  
9 on the value of the property which it employs for the convenience of  
10 the public equal to that generally being made at the same time and in  
11 the same general part of the country on investments in other  
12 business undertakings which are attended by corresponding risks  
13 and uncertainties. . . . The return should be reasonably sufficient to  
14 assure confidence in the financial soundness of the utility and should  
15 be adequate, under efficient and economical management, to  
16 maintain and support its credit and enable it to raise the money  
17 necessary for the proper discharge of its public duties.

18 The regulated utility must compete in the capital markets for debt capital  
19 and must earn a reasonable return on its common equity to assure potential  
20 bond holders of its creditworthiness. The use of double leverage as a rationale  
21 for recommending a hypothetical capital structure does not permit an opportunity  
22 to earn a rate of return commensurate with publicly owned enterprises of similar  
23 risk, thereby pressuring cash flows and impairing interest coverage and, in turn,  
24 the regulated utility's ability to attract debt capital at reasonable costs.

25 Thus, the concept of double leverage is both discriminatory and patently  
26 unfair to the parent holding company investor.

---

27 <sup>6</sup> Bluefield Water Works Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679 (1922).

1 Q. What are some of the problematic assumptions upon which the concept of  
2 double leverage is based?

3 A. First, double leverage assumes that all of the regulated subsidiary's equity capital  
4 was provided by the parent holding company. However, the retained earnings of  
5 the subsidiary are not derived from the parent. Rather, retained earnings result  
6 from the accumulated net income to common equity, after payment of common  
7 dividends, and are derived from revenues collected from the regulated operating  
8 subsidiary's ratepayers. In addition, if the proceeds of any of the senior capital,  
9 i.e., debt and / or preferred equity, at the parent level were used to specifically  
10 invest in the operations of other subsidiaries or to acquire another subsidiary, the  
11 assumption that such funds were available for investment in the subsidiary  
12 subject to double leverage is invalid.  
13

14 Second, double leverage assumes that the business and financial risks of  
15 all the operating subsidiaries are identical and, in turn, identical to the business  
16 and financial risks of the parent holding company. This is clearly non-sensical,  
17 given that EWAZ operates in a different service territory than CCWC and is a  
18 larger utility. Moreover, EPCOR Utilities builds, owns and operates electric  
19 transmission and distribution systems as well as water and wastewater treatment  
20 facilities and infrastructure in both Canada and the U.S. representing different  
21 geographical areas under different regulatory paradigms, and hence, facing  
22 different operating and financial risks. Clearly, the risks of all of EPCOR Utilities'  
23 operating subsidiaries are not equal. Once again, the risk and return principle is  
24 violated by double leverage, because it assumes the same cost of common  
25 equity for all the subsidiaries regardless of their specific risk differences.  
26  
27  
28

1           Consequently, many of the assumptions of double leverage are highly  
2 problematic and nonsensical.

3 **Q. Please explain how “[t]he double leverage approach is a tautology.”**

4 **A.** A tautology is an unnecessary redundancy, i.e., saying the same thing twice.  
5 The double leverage approach is a tautology because as Morin states on page 5  
6 of Schedule 3 “[i]t is not the parent’s weighted average cost of capital (WACC)  
7 that determines the subsidiary’s cost of equity because the parent’s WACC is  
8 itself a weighted average of equity costs of all subsidiaries.”<sup>7</sup> However, by  
9 recommending a hypothetical capital structure based upon the existence of  
10 double leverage, Mr. Cassidy is also assuming that the parent’s cost of equity,  
11 based upon that capital structure, is applicable to CCWC. A holding company is  
12 like a mutual fund, but one which holds its operating subsidiaries in its portfolio of  
13 assets instead of capital market securities, i.e., stocks and bonds. A mutual  
14 fund’s required return, based upon portfolio theory, is the weighted average of  
15 the returns of the individual securities in the fund. Each security in the fund has  
16 its own unique required return which is a function of its individual risk profile. The  
17 concept of double leverage, if applied to a mutual fund, would say that the  
18 required return on any given individual security held by the mutual fund is the  
19 weighted average required return on the mutual fund as a whole. This defies  
20 common sense. If an investor could expect to receive the same return on the  
21 individual securities as in the mutual fund as a whole why, would he / she invest  
22 in the fund and pay the attendant fees which would then reduce his / her return?  
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<sup>7</sup> Morin, 526.

1 Thus, the use of double leverage transposes the direction of cause and  
2 effect on the parent's WACC. Consistent with the fundamental and basic  
3 financial concept of risk and return as discussed above, the cost of common  
4 equity of a regulated operating utility subsidiary is a function of its business and  
5 financial risks and must be found on a stand-alone basis, which requires the use  
6 of the Company's own average capital structure and cost rates, including the cost  
7 rate of common equity capital, and not the use of double leverage, which  
8 assumes the cost of common equity capital of the subsidiary to be the weighted  
9 average overall cost of capital of the parent company.  
10

11 **Q. What is your conclusion regarding Staff's recommendation of a**  
12 **hypothetical capital structure consisting of 40.0% debt and 60.0% common**  
13 **equity?**

14 **A.** Staff's hypothetical capital structure ratios should be rejected by the ACC for all  
15 of the reasons provided in my rebuttal testimony as well as in view of all of the  
16 foregoing. The ACC should set CCWC's rates in this proceeding based upon its  
17 requested actual capital structure ratios of 14.45% debt and 85.55% common  
18 equity.  
19

20 **RUCO Witness Parcell**

21 **Q. RUCO Witness Parcell is now recommending a hypothetical capital**  
22 **structure consisting of 40% debt and 60% common equity ratios as well.**  
23 **Do you have any comment?**

24 **A.** Yes. On pages 17 through 19 of his surrebuttal testimony, Mr. Parcell indicates  
25 that he has decided to move away from his original recommendation to use the  
26 actual capital structure ratios of CCWC and now accepts and endorses Mr.  
27 Cassidy's recommended hypothetical capital structure ratios of 40.0% debt and  
28

1 60.0% common equity. Without providing any rationale or empirical support, he  
2 simply notes that CCWC's "capital structure ratios are significantly higher than  
3 both the proxy water utilities and the Company's affiliated and parent  
4 companies." However, the fact that CCWC's actual capital structure ratios were  
5 significantly higher than the proxy water utilities when he wrote his direct  
6 testimony, did not stop him from recommending that they be used for setting  
7 rates for CCWC in this proceeding. Likewise, the fact that he now realizes that  
8 CCWC's actual capital structure ratios were significantly higher than "the  
9 Company's affiliated and parent companies" should not stop him from continuing  
10 to recommend CCWC's actual capital structure ratios for setting rates.  
11

12 **Response to RUCO Staff Witness David C. Parcell's Comments on Company's**

13 **Rebuttal Testimony**

14 **Q. On page 2, lines 4 – 7 of Mr. Parcell's surrebuttal testimony, he states that**  
15 **you have implicitly proposed a modification to the DCF cost rate results.**  
16 **Please comment.**

17 **A. Mr. Parcell has mischaracterized my rebuttal testimony, I have not proposed,**  
18 **explicitly or implicitly, that the results of the DCF model be modified as is clear**  
19 **from both page 2 of Schedule 1 of Exhibit PMA-1 and page12 of Schedule 11R**  
20 **of Exhibit PMA-2, where I summarize my cost of common equity models and**  
21 **show unmodified DCF results. My testimony is that because of the tendency of**  
22 **the DCF model to mis-specify the investors required return on the market value**  
23 **of their investment when that DCF result is applied to book value, i.e., original**  
24 **cost rate base less depreciation, and market-to-book ratios differ from unity, it is**  
25 **necessary to rely upon multiple, properly applied cost of common equity models.**  
26  
27  
28

1 Q. Mr. Parcell also states on page 2, lines 27 – 28 of his surrebuttal testimony  
2 that you maintain that the DCF model produces “understated” results.  
3 Please comment.

4 A. Once again, Mr. Parcell has mischaracterized my testimony. My testimony, as  
5 stated on lines 14 – 16 on page 20 of my rebuttal testimony that “[w]hen the  
6 market value of assets diverges significantly from their book value, a market-  
7 based DCF cost rate applied to the book value of common equity, *i.e.*, rate base  
8 will not produce investors’ expected returns? (emphasis added) I am not alone in  
9 making this observation. I will repeat my citation from Roger A. Morin<sup>8</sup>, Ph.D.,  
10 Professor Emeritus at Georgia State University:  
11

12 The third reason and perhaps most important for caution and  
13 skepticism is that application of the DCF model produces estimates  
14 of common equity cost that are consistent with investors’ expected  
15 return only when stock price and book value are reasonably similar,  
16 that is when the M/B is close to unity. As shown below, application  
17 of the standard DCF model to utility stocks understates the  
18 investor’s expected return when the market-to-book (M/B) ratio of a  
19 given stock exceeds unity. This was particularly relevant in the  
20 capital market environment of the 1990s and 2000s where utility  
21 stocks were trading at M/B ratios well above unity and have been  
22 for nearly two decades. The converse is also true, that is, the DCF  
23 model overstates that investor’s return when the stock’s M/B ratio is  
24 less than unity. The reason for the distortion is that the DCF market  
25 return is applied to a book value rate base by the regulator, that is,  
26 a utility’s earnings are limited to earnings on a book value rate  
27 base.

22 Q. Starting at line 27, on page 3 of his surrebuttal testimony and ending at line  
23 4 on page 4, Mr. Parcell discusses the notion that “investors are now very  
24 much aware of recent failures of security analysts to accurately predict  
25 EPS growth.” Please comment.  
26

27  
28 <sup>8</sup> Morin, 434.

1 A. There is no empirical evidence that investors, consistent with the EMH, would  
2 disregard analysts' estimates of growth in earnings per share. "Do Analyst  
3 Conflicts Matter? Evidence from Stock Recommendations,"<sup>9</sup> provided in  
4 Schedule 6, examined whether conflicts of interest with investment banking ["IB"]  
5 and brokerage businesses induced sell-side analysts to issue optimistic stock  
6 recommendations and whether investors were misled by such biases. They  
7 conclude on page 1 of Schedule 6.

8 Overall, our findings do not support the view that conflicted  
9 analysts are able to systematically mislead investors with  
10 optimistic stock recommendations.

11 On page 29 of Schedule 6, Agrawal and Chen state:

12 Overall, our empirical findings suggest that while analysts do  
13 respond to IB and brokerage conflicts by inflating their stock  
14 recommendations, the market discounts these recommendations  
15 after taking analysts' conflicts into account. These findings are  
16 reminiscent of the story of the nail soup told by Brealey and Myers  
17 (1991), except that here analysts (rather than accountants) are  
18 the ones who put the nail in the soup and investors (rather than  
19 analysts) are the ones to take it out. Our finding that the market is  
20 not fooled by biases stemming from conflicts of interest echoes  
21 similar findings in the literature on conflicts of interest in universal  
22 banking (for example, Kroszner and Rajan, 1994, 1997; Gompers  
23 and Lerner 1999) and on bias in the financial media (for  
24 examples, Bhattacharya et al. forthcoming; Reuter and Zitzewitz  
25 2006). Finally, while we cannot rule out the possibility that some  
26 investors may have been naïve, our findings do not support the  
27 notion that the marginal investor was systematically misled over  
28 the last decade by analysts' recommendations.

29 In addition, Mr. Parcell has clearly placed his opinion above that of  
30 academicians, such as Agrawal and Chen, and Morin whom I cited on pages 25

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31 <sup>9</sup> Agrawal, Anup and Chen, Mark A., "Do Analysts' Conflicts Matter? Evidence from Stock  
32 Recommendations", (Journal of Law and Economics, August 2008), Vol. 51.

1 and 26 of my rebuttal testimony addressing the accuracy of security analysts'  
2 projections of earnings per share ("EPS") growth. That citation, too, bears  
3 repeating. Morin states<sup>10</sup>:

4  
5 Because of the dominance of institutional investors and their  
6 influence on individual investors, analysts' forecasts of long-run  
7 growth rates provide a sound basis for estimating required returns.  
8 Financial analysts exert a strong influence on the expectations of  
9 many investors who do not possess the resources to make their  
10 own forecasts, that is, they are a cause of g. The accuracy of these  
11 forecasts in the sense of whether they turn out to be correct is not  
12 at issue here, as long as they reflect widely held expectations. As  
13 long as the forecasts are typical and/or influential in that they are  
14 consistent with current stock price levels, they are relevant. The  
15 use of analysts' forecasts in the DCF model is sometimes  
16 denounced on the grounds that it is difficult to forecast earnings  
17 and dividends for only one year, let alone for longer time periods.  
18 This objection is unfounded, however, because it is present  
19 investor expectations that are being priced; it is the consensus  
20 forecast that is embedded in price and therefore in required return,  
21 and not the future as it will turn out to be.

22 \* \* \*

23 Published studies in the academic literature demonstrate that  
24 growth forecasts made by security analysts represent an  
25 appropriate source of DCF growth rates, are reasonable indicators  
26 of investor expectations and are more accurate than forecasts  
27 based on historical growth. These studies show that investors rely  
28 on analysts' forecasts to a greater extent than on historic data only.

29 In view of the foregoing, with all due respect, Mr. Parcell's comments  
30 regarding the "problematic" nature of relying upon EPS growth forecasts is  
31 incorrect.

32 **Q. Do you have any comment upon the 2010 "Investor Alert" Analyzing  
33 Recommendations" by the Securities and Exchange Commission ("SEC")  
34 cited by Mr. Parcell at lines 17 – 29 on page 4 of his surrebuttal testimony?**

35  
36  
37  
38 <sup>10</sup> Morin 298.

1 A. Yes. Mr. Parcell's citation is misplaced as it pertains to "buy, hold, or sell"  
2 recommendations by security analysts' relative to common stock and not to  
3 security analysts' projection of EPS growth rates.

4 Q. On page 5, line 17 through page 6, line 5 of his surrebuttal testimony, Mr.  
5 Parcell claims that your statement regarding his use of the most recent  
6 three-month average yields on 20-year U.S. Treasury bonds is inconsistent  
7 with your own analyses. Please comment.

8 A. Mr. Parcell is incorrect. He is correct when he states that my application of the  
9 RPM and CAPM models do rely, in part, upon historical risk premiums.  
10 However, in using historical risk premiums, I rely upon both the arithmetic mean  
11 historical risk premium and a Predictive Risk Premium Model™ ("PRPM™")  
12 equity risk premium, both of which are expectational, or forward-looking in  
13 nature. Statistically, the arithmetic mean is "the best estimate of the expected  
14 value of a variable that has behaved randomly in the past" as noted by Ibbotson®  
15 SBBI® 2013 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and  
16 Inflation ("SBBI – 2013")<sup>11</sup> on page 58 (see page 10 of Schedule 7R of Exhibit  
17 PMA-2). And the PRPM™, by its nature, produces a predicted or forward-looking  
18 equity risk premium. Hence, Mr. Parcell is incorrect. My statements regarding his  
19 use of historical / current yields on 20-year U.S. Treasury bonds are not  
20 inconsistent with my own analyses. Once again, Mr. Parcell has  
21 mischaracterized my testimony.  
22  
23  
24  
25  
26

27 <sup>11</sup> Ibbotson® SBBI® - 2013 Valuation Yearbook – Market Results for Stocks, Bonds,  
28 Bills and Inflation (Morningstar, Inc., 2013).

1 Q. On page 6, lines 15 - 29 of his surrebuttal testimony, Mr. Parcell discusses  
2 your comments relative to the use of forecasted versus historical / current  
3 yields in a CAPM analysis. Please comment.

4 A. Mr. Parcell states on lines 23 – 24 on page 6 that “[u]se of the current yield in a  
5 DCF context is similar to using the current risk-free rate in a CAPM context.”  
6 While that statement is true, neither Mr. Parcell nor I used a current dividend  
7 yield in our DCF analyses. As he stated page 18 of his direct testimony, “I believe  
8 the most appropriate dividend yield component is a quarterly compounding  
9 variant, which is expressed as follows:  
10

$$11 \text{ Yield} = \frac{D_o(1+0.5g)^n}{P_o}$$

12  
13  
14  
15 Thus, Mr. Parcell actually used a projected dividend yield in his DCF  
16 analysis, which is not analogous to using the current risk-free rate in a CAPM  
17 analysis.

18 Q. On page 7, lines 1 – 5 of his surrebuttal testimony, Mr. Parcell states that it  
19 is proper to consider both geometric and arithmetic mean returns because  
20 “investors have access to both types of returns when they make  
21 investment decisions.” Please comment.

22 A. Both Mr. Parcell and I have relied upon historical market equity returns from  
23 Ibbotson Associates. It is only logical that if investors have access to these  
24 returns, they also have access to Ibbotson Associates recommendation /  
25 conclusion that only the arithmetic mean return / equity risk premium is  
26 appropriate for cost of capital purposes because it is the “most appropriate when  
27  
28

1 discounting future cash flows as they state on pages 55 – 56 of SBBI – 2013  
2 Valuation.

3 **Q. Mr. Parcell maintains that it is not necessary to incorporate an empirical**  
4 **CAPM (“ECAPM”) analysis. Please comment.**

5 A. Mr. Parcell’s discussion on line 21, page 8 through line 2, page 9 of his  
6 surrebuttal testimony once again ignores empirical academic literature. Both my  
7 direct and rebuttal testimonies cited the academic literature which have  
8 determined that the Security Market Line (“SML”) described by the CAPM  
9 formula at any given moment in time is not as steeply sloped as the predicted  
10 SML. This literature underscores that the traditional CAPM understates the cost  
11 rate for common equity for companies with betas less than 1.0 and overstates  
12 the cost rate for companies with betas greater than 1.0. The ECAPM is not based  
13 upon any assumptions of mine, but rather upon extensive academic empirical  
14 research.  
15

16 **Q. Do you have any final comment?**

17 A. Yes. The fact that I have not addressed all of Mr. Parcell’s comments upon my  
18 rebuttal testimony should not be taken to mean that I am in agreement with those  
19 comments.  
20

21 **Q. Does that conclude your rejoinder testimony?**

22 A. Yes.  
23  
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28

EXHIBIT A  
SCHEDULES

**Chaparral City Water  
Company**  
Financial Statements  
December 31, 2011

**Chaparral City Water Company**  
**Index**  
**December 31, 2011**

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**KPMG LLP**  
**Chartered Accountants**  
10125 - 102 Street  
Edmonton AB T5J 3V8  
Canada

Telephone (780) 429-7300  
Fax (780) 429-7379  
Internet [www.kpmg.ca](http://www.kpmg.ca)

## INDEPENDENT AUDITORS' REPORT

To the Directors of Chaparral City Water Company

We have audited the accompanying financial statements of Chaparral City Water Company, which comprise the balance sheet and statement of capitalization as at December 31, 2011, the statements income, changes in common stockholder's equity and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

### *Management's Responsibility for the Financial Statements*

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

### *Auditors' Responsibility*

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### *Opinion*

In our opinion, the financial statements present fairly, in all material respects, the financial position of Chaparral City Water Company as at December 31, 2011 and the results of its financial performance and its cash flows for the year then ended in accordance with U.S. generally accepted accounting principles.

A handwritten signature in black ink that reads 'KPMG LLP'. The signature is written in a cursive, slightly slanted style. A horizontal line is drawn underneath the signature.

Chartered Accountants

April 27, 2012

Edmonton, Canada

**Chaparral City Water Company**  
**Balance Sheet**  
**December 31, 2011**

<b>Assets</b>	
Utility plant (Note 3)	\$ 64,384,389
Less: accumulated depreciation	(23,374,244)
Construction work in progress	<u>339,219</u>
Net utility plant	<u>41,349,364</u>
<b>Other Property and Investments</b>	
Goodwill	3,321,058
Restricted cash	<u>730,638</u>
	<u>4,051,696</u>
<b>Current Assets</b>	
Cash and cash equivalents	1,841,157
Accounts receivable, net of allowance of \$17,787	450,341
Other accounts receivable	23,638
Unbilled revenues	282,861
Deferred income taxes - current	12,471
Regulatory assets -- current (Note 2)	32,599
Prepaid expenses and other current assets	<u>249,763</u>
Total current assets	<u>2,892,830</u>
<b>Other Assets</b>	
Debt issuance costs	<u>291,507</u>
Total other assets	<u>291,507</u>
Total assets	<u>\$ 48,585,397</u>
<b>Capitalization and Liabilities</b>	
Common stockholder's equity	\$ 22,854,464
Long-term debt, less current maturities (Note 4)	<u>4,935,000</u>
Total capitalization	<u>27,789,464</u>
<b>Commitments and contingencies (Note 9)</b>	
<b>Current Liabilities</b>	
Long-term debt, current (Note 4)	365,000
Accounts payable	342,163
Intercompany payables due to related party	315,434
Income taxes payable	367,118
Accrued employee expenses	42,420
Accrued interest	23,785
Other	<u>236,874</u>
Total current liabilities	<u>1,692,794</u>
<b>Other Credits</b>	
Customer deposits	208,350
Advances for construction	4,626,636
Contributions in aid of construction, net	12,461,325
Deferred income taxes	1,279,250
Regulatory liabilities (Note 2)	461,005
Other	<u>66,573</u>
Total other credits	<u>19,103,139</u>
Total capitalization and liabilities	<u>\$ 48,585,397</u>

*The accompanying notes are an integral part of these financial statements*

**Chaparral City Water Company**  
**Statement of Capitalization**  
**December 31, 2011**

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<b>Common stockholder's equity</b>	
Common stock	\$ 4,603,140
Additional paid-in capital	14,959,074
Retained earnings	<u>3,292,250</u>
<b>Total common stockholder's equity</b>	<u><b>22,854,464</b></u>
<b>Long-term debt</b>	
Industrial Development Authority Bonds	
Series 1997A term bonds, due December 1, 2022 (5.40%)	4,515,000
Series 1997B term bonds, due December 1, 2022 (5.30%)	<u>785,000</u>
<b>Total long-term debt</b>	<b>5,300,000</b>
<b>Less: current maturities</b>	<u><b>(365,000)</b></u>
<b>Long-term debt, less current maturities</b>	<u><b>4,935,000</b></u>
<b>Total capitalization</b>	<u><b>\$ 27,789,464</b></u>

*The accompanying notes are an integral part of these financial statements*

**Chaparral City Water Company**  
**Statement of Income**  
**Year Ended December 31, 2011**

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<b>Operating revenues</b>	
Sales of water	<u>\$ 8,958,247</u>
<b>Operating expenses</b>	
Water purchased	964,143
Power purchased for pumping	553,148
Other operation expenses	1,226,856
Administrative and general expenses	1,450,136
Maintenance	428,764
Depreciation	1,880,295
Property and other taxes	225,770
Gain on settlement for removal of wells	<u>(760,000)</u>
Total operating expenses	<u>5,969,112</u>
<b>Operating income</b>	<u>2,989,135</u>
<b>Other income (expense)</b>	
Interest income	575
Interest expense	<u>(332,462)</u>
Total other income (expense)	<u>(331,887)</u>
<b>Income from operations before income tax expense</b>	<u>2,657,248</u>
Income tax expense	<u>1,259,949</u>
<b>Net income</b>	<u>\$ 1,397,299</u>

*The accompanying notes are an integral part of these financial statements*

**Chaparral City Water Company**  
**Statement of Changes in Common Stockholder's Equity**  
**Year Ended December 31, 2011**

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	<b>Common Stock</b>	<b>Additional Paid-in Capital</b>	<b>Retained Earnings</b>	<b>Total</b>
<b>Balance, January 1, 2011</b>	\$4,603,140	\$14,959,074	\$3,394,951	\$ 22,957,165
Dividends on Common Stock	-	-	(1,500,000)	(1,500,000)
Net income	-	-	<u>1,397,299</u>	<u>1,397,299</u>
<b>Balance, December 31, 2011</b>	<u>\$4,603,140</u>	<u>\$14,959,074</u>	<u>\$ 3,292,250</u>	<u>\$ 22,854,464</u>

*The accompanying notes are an integral part of these financial statements*

**Chaparral City Water Company**  
**Statement of Cash Flows**  
**Year Ended December 31, 2011**

<b>Cash flows from operating activities</b>	
Net income	\$ 1,397,299
Adjustments to reconcile net income to net cash provided by operating activities:	
Depreciation	1,880,295
Deferred income taxes	525,053
Amortization of debt issuance costs	26,501
Gain on settlement for removal of wells	(760,000)
Changes in operating assets and liabilities:	
Accounts receivable	(39,582)
Other accounts receivable	41,248
Unbilled revenues	77,300
Materials and supplies	5,518
Prepaid expenses and other current assets	(33,549)
Taxes receivable/payable	321,135
Other assets/liabilities	(121,813)
Accounts payable	97,654
Intercompany receivables/payables	137,740
Customer deposits	(66,116)
Other	(21,500)
Net cash flows provided by operating activities	<u>3,467,183</u>
<b>Cash flows from investing activities</b>	
Capital expenditures	(1,000,383)
Change in restricted cash	(6)
Net cash flows used in investing activities	<u>(1,000,389)</u>
<b>Cash flows from financing activities</b>	
Receipt of advances for and contributions in aid of construction	37,045
Refunds on advances for construction	(114,858)
Repayments of long-term debt	(345,000)
Common dividends paid	(1,500,000)
Net cash flows used in financing activities	<u>(1,922,813)</u>
Increase in cash and cash equivalents	543,981
Cash and cash equivalents at beginning of year	<u>1,297,176</u>
Cash and cash equivalents at end of year	<u>\$ 1,841,157</u>
<b>Supplemental disclosure of cash flow information</b>	
Interest paid	\$ 303,595
Income taxes paid, net of refunds	\$ 169,185

*The accompanying notes are an integral part of these financial statements*

## **Chaparral City Water Company**

### **Notes to Financial Statements**

#### **December 31, 2011**

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#### **1. Summary of Significant Accounting Policies**

##### **Nature of Operations**

Chaparral City Water Company ("CCWC" or "the Company") is an Arizona public utility company engaged principally in the purchase, production, distribution and sale of water. CCWC serves approximately 13,000 customers in Fountain Hills, Arizona and a portion of the City of Scottsdale, Arizona. Regulated by the Arizona Corporation Commission ("ACC"), CCWC is required to provide service and grant credit to customers within its defined service area.

On June 7, 2010, American States Water Company ("AWR"), the parent company of CCWC, entered into a stock purchase agreement with EPCOR Water (USA) Inc. ("EPCOR") to sell all of the common stock of CCWC. The consummation of the transaction contemplated by the agreement was subject to customary conditions, including among other things, regulatory approval by the ACC. The ACC voted on March 30, 2011 to approve the transaction and issued a final order on April 7, 2011.

On May 31, 2011, EPCOR completed the acquisition of 100% of the common stock of CCWC from AWR for total consideration of \$30 million and the assumption of \$5 million in long-term debt.

##### **Basis of Presentation**

The preparation of financial statements of CCWC on a stand-alone basis is in accordance with accounting principles generally accepted in the United States of America and requires the use of estimates and assumptions that affect (i) the reported amount of assets and liabilities, (ii) disclosure of contingent assets and liabilities known to exist as of the date the financial statements are published, and (iii) the reported amount of revenues and expenses recognized during each period presented. Actual results could differ from those estimates.

##### **Regulatory Accounting**

CCWC's accounting policies conform to accounting principles generally accepted in the United States of America, including the accounting principles for rate-regulated enterprises, which reflect the rate-making policies of the ACC, and are maintained in accordance with the Uniform System of Accounts prescribed by the ACC. CCWC is subject to regulation by the ACC to the extent necessary to enable the ACC to determine that CCWC's rates constitute reasonable costs to its customers. Under such accounting guidance, rate regulated entities defer costs and credits on the balance sheet as regulatory assets and liabilities when it is probable that those costs and credits will be recognized in the ratemaking process in a period different from the period in which they would have been reflected in income by an unregulated company. These deferred regulatory assets and liabilities are then reflected in the income statement in the period in which the same amounts are reflected in the rates charged for service. The amounts included as regulatory assets and liabilities that will be collected over a period exceeding one year are classified as long-term assets and liabilities as at December 31, 2011.

##### **Cash and Cash Equivalents**

Cash equivalents consist of highly liquid money market instruments with original maturities of three months or less. At times, cash and cash equivalent balances may be in excess of federally insured limits. CCWC's cash and cash equivalents are held with financial institutions with high credit standings.

## **Chaparral City Water Company**

### **Notes to Financial Statements**

#### **December 31, 2011**

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#### **Restricted Cash**

In accordance with the terms of its long-term debt agreements, CCWC is required to maintain amounts on deposit in a trust account (the Debt Service Reserve) for payment of principal and interest (Note 4). The funds in this account will be maintained until such time that the terms of the financing agreement are fully satisfied. At December 31, 2011, CCWC had \$730,638 classified as non-current restricted cash on the balance sheet in connection with this debt service reserve.

#### **Accounts Receivable**

Accounts receivable is reported on the balance sheet net of any allowance for doubtful accounts. The allowance is based on CCWC's evaluation of the receivable portfolio under current conditions and review of specific problems and such other factors that, in management's judgment, requires recognition in estimating losses.

#### **Utility Plant and Depreciation**

CCWC capitalizes as utility plant the cost of additions and replacements of retirement units. Such costs include labor, materials, and certain indirect charges.

Depreciation is computed utilizing the straight-line group method at rates based on the estimated useful lives of the assets as prescribed by the ACC. The composite provision for depreciation for CCWC was approximately 3.99% for the year ended December 31, 2011. Expenditures for maintenance and repairs are expensed as incurred. Replaced or retired property costs, including cost of removal, are charged to the accumulated provision for depreciation.

#### **Impairment of Long-Lived Assets**

Long-lived assets are reviewed for impairment annually or whenever events or changes in circumstances indicate that the carrying amount of an asset may not be fully recoverable in accordance with the accounting guidance for the impairment or disposal of long-lived assets. CCWC will recognize an impairment loss only if the carrying value amount of a long-lived asset is not recoverable from customer rates authorized by the ACC. An impairment loss is measured as the excess of the carrying value over the amounts recovered in customer rates. CCWC also periodically reviews its utility plant for possible impairment in accordance with the accounting guidance for regulated enterprises for accounting for abandonments and disallowances of plant costs.

#### **Goodwill**

In accordance with the accounting guidance for goodwill and other intangible assets, goodwill is tested for impairment at least annually and more frequently if circumstances indicate that it may be impaired. The goodwill impairment model is a two-step process. First, it requires a comparison of the book value of net assets to the fair value of the related operations that have goodwill assigned to them. CCWC uses the terminal multiple valuation method in estimating fair value which assumes a business will be sold at the end of the projection period at a specific terminal multiple. Earnings and discounted cash flows were developed from CCWC's internal forecasts. Additionally, management must make an estimate of a weighted average cost of capital to be used as a discount rate, which takes into account certain risk and size premiums, long-term bond yields, and the capital structure of the industry. Changes in these projections or estimates could result in CCWC either passing or failing the first step in the accounting guidance impairment model, which could significantly change the amount of any impairment ultimately recorded.

**Chaparral City Water Company**  
**Notes to Financial Statements**  
**December 31, 2011**

CCWC also considers other qualitative and quantitative factors, including terminal multiples used in the water industry, the regulatory environment in which the Company operates that can significantly impact future earnings and cash flows, and the effects of the volatile current economic environment. If the fair value is determined to be less than book value, a second step is performed to compute the amount of the impairment. In this process, a fair value for goodwill is estimated, based in part on the fair value of the Company's assets and liabilities used in the first step, and compared to its carrying value. The amount by which carrying value exceeds fair value represents the amount of goodwill impairment.

As of December 31, 2011, the \$3,321,058 of goodwill is not considered to be at risk of impairment as CCWC's sale to EPCOR indicates a fair value above the book value of the Company.

**Revenues**

CCWC records operating revenues when the service is provided to customers. Revenues include amounts billed to customers on a cycle basis based on meter reading for services provided and unbilled revenues representing estimated amounts to be billed for usage from the last meter reading date to the end of the accounting period. Actual usage may vary from this estimate.

**Advances for Construction & Contributions in aid of Construction**

Advances for construction represent amounts advanced by developers, which are refundable over 10 to 20 years. Refund amounts under the contracts are based on annual revenues from the extensions. After all refunds are made, any remaining balance is transferred to contributions-in-aid of construction. There were \$129,200 of advances that expired and transferred to contributions-in-aid of construction during the year ended December 31, 2011. Contributions in aid of construction are similar to advances, but require no refunding and are amortized over the useful lives of the related property.

**Fair Value of Financial Instruments**

For cash and cash equivalents, accounts receivable, accounts payable and short-term debt, the carrying amount is assumed to approximate fair value due to the short-term nature of the amounts. The table below estimates the fair value of long-term debt held by CCWC. Rates available to utility subsidiaries at December 31, 2011 for debt with similar terms and remaining maturities were used to estimate fair value for long-term debt. Changes in the assumptions will produce differing results.

	December 31, 2011	
	Carrying Amount	Fair Value
Financial liabilities:		
Long-term debt	\$ 5,300,000	\$ 6,089,055

**Debt Issuance Costs**

Original debt issuance costs are capitalized and amortized over the lives of the respective issues.

## Chaparral City Water Company

### Notes to Financial Statements

#### December 31, 2011

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#### **Sales and Use Taxes**

In addition to the collection of regular rates, CCWC separately charges and collects from its customers a proportionate share of any privilege, sales and use tax in accordance with ACC rules. CCWC bills and collects these taxes from its customers, which are then remitted to the state and local governments on a monthly basis. Because CCWC acts as an agent, these taxes are accounted for on a net basis. During the year ended December 31, 2011, CCWC billed its customers \$901,757 for these taxes.

#### **Related Party Transactions**

Prior to the close of business on May 31, 2011, CCWC received various services from its former parent, AWR, and from Golden State Water Company ("GSWC"), a wholly owned subsidiary of AWR. AWR maintained coverage to insure against property and general liability claims incurred in the ordinary course of CCWC's business. Ultimate settlements of claims that occurred prior to the close of business on May 31, 2011 are the responsibility of AWR. GSWC also allocated certain corporate office administrative and general costs to CCWC using agreed upon allocation factors based on a weighted rate calculated from the number of customers, utility plant, expenses and labor costs ("four-factor method") that was established by the California Public Utilities Commission for regulated companies. In addition, CCWC remitted its federal tax payables to AWR (as the filer of the consolidated return in which it is included). As at May 31, 2011, total intercompany payables due to AWR and affiliates were \$343,216 for these items. All amounts were settled as part of the acquisition of CCWC by EPCOR.

During June 1, 2011 through December 31, 2011 CCWC benefited from shared services provided by EPCOR and its wholly owned subsidiary, EPCOR Water Services Inc. These services include customer service, regulatory affairs, human resources, insurance, legal, employee benefits, management, accounting and financial services. All transactions are in the normal course of operations and are based on normal commercial rates. As at December 31, 2011, total intercompany payables due to EPCOR and its affiliates were \$315,434.

#### **Subsequent Events**

CCWC has evaluated events and transactions that occurred after December 31, 2011 through March 29, 2012, which is the date these financial statements were issued.

#### **New Accounting Pronouncements**

Recently adopted accounting pronouncements: In October 2009, the FASB issued an update to the accounting standards and provided amendments to the criteria of Accounting Standards Codification Topic 605, "Revenue Recognition", for separately recognizing consideration in multiple-deliverable arrangements. The amendments establish a selling price hierarchy for determining the selling price of a deliverable. This guidance was effective for CCWC beginning January 1, 2011 and did not have an impact on its financial statements.

In January 2010, the FASB issued an update to the accounting standards and amended the disclosure guidance with respect to fair value measurements. Specifically, the new guidance requires disclosure of amounts transferred in and out of Levels 1 and 2 fair value measurements, a reconciliation presented on a gross basis rather than a net basis of activity in Level 3 fair value measurements, greater disaggregation of the assets and liabilities for which fair value measurements are presented and more robust disclosure of the valuation techniques and inputs used to measure Level 2 and 3 fair value measurements. The adoption of this guidance had no impact on CCWC's financial statements.

**Chaparral City Water Company**  
**Notes to Financial Statements**  
**December 31, 2011**

Other accounting standards that have been issued or proposed by the FASB or other standards-setting bodies that do not require adoption until a future date are not expected to have a material impact on CCWC's financial statements upon adoption.

**2. Regulatory Matters**

In accordance with accounting principles for rate-regulated enterprises, CCWC records regulatory assets, which represent probable future revenue associated with certain costs that will be recovered from customers through the ratemaking process, and regulatory liabilities, which represent probable future reductions in revenues associated with amounts that are to be credited to customers through the ratemaking process. At December 31, 2011, CCWC had approximately \$425,381 of net regulatory liabilities not accruing carrying costs. Regulatory assets, less regulatory liabilities, included in the balance sheet as at December 31, 2011 are as follows:

Deferred general rate case costs	\$ 107,099
Asset retirement obligations	66,112
Proceeds on settlement of removal of wells	(598,592)
Retroactive revenues	(3,025)
	<u>(428,406)</u>
Less: current asset balance	<u>(32,599)</u>
	<u>\$ (461,005)</u>

**Deferred General Rate Case Costs:**

Deferred rate case expenses are capitalized as regulatory assets and amortized as specified by the ACC for ratemaking purposes. In November 2009, CCWC filed an application for rehearing on several issues, including the recovery of previously incurred rate case costs in connection with an appeal and subsequent remand proceeding. On April 7, 2011, the ACC issued a final decision allowing CCWC to recover an additional \$100,000 of rate case expenses incurred in its appeal of its 2006 general rate case and the subsequent remand proceeding before the ACC.

**Asset Retirement Obligations:**

As more fully discussed in Note 3, effective January 1, 2003, CCWC adopted the accounting guidance for asset retirement obligations. Because retirement costs have historically been recovered through rates at the time of retirement, upon implementing the accounting guidance, the cumulative effect was reflected as a regulatory asset. CCWC will also reflect the gain or loss at settlement as a regulatory asset or liability on the balance sheet.

**Proceeds on Settlement for Removal of Wells:**

In 2005, in an agreement with the Fountain Hills Sanitary District ("FHSD"), CCWC agreed to permanently cease using one of its wells in order for the FHSD to secure an Aquifer Protection Permit for its recharge system. Based on previous rulings by the ACC on similar gains, CCWC recognized a net gain of \$760,000 (50% of the proceeds) in 2005 related to the settlement agreement and established a regulatory liability for the remaining \$760,000 pending the ACC's review of the matter. On October 8, 2009, the ACC ordered CCWC to treat the entire settlement proceeds of \$1,520,000 as a reduction to rate base. As a result, CCWC recognized a loss of \$760,000 during the third quarter of 2009 and increased the regulatory liability by this amount.

In November 2009, CCWC filed an application for rehearing on several issues including the sharing of this gain from the settlement proceeds. On April 7, 2011, the ACC issued a final order to

**Chaparral City Water Company**  
**Notes to Financial Statements**  
**December 31, 2011**

reverse its October 2009 decision and allowed CCWC to retain 50% of the \$1,520,000 settlement proceeds. Accordingly, for the year ended December 31, 2011, CCWC recorded a pretax gain of \$760,000 and reduced the regulatory liability related to the settlement of removal of wells.

**Retroactive Revenues**

As part of the April 7, 2011 ACC decision on the proceeds on settlement of removal of wells and additional rate case expenses, CCWC was authorized to recover the difference in revenues between what would have been collected to-date had the April 7, 2011 decision been in place effective October 2009, and revenues actually collected to-date under rates approved from the original 2009 decision. Accordingly, in May 2011 CCWC recorded retroactive revenues of \$149,258 to be collected, with interest at 6% per annum, through a six-month surcharge. During the six month surcharge collection period, CCWC collected excess revenues in the amount of \$3,025 and therefore recorded a regulatory liability in the balance sheet as at December 31, 2011.

**3. Utility Plant**

The following table reflects CCWC's utility plant by major class as at December 31, 2011:

Land	\$ 271,857
Intangible assets	1,282,734
Source of water supply	3,373,394
Pumping	6,029,036
Water treatment	7,025,559
Transmission and distribution	44,523,384
Other property and equipment	1,878,425
	<u>64,384,389</u>
Less: Accumulated depreciation	(23,374,244)
Construction work in progress	339,219
Net utility plant	<u>\$ 41,349,364</u>

As at December 31, 2011, the intangible assets included in Utility Plant consist of unamortized water rights for the additional Central Arizona Project ("CAP") allocation to CCWC in the amount of 1,931 acre-feet per year. In November 2007, a final written agreement was executed and CCWC paid approximately \$1.3 million for these additional CAP water rights (see Note 9).

**Asset Retirement Obligation**

Effective January 1, 2003, CCWC adopted accounting guidance for asset retirement obligations, which requires businesses to record the fair value of a liability for an asset retirement obligation in the period in which it is incurred. When the liability is initially recorded, CCWC capitalizes a cost by increasing the carrying amount of the related long-lived asset. Over time, the liability is accreted to its present value each period, and the capitalized cost is depreciated over the useful life of the related asset. Upon settlement of the liability, CCWC either settles the obligation for its recorded amount or incurs a gain or loss upon settlement. CCWC's legal obligations for retirement reflect principally the retirement of wells, which by law need to be properly capped at the time of removal. Retirement costs have historically been recovered through rates at the time of retirement. Accordingly, at implementation of the guidance for asset retirement obligations, the cumulative effect was reflected as a regulatory asset. The Company also reflects the gain or loss at settlement as a regulatory asset or liability on the balance sheet.

For the year ended December 31, 2011, CCWC incurred accretion of \$3,536.

**Chaparral City Water Company**  
**Notes to Financial Statements**  
**December 31, 2011**

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**4. Long-term Debt**

**Industrial Development Authority Bonds**

Substantially all of utility plant is pledged as collateral for CCWC's Industrial Development Authority ("IDA") Bonds. The Bond Agreement, among other things, (i) requires CCWC to maintain certain financial ratios; (ii) restricts CCWC's ability to incur debt and make liens, sell, lease or dispose of assets, merge with another corporation, and (iii) restricts the payment of dividends. CCWC maintains a debt service reserve fund, which had a balance of \$655,760 at December 31, 2011. Amounts are classified as noncurrent restricted cash on the balance sheet. The loan and trust agreement contains restrictive covenants, including the maintenance of a debt service coverage ratio of 2.0, as defined in the loan and trust agreement, calculated annually at year end. As of December 31, 2011, CCWC was in compliance with all covenants under the loan and trust agreement.

Maturities of long-term debt outstanding at December 31, 2011 are as follows:

2012	\$	365,000
2013		390,000
2014		405,000
2015		430,000
2016		450,000
Thereafter		<u>3,260,000</u>
		5,300,000
Less: current portion		<u>(365,000)</u>
	\$	<u>4,935,000</u>

**Repayment Contract**

In 1984, CCWC entered into an agreement with the United States Bureau of Reclamation for construction of a delivery and storage system to transport CAP water to CCWC's property (the "Delivery Agreement"). In connection therewith, a repayment obligation was incurred by CCWC related to construction costs plus interest. CCWC made the final payment on this obligation in 2006. Interest accrued at a rate of 3.34% per annum. The cost of the constructed assets is recorded as utility plant. Under the terms of the Delivery Agreement, CCWC retains the right to use the delivery and storage system for an unspecified time period conditional upon meeting certain obligations including making scheduled principal and interest repayments for the construction costs and operating and maintaining the system. The Delivery Agreement also provides that the United States Bureau of Reclamation retains ownership of the system. Pursuant to this Agreement, CCWC continues to maintain a debt service reserve fund, which had a balance of \$74,879 at December 31, 2011. This amount is classified as part of noncurrent restricted cash on the balance sheet.

**5. Dividend Limitations**

CCWC is subject to contractual restrictions on its ability to pay dividends. CCWC's maximum ability to distribute dividends is limited to maintenance of no more than 55% debt in the capital structure for the quarter immediately preceding the distribution. The ability of CCWC to pay dividends is also restricted by Arizona law. Under restrictions of the Arizona tests, approximately \$1.6 million was available to pay dividends at December 31, 2011. Contractual restrictions are the most restrictive. On May 26, 2011, CCWC distributed a cash dividend of \$1.5 million to its then-parent, AWR.

**Chaparral City Water Company**  
**Notes to Financial Statements**  
**December 31, 2011**

**6. Taxes on Income**

The Company's financial statements recognize the current and deferred income tax consequences that result from the Company's activities during the current and preceding periods pursuant to the provisions of Accounting Standards Codification Topic 740, Income Taxes (ASC 740), as if the Company were a separate taxpayer rather than a member of the parent company's consolidated income tax return group. Differences between the Company's separate company income tax provision and cash flows attributable to income taxes pursuant to the provisions of the Company's tax sharing arrangement with the parent company will be recognized as capital contributions from, or dividends to, the parent company.

The Company applies the provisions of the accounting guidance for accounting for income taxes, which requires the use of an asset and liability approach in accounting for income taxes. This approach requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the Company's financial statements or tax returns.

The significant components of the deferred tax assets and liabilities as reflected in the balance sheet at December 31, 2011 were:

<b>Deferred tax assets</b>	
Contributions and advances	\$ 3,274,795
Regulatory liability-related (well-removal settlement)	121,421
Other	17,345
	<u>3,413,561</u>
<b>Deferred tax liabilities</b>	
Goodwill	(1,267,980)
Fixed assets	(3,412,360)
	<u>(4,680,340)</u>
Accumulated deferred income taxes, net	<u>\$ (1,266,779)</u>

The current and deferred components of income tax expense were as follows:

<b>Current provision</b>	
Federal	\$ 605,353
State	129,543
Total current tax expense	<u>734,896</u>
<b>Deferred provision</b>	
Federal	457,677
State	92,692
Adjustment to enacted state rate	(25,316)
Total deferred tax expense	<u>525,053</u>
Total income tax expense	<u>\$ 1,259,949</u>

Income tax expense from continuing operations for the year was higher than the amount that would result from applying the domestic corporate income tax rate primarily as a result of an adjustment made to the Company's component 1 goodwill which was reflected on its 2010 income tax return as filed as well as certain other adjustments made on amended 2006 through 2009 income tax

## **Chaparral City Water Company**

### **Notes to Financial Statements**

#### **December 31, 2011**

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returns. In addition, the federal statutory rate differs from the effective rate due to state taxes, net of federal effect.

As at December 31, 2011, the Company had no unrecognized tax benefits.

#### **7. Employee Benefit Plans**

Certain CCWC employees participated in a defined benefit plan (the "Plan") administered by AWR that provided eligible employees (through the close of business on May 31, 2011) monthly benefits upon retirement based on average salaries and length of service. The pension costs for CCWC were \$25,522 for the period January 1, 2011 through May 31, 2011 and have been included in administrative and general expenses on the statement of income. On June 1, 2011 employees of CCWC were no longer eligible to participate in the Plan as a result of the acquisition of CCWC by EPCOR.

Certain CCWC employees were also included in the 401(k) Investment Incentive Program (the "401(k) Plan") administered by AWR through May 31, 2011, under which employees may invest a percentage of their pay, up to a maximum investment prescribed by law, in an investment program managed by an outside investment manager. Company contributions to the 401(k) Plan are based upon a percentage of individual employee contributions. CCWC contributions to the 401(k) Plan for the period January 1, 2011 through May 31, 2011 totaled \$11,763. On June 1, 2011 employees of CCWC were no longer eligible to participate in the 401(k) Plan as a result of the acquisition of CCWC by EPCOR.

On June 1, 2011, CCWC employees became eligible to participate in the TriNet 401(k) Plan – EPCOR Water (USA), Inc. (the "TriNet 401(k) Plan"). Eligible employees may invest a percentage of their pay, up to a maximum investment prescribed by law, in an investment program managed by an outside investment manager. Company contributions to the TriNet 401(k) Plan are based upon a percentage of individual employee contributions. CCWC contributions to the TriNet 401(k) Plan for the period June 1, 2011 through December 31, 2011 totaled \$31,453.

#### **8. Related-Party Transactions**

Through the close of business on May 31, 2011, CCWC benefited from customer service, regulatory affairs, human resources, insurance, legal, employee benefits, management, accounting and financial services provided and paid for by AWR and reimbursed by CCWC. AWR allocated these costs to CCWC using agreed upon allocation factors based on a weighted rate calculated from the number of customers, utility plant, expenses and labor costs ("four-factor method") that was established by the California Public Utilities Commission for regulated companies. The costs for these services, including allocated costs for the employee benefit plans discussed above, were \$356,238 for the period January 1, 2011 through May 31, 2011 and have been included in other operation expenses and administrative and general expenses.

Between June 1, 2011 and December 31, 2011, CCWC benefited from shared services which included customer service, regulatory affairs, human resources, insurance, legal, employee benefits, management, accounting and financial services provided and paid for by EPCOR. All transactions are in the normal course of operations and are based on normal commercial rates. The costs for these services were \$416,931 and have been included in other operation expenses and administrative and general expenses. During this same period, administrative and general

## **Chaparral City Water Company**

### **Notes to Financial Statements**

#### **December 31, 2011**

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expenses were offset by \$33,831 for employee costs that were transferred to other wholly owned subsidiaries of EPCOR.

#### **9. Commitments and Contingencies**

CCWC obtains its water supply from one operating well and from Colorado River water delivered by the CAP. The majority of CCWC's water supply is obtained from its CAP allocation and well water is used for peaking capacity in excess of treatment plant capability, during treatment plant shutdowns, and to keep the well system in optimal operating condition.

CCWC has an assured water supply designation, by decision and order of the Arizona Department of Water Resources stating that CCWC has demonstrated the physical, legal and continuous availability of CAP water and groundwater, in an aggregate volume of 11,759 acre-feet per year for a minimum of 100 years. The 11,759 acre-feet is comprised of existing CAP allocation of 8,909 acre-feet per year, 350 acre-feet per year groundwater allowance, incidental recharge credits of 500 acre-feet per year, and a Central Arizona Groundwater Replenishment District contract of 2,000 acre-feet per year.

CCWC has a long-term water supply contract with the Central Arizona Conservation District (the "District") through December 2108, and is entitled to take 8,909 acre-feet of water per year from CAP. In connection with this long-term water supply contract, CCWC pays an annual charge based on its full allocation regardless of the amount of water delivered. The rate for such charge is set by the District and is subject to annual increases. Based on the District's published new rate schedules, the estimated remaining commitment under this contract is \$400,905 as at December 31, 2011.

Notwithstanding an assured water supply designation, CCWC's water supply may be subject to interruption or reduction, in particular owing to interruption or reduction of CAP water. In the event of interruption or reduction of CAP water, CCWC can rely on its well water supplies for short-term periods. However, the quantity of water CCWC supplies to some or all of its customers may be interrupted or curtailed, pursuant to the provisions of its tariffs. CCWC has the physical capability to deliver water in excess of that which is currently accounted for in CCWC's assured water supply account.

CCWC is involved from time to time in claims and litigation, both as plaintiff and defendant, in the ordinary course of business. The Company believes that rate recovery, proper insurance coverage, and reserves are in place to insure against property, general liability, and workers' compensation claims incurred in the ordinary course of business. The Company is of the opinion that the outcome of such claims and litigation will not have a materially adverse effect upon CCWC's results of operations, financial position or cash flows.

**Chaparral City Water  
Company**  
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**KPMG LLP**  
**Chartered Accountants**  
10125 - 102 Street  
Edmonton AB T5J 3V8  
Canada

Telephone (780) 429-7300  
Fax (780) 429-7379  
Internet www.kpmg.ca

## INDEPENDENT AUDITORS' REPORT

To the Directors of Chaparral City Water Company

We have audited the accompanying financial statements of Chaparral City Water Company, which comprise the balance sheet and statement of capitalization as at December 31, 2012, the statements of income, changes in common stockholder's equity and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

### *Management's Responsibility for the Financial Statements*

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

### *Auditors' Responsibility*

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### *Opinion*

In our opinion, the financial statements present fairly, in all material respects, the financial position of Chaparral City Water Company as at December 31, 2012, and its results of operations and its cash flows for the year then ended in accordance with U.S. generally accepted accounting principles.

Yours truly,

Chartered Accountants  
April 29, 2013  
Edmonton, Canada

**Chaparral City Water Company**  
**Balance Sheet**  
**December 31, 2012**

<b>Assets</b>	
Utility plant (Note 3)	\$ 65,617,301
Less: accumulated depreciation	(25,734,123)
Construction work in progress	1,612,943
Net utility plant	<u>41,496,121</u>
Other Property and Investments	
Goodwill	3,321,058
Restricted cash	730,646
	<u>4,051,704</u>
Current Assets	
Cash and cash equivalents	4,931,943
Accounts receivable, net of allowance of \$43,794	473,164
Other accounts receivable	19,981
Unbilled revenues	344,987
Prepaid expenses and other current assets	259,560
Total current assets	<u>6,029,635</u>
Other Assets	
Regulatory assets – non-current (Note 2)	79,806
Debt issuance costs	265,006
Deferred income taxes	2,839,111
Total other assets	<u>3,183,923</u>
Total assets	<u>\$ 54,761,383</u>
<b>Capitalization and Liabilities</b>	
Common stockholder's equity	\$ 26,949,123
Long-term debt, less current maturities (Note 4)	4,545,000
Total capitalization	<u>31,494,123</u>
Commitments and contingencies (Note 8)	
Current Liabilities	
Long-term debt, current (Note 4)	390,000
Accounts payable	845,144
Intercompany payables due to related party (Note 5)	2,985,504
Regulatory liabilities (Note 2)	74,500
Accrued interest	22,147
Other	283,306
Total current liabilities	<u>4,600,601</u>
Other Credits	
Customer deposits	148,869
Intercompany payables due to related party (Note 5)	1,500,624
Advances for construction	3,933,916
Contributions in aid of construction, net	12,637,731
Regulatory liabilities (Note 2)	375,080
Other	70,439
Total other credits	<u>18,666,659</u>
Total capitalization and liabilities	<u>\$ 54,761,383</u>

*The accompanying notes are an integral part of these financial statements*

**Chaparral City Water Company**  
**Statement of Capitalization**  
**December 31, 2012**

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<b>Common stockholder's equity</b>	
Common stock	\$ 4,603,140
Additional paid-in capital	19,006,566
Retained earnings	<u>3,339,417</u>
Total common stockholder's equity	26,949,123
<b>Long-term debt</b>	
Industrial Development Authority Bonds	
Series 1997A term bonds, due December 1, 2022 (5.40%)	4,205,000
Series 1997B term bonds, due December 1, 2022 (5.30%)	<u>730,000</u>
Total long-term debt	4,935,000
Less: current maturities	<u>(390,000)</u>
Long-term debt, less current maturities	<u>4,545,000</u>
Total capitalization	<u>\$ 31,494,123</u>

*The accompanying notes are an integral part of these financial statements*

**Chaparral City Water Company**  
**Statement of Income**  
**Year Ended December 31, 2012**

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<b>Operating revenues</b>	
Sales of water	\$ 9,119,018
<b>Operating expenses</b>	
Water purchased	911,156
Power purchased for pumping	565,129
Other operation expenses	2,015,901
Administrative and general expenses	1,602,935
Maintenance	181,576
Depreciation	1,852,898
Property and other taxes	<u>219,269</u>
Total operating expenses	<u>7,348,864</u>
<b>Operating income</b>	<u>1,770,154</u>
<b>Other income (expense)</b>	
Other income	2,807
Interest expense	<u>(283,567)</u>
Total other income (expense)	<u>(280,760)</u>
<b>Income from operations before income tax recovery</b>	<u>1,489,394</u>
Income tax recovery (Note 6)	<u>58,397</u>
<b>Net income</b>	<u>\$ 1,547,791</u>

*The accompanying notes are an integral part of these financial statements*

**Chaparral City Water Company**  
**Statement of Changes in Common Stockholder's Equity**  
**Year Ended December 31, 2012**

	<b>Common Stock</b>	<b>Additional Paid-in Capital</b>	<b>Retained Earnings</b>	<b>Total</b>
<b>Balance, January 1, 2012</b>	\$4,603,140	\$14,959,074	\$3,292,250	\$ 22,854,464
Dividends on Common Stock	-	-	(1,500,624)	(1,500,624)
Transaction with shareholder	-	4,047,492	-	4,047,492
Net income	-	-	1,547,791	1,547,791
<b>Balance, December 31, 2012</b>	<u>\$4,603,140</u>	<u>\$19,006,566</u>	<u>\$ 3,339,417</u>	<u>\$ 26,949,123</u>

*The accompanying notes are an integral part of these financial statements*

**Chaparral City Water Company**  
**Statement of Cash Flows**  
**Year Ended December 31, 2012**

<b>Cash flows from operating activities</b>	
Net income	\$ 1,547,791
Adjustments to reconcile net income to net cash provided by operating activities:	
Depreciation	1,852,898
Net gain on sale of property	2,800
Provision for doubtful accounts	26,007
Income tax recovery	(58,397)
Amortization of debt issuance costs	26,501
Changes in operating assets and liabilities:	
Accounts receivable	(48,830)
Other accounts receivable	3,657
Unbilled revenues	(62,126)
Prepaid expenses and other current assets	(9,797)
Taxes receivable/payable	(367,118)
Regulatory asset/liabilities	24,163
Other assets/liabilities	(71,933)
Accounts payable	502,981
Intercompany receivables/payables	2,670,070
Customer deposits	(59,482)
Net cash flows provided by operating activities	<u>5,979,185</u>
<b>Cash flows from investing activities</b>	
Capital expenditures	(2,509,436)
Change in restricted cash	(8)
Net cash flows used in investing activities	<u>(2,509,444)</u>
<b>Cash flows from financing activities</b>	
Receipt of advances for and contributions in aid of construction	40,887
Refunds on advances for construction	(54,842)
Repayments of long-term debt	(365,000)
Net cash flows used in financing activities	<u>(378,955)</u>
Increase in cash and cash equivalents	3,090,786
Cash and cash equivalents at beginning of year	<u>1,841,157</u>
Cash and cash equivalents at end of year	<u>\$ 4,931,943</u>
<b>Supplemental disclosure of cash flow information</b>	
Interest paid	\$ 285,415
Income taxes paid, net of refunds	\$ -

*The accompanying notes are an integral part of these financial statements*

## **Chaparral City Water Company**

### **Notes to Financial Statements**

#### **December 31, 2012**

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#### **1. Summary of Significant Accounting Policies**

##### **Nature of Operations**

Chaparral City Water Company ("CCWC" or "the Company") is an Arizona public utility company engaged principally in the purchase, treatment, distribution and sale of water. CCWC serves approximately 13,000 customers in Fountain Hills, Arizona and a portion of the City of Scottsdale, Arizona. Regulated by the Arizona Corporation Commission ("ACC"), CCWC is required to provide service and grant credit to customers within its defined service area. EPCOR Water (USA), Inc. owns 100% of the common stock of CCWC.

##### **Basis of Presentation**

The preparation of financial statements of CCWC is in accordance with accounting principles generally accepted in the United States of America and requires the use of estimates and assumptions that affect (i) the reported amount of assets and liabilities, (ii) the disclosure of contingent assets and liabilities known to exist as of the date the financial statements are published, and (iii) the reported amount of revenues and expenses recognized during each period presented. Actual results could differ from those estimates.

##### **Regulatory Accounting**

CCWC's accounting policies conform to accounting principles generally accepted in the United States of America, including the accounting principles for rate-regulated enterprises, which reflect the rate-making policies of the ACC, and are maintained in accordance with the Uniform System of Accounts prescribed by the ACC. CCWC is subject to regulation by the ACC to the extent necessary to enable the ACC to determine that CCWC's rates constitute reasonable costs to its customers. Under such accounting guidance, rate regulated entities defer costs and credits on the balance sheet as regulatory assets and liabilities when it is probable that those costs and credits will be recognized in the ratemaking process in a period different from the period in which they would have been reflected in the statement of income by an unregulated company. These deferred regulatory assets and liabilities are then reflected in the statement of income in the period in which the same amounts are reflected in the rates charged for service. The amounts included as regulatory assets and liabilities that will be collected over a period exceeding one year are classified as long-term assets and liabilities as at December 31, 2012.

##### **Cash and Cash Equivalents**

Cash equivalents consist of highly liquid money market instruments with original maturities of three months or less. At times, cash and cash equivalent balances may be in excess of federally insured limits. CCWC's cash and cash equivalents are held with financial institutions with high credit standings.

##### **Restricted Cash**

In accordance with the terms of its long-term debt agreements, CCWC is required to maintain amounts on deposit in a trust account (the Debt Service Reserve) for payment of principal and interest Note 4. The funds in this account will be maintained until such time that the terms of the financing agreement are fully satisfied. At December 31, 2012, CCWC had \$730,646 classified as non-current restricted cash on the balance sheet in connection with this debt service reserve.

##### **Accounts Receivable**

Accounts receivable are reported on the balance sheet net of any allowance for doubtful accounts ("the allowance"). The allowance is based on CCWC's evaluation of the receivable portfolio under

## **Chaparral City Water Company**

### **Notes to Financial Statements**

#### **December 31, 2012**

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current conditions and review of specific problems and such other factors that, in management's judgment, requires recognition in estimating losses.

#### **Utility Plant and Depreciation**

CCWC capitalizes as utility plant the cost of additions and replacements of retired units. Such costs include labor, materials, and certain indirect charges.

Depreciation is computed utilizing the straight-line group method at rates based on the estimated useful lives of the assets as prescribed by the ACC. The composite provision for depreciation for CCWC was approximately 3.56% for the year ended December 31, 2012. Expenditures for maintenance and repairs are expensed as incurred. Replaced or retired property costs, including cost of removal, are charged to the accumulated provision for depreciation.

#### **Impairment of Long-Lived Assets**

Long-lived assets are reviewed for impairment annually or whenever events or changes in circumstances indicate that the carrying amount of an asset may not be fully recoverable in accordance with the accounting guidance for the impairment or disposal of long-lived assets. CCWC will recognize an impairment loss only if the carrying value amount of a long-lived asset is not recoverable from customer rates authorized by the ACC. An impairment loss is measured as the excess of the carrying value over the amounts recovered in customer rates. CCWC also periodically reviews its utility plant for possible impairment in accordance with the accounting guidance for regulated enterprises for accounting for abandonments and disallowances of plant costs.

#### **Goodwill**

In accordance with the provisions of Accounting Standards Codification Topic 350, Intangibles – Goodwill and Other (ASC 350), goodwill is tested for impairment at least annually and more frequently if circumstances indicate that it may be impaired. Accounting Standards Update (ASU) No. 2011-08 introduced a qualitative impairment assessment that may be used prior to performing step one of the two-step goodwill impairment test. The assessment determines whether it is more likely-than-not that the fair value of a reporting unit is less than its carrying amount. If determined that there is less than a 50% chance that the fair value of a reporting unit is less than its carrying amount, then performing the two step test is unnecessary.

At year end, CCWC performed a qualitative assessment to determine whether it was more likely than not that its book value of net assets were less than the fair value. CCWC considered relevant events and circumstances including macroeconomic conditions, industry and market conditions, cost factors, financial performance, and other relevant events.

At December 31, 2012, the \$3,321,058 of goodwill is not considered to be at risk of impairment.

#### **Revenues**

CCWC records operating revenues when the service is provided to customers. Revenues include amounts billed to customers on a cycle basis based on meter reading for services provided and unbilled revenues representing estimated amounts to be billed for usage from the last meter reading date to the end of the accounting period.

**Chaparral City Water Company**  
**Notes to Financial Statements**  
**December 31, 2012**

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**Advances for Construction & Contributions in Aid of Construction**

Advances for construction represent amounts advanced by developers, which are refundable over 10 to 20 years. Refund amounts under the contracts are based on annual revenues from the extensions. After all refunds are made, any remaining balance is transferred to contributions in aid of construction. There were \$562,878 of advances that expired and transferred to contributions in aid of construction during the year ended December 31, 2012. Contributions in aid of construction are similar to advances, but require no refunding and are amortized over the useful lives of the related property.

**Fair Value of Financial Instruments**

For cash and cash equivalents, accounts receivable, accounts payable and the current portion of long-term debt, the carrying amount is assumed to approximate fair value due to the short-term nature of the amounts. The table below estimates the fair value of long-term debt held by CCWC. Rates available to utility subsidiaries at December 31, 2012 for debt with similar terms and remaining maturities were used to estimate fair value for long-term debt. Changes in the assumptions will produce differing results.

	December 31, 2012	
	<u>Carrying Amount</u>	<u>Fair Value</u>
Financial liabilities:		
Long-term debt	\$ 4,935,000	\$ 5,642,391

**Sales and Use Taxes**

In addition to the collection of regular rates, CCWC separately charges and collects from its customers a proportionate share of any privilege, sales and use tax in accordance with ACC rules. CCWC bills and collects these taxes from its customers, which are then remitted to the state and local governments on a monthly basis. Because CCWC acts as an agent, these taxes are accounted for on a net basis. During the year ended December 31, 2012, CCWC billed its customers \$906,583 for these taxes.

**Debt Issuance Costs**

Original debt issuance costs are capitalized and amortized over the lives of the respective issues.

**Related Party Transactions**

During the year ended December 31, 2012 CCWC benefited from shared services provided by EPCOR Utilities Inc. and its wholly owned subsidiaries, EPCOR Water Services Inc. and EPCOR Water (USA) Inc. These services include customer service, regulatory affairs, human resources, insurance, legal, employee benefits, management, accounting and financial services. All transactions are in the normal course of operations and are based on normal commercial rates. As at December 31, 2012, total intercompany payables due to EPCOR and its affiliates were \$2,985,504.

**Subsequent Events**

CCWC has evaluated events and transactions that occurred after December 31, 2012 through April 29, 2013, which is the date these financial statements were issued.

**Chaparral City Water Company**  
**Notes to Financial Statements**  
**December 31, 2012**

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**New Accounting Pronouncements**

Accounting standards that have been issued or proposed by the Financial Accounting Standards Board or other standards-setting bodies that do not require adoption until a future date are not expected to have a material impact on CCWC's financial statements upon adoption.

**2. Regulatory Matters**

In accordance with accounting principles for rate-regulated enterprises, CCWC records regulatory assets, which represent probable future revenue associated with certain costs that will be recovered from customers through the ratemaking process, and regulatory liabilities, which represent probable future reductions in revenues associated with amounts that are to be credited to customers through the ratemaking process. At December 31, 2012, CCWC's net regulatory liabilities are not accruing carrying costs. Regulatory assets, less regulatory liabilities, included in the balance sheet as at December 31, 2012 are as follows:

Regulatory assets - non-current	<u>\$ 79,806</u>
Regulatory liabilities:	
Asset retirement obligations	(69,753)
Proceeds on settlement of removal of wells	<u>519,333</u>
	449,580
Less: current portion	<u>(74,500)</u>
	<u>\$ 375,080</u>

**Regulatory Assets – Non-Current:**

In October 2009, the ACC issued an order to allow CCWC recovery of 50% of the Central Arizona Project ("CAP") M&I charges related to the additional allocation discussed in Note 3 and Note 8. The ACC order determines that 50% of the additional allocation was considered used and therefore the remaining 50% should be deferred for a period of 48 months. At December 31, 2012 the deferred regulatory balance above is included in other long term assets on the balance sheet.

**Asset Retirement Obligations:**

As more fully discussed in Note 3, as retirement costs have historically been recovered through rates at the time of retirement, upon implementing the accounting guidance for asset retirement obligation's, the cumulative effect was reflected as a regulatory asset. CCWC will also reflect the gain or loss at settlement as a regulatory asset or liability on the balance sheet.

**Proceeds on Settlement for Removal of Wells:**

In 2005, in an agreement with the Fountain Hills Sanitary District ("FHSD"), CCWC agreed to permanently cease using one of its wells in order for the FHSD to secure an Aquifer Protection Permit for its recharge system. A regulatory liability of \$760,000 was established related to the proceeds on settlement for removal of the well, based on ACC rulings. The liability will be recognized into income over a 10 year period as prescribed by the ACC. The remaining regulatory liability related to the removal of the well is \$519,333.

**Chaparral City Water Company**  
**Notes to Financial Statements**  
**December 31, 2012**

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**3. Utility Plant**

The following table reflects CCWC's utility plant by major class as at December 31, 2012:

Land	\$ 271,857
Intangible assets	1,282,734
Source of water supply	3,380,364
Pumping	6,116,712
Water treatment	7,144,157
Transmission and distribution	45,520,225
Other property and equipment	1,901,252
	<u>65,617,301</u>
Less: Accumulated depreciation	(25,734,123)
Construction work in progress	1,612,943
Net utility plant	<u>\$ 41,496,121</u>

As at December 31, 2012, the intangible assets included in Utility Plant consist of unamortized water rights for the additional CAP allocation to CCWC in the amount of 1,931 acre-feet per year. In November 2007, a final written agreement was executed and CCWC paid approximately \$1.3 million for these additional CAP water rights (see Note 9).

**Asset Retirement Obligation**

CCWC records the fair value of a liability for an asset retirement obligation in the period in which it is incurred. When the liability is initially recorded, CCWC capitalizes a cost by increasing the carrying amount of the related long-lived asset. Over time, the liability is accreted to its present value each period, and the capitalized cost is depreciated over the useful life of the related asset. Upon settlement of the liability, CCWC either settles the obligation for its recorded amount or incurs a gain or loss upon settlement. CCWC's legal obligations for retirement reflect principally the retirement of wells, which by law need to be properly capped at the time of removal. Retirement costs have historically been recovered through rates at the time of retirement. Accordingly, at implementation of the guidance for asset retirement obligations, the cumulative effect was reflected as a regulatory asset. The Company also reflects the gain or loss at settlement as a regulatory asset or liability on the balance sheet.

For the year ended December 31, 2012, CCWC incurred accretion expense of \$3,536 which is included in depreciation expense in the statement of income.

**4. Long-term Debt**

**Industrial Development Authority Bonds**

Substantially all of utility plant is pledged as collateral for CCWC's Industrial Development Authority ("IDA") Bonds. The Bond Agreement, among other things, (i) requires CCWC to maintain certain financial ratios; (ii) restricts CCWC's ability to incur debt and make liens, sell, lease or dispose of assets, merge with another corporation, and (iii) restricts the payment of dividends. CCWC maintains a debt service reserve fund, which had a balance of \$655,760 at December 31, 2012. Amounts are classified as noncurrent restricted cash on the balance sheet. The loan and trust agreement contains restrictive covenants, including the maintenance of a debt service coverage ratio of 2.0, as defined in the loan and trust agreement, calculated annually at year end.

**Chaparral City Water Company**  
**Notes to Financial Statements**  
**December 31, 2012**

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As of December 31, 2012, CCWC was in compliance with all covenants under the loan and trust agreement.

Maturities of long-term debt outstanding at December 31, 2012 are as follows:

2013	\$ 390,000
2014	405,000
2015	430,000
2016	450,000
2017	475,000
Thereafter	2,785,000
	<u>4,935,000</u>
Less: current portion	(390,000)
	<u>\$ 4,545,000</u>

**Repayment Contract**

In 1984, CCWC entered into an agreement with the United States Bureau of Reclamation for construction of a delivery and storage system to transport CAP water to CCWC's property (the "Delivery Agreement"). The cost of the constructed assets is recorded as utility plant. Under the terms of the Delivery Agreement, CCWC retains the right to use the delivery and storage system for an unspecified time period conditional upon meeting certain obligations including operating and maintaining the system. The Delivery Agreement also provides that the United States Bureau of Reclamation retains ownership of the system. Pursuant to this Agreement, CCWC continues to maintain a debt service reserve fund, which had a balance of \$74,886 at December 31, 2012. This amount is classified as part of noncurrent restricted cash on the balance sheet.

**5. Dividend Limitations**

CCWC is subject to contractual restrictions on its ability to pay dividends. CCWC's maximum ability to distribute dividends is limited to maintenance of no more than 55% debt in the capital structure for the quarter immediately preceding the distribution. On March 29, 2012, CCWC declared a \$1.5 million dividend payable to EPCOR Water (USA), Inc. which is included in Intercompany payables due to related party in the balance sheet as at December 31, 2012.

The ability of CCWC to pay future dividends is also restricted by Arizona law. Under restrictions of the Arizona tests, approximately \$1.1 million is available to pay dividends at December 31, 2012.

**6. Taxes on Income**

The Company's financial statements recognize the current and deferred income tax consequences that result from the Company's activities during the current and preceding periods pursuant to the provisions of Accounting Standards Codification Topic 740, Income Taxes (ASC 740), as if the Company were a separate taxpayer rather than a member of the parent company's consolidated income tax return group. Differences between the Company's separate company income tax provision and cash flows attributable to income taxes pursuant to the provisions of the Company's tax sharing arrangement with the parent company will be recognized as capital contributions from, or dividends to, the parent company.

The Company applies the provisions of the accounting guidance for accounting for income taxes, which requires the use of an asset and liability approach in accounting for income taxes. This approach requires the recognition of deferred tax assets and liabilities for the expected future tax

**Chaparral City Water Company**  
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consequences of events that have been recognized in the Company's financial statements or tax returns.

The significant components of the deferred tax assets and liabilities as reflected in the balance sheet at December 31, 2012 are:

<b>Deferred tax assets</b>	
Other	\$ 149,029
Goodwill	2,428,360
Contributions and advances	4,919,869
	<u>7,497,258</u>
<b>Deferred tax liabilities</b>	
Fixed assets	<u>(4,658,147)</u>
Deferred income taxes, net	<u>\$ 2,839,111</u>

The initial recognition of the deferred tax asset for goodwill is recognized in equity as additional paid-in-capital, as the change in tax base was a result of transactions with the shareholder.

The current and deferred components of income tax expense (recovery) are as follows:

<b>Current provision</b>	
Federal	\$ -
State	-
Total current tax expense (recovery)	<u>-</u>
<b>Deferred provision</b>	
Federal	(58,397)
State	-
Total deferred tax expense (recovery)	<u>(58,397)</u>
Total income tax expense (recovery)	<u>\$ (58,397)</u>

EPCOR Water (USA), Inc. files one consolidated tax return which includes all of the subsidiary entities in the state of Arizona and New Mexico. There is no current provision as CCWC's taxable income was offset by net operating losses in the EPCOR Water (USA), Inc. consolidated federal and Arizona state income tax returns. The deferred provision is due to the tax affected changes in the deferred tax asset and liability accounts for the current year.

**7. Employee Benefit Plans**

For the period January 1, 2012 through September 30, 2012, CCWC employees participated in the TriNet 401(k) Plan – EPCOR Water (USA), Inc. (the "TriNet 401(k) Plan"). Eligible employees may invest a percentage of their pay, up to a maximum investment prescribed by law, in an investment program managed by an outside investment manager. On October 1, 2012 CCWC employees became eligible to participate in the EPCOR Water (USA), Inc. 401(k) Plan and all balances in the TriNet 401(k) Plan were transferred. Company contributions to the EPCOR Water (USA) 401(k) plan are based upon a percentage of individual employee contributions and totaled \$88,199.

**Chaparral City Water Company**  
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**8. Commitments and Contingencies**

CCWC obtains its water supply from one operating well and from Colorado River water delivered by the CAP. The majority of CCWC's water supply is obtained from its CAP allocation and well water is used for peaking capacity in excess of treatment plant capability, during treatment plant shutdowns, and to keep the well system in optimal operating condition.

CCWC has an assured water supply designation, by decision and order of the Arizona Department of Water Resources stating that CCWC has demonstrated the physical, legal and continuous availability of CAP water and groundwater, in an aggregate volume of 11,759 acre-feet per year for a minimum of 100 years. The 11,759 acre-feet is comprised of existing CAP allocation of 8,909 acre-feet per year, 350 acre-feet per year groundwater allowance, incidental recharge credits of 500 acre-feet per year, and a Central Arizona Groundwater Replenishment District contract of 2,000 acre-feet per year.

CCWC has a long-term water supply contract with the Central Arizona Conservation District (the "District") through December 2108, and is entitled to take 8,909 acre-feet of water per year from CAP. In connection with this long-term water supply contract, CCWC pays an annual charge based on its full allocation regardless of the amount of water delivered. The rate for such charge is set by the District and is subject to annual increases. Based on the District's published new rate schedules, the estimated remaining commitment under this contract is \$681,539 as at December 31, 2012.

Notwithstanding an assured water supply designation, CCWC's water supply may be subject to interruption or reduction, in particular owing to interruption or reduction of CAP water. In the event of interruption or reduction of CAP water, CCWC can rely on its well water supplies for short-term periods. However, the quantity of water CCWC supplies to some or all of its customers may be interrupted or curtailed, pursuant to the provisions of its tariffs. CCWC has the physical capability to deliver water in excess of that which is currently accounted for in CCWC's assured water supply account.

CCWC is involved from time to time in claims and litigation, both as plaintiff and defendant, in the ordinary course of business. The Company believes that rate recovery, proper insurance coverage, and reserves are in place to insure against property, general liability, and workers' compensation claims incurred in the ordinary course of business. The Company is of the opinion that the outcome of such claims and litigation will not have a materially adverse effect upon CCWC's results of operations, financial position or cash flows.

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**Roger A. Morin, PhD**

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## 19.2 Critique of Double Leverage

Adherents to the double leverage calculation argue that the true cost of capital to a utility subsidiary is the weighted cost of its own debt and the weighted cost of the parent's debt and equity funding. Moreover, unless the subsidiary's equity is assigned the parent's weighted cost of capital, parent shareholders will reap abnormally high returns. Although persuasive on the surface, these arguments conceal serious conceptual and practical problems. Moreover, the validity of double leverage rests on highly questionable assumptions.

The flaws associated with the double leverage approach have been discussed thoroughly in the academic literature. Pettway and Jordan (1983) and Beranek and Miles (1988) point out the flaws in the double leverage argument, particularly the excess return argument, and also demonstrate that the stand-alone method is a superior procedure. Rozeff (1983) discusses the ratepayer cross-subsidies of one subsidiary by another when employing double leverage. Lerner (1973) concludes that the returns granted an equity investor must be based on the risks to which the investor's capital is exposed and not on the investor's source of funds.

### Theoretical Issues

The double leverage approach contradicts the core of the cost of capital concept. Financial theory clearly establishes that the cost of equity is the risk-adjusted opportunity cost to the investors and not the cost of the specific capital sources employed by investors. The true cost of capital depends on the use to which the capital is put and not on its source. The *Hope* and *Bluefield* doctrines have made clear that the relevant considerations in calculating a company's cost of capital are the alternatives available to investors and the returns and risks associated with those alternatives. The specific source of funding and the cost of those funds to the investor are irrelevant considerations.

Carrying the double leverage standard to its logical conclusion leads to even more unreasonable prescriptions. If the common shares of the subsidiary were held by both the parent and by individual investors, the equity contributed by the parent would have one cost under the double leverage computation while the equity contributed by the public would have another. This is clearly illogical. Or, does double leverage require tracing the source of funds used by each individual investor so that its cost can be computed by applying double leverage to each individual investor? Of course not! Equity is equity, irrespective of its source, and the cost of that equity is governed by its use, by the risk to which it is exposed.

To illustrate, let us say that an individual investor borrows money at the bank at an after-tax cost of 8% and invests the funds in a speculative oil exploration venture. Clearly, the required return on the oil venture investment is not the

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8% cost but rather the return forgone in speculative projects of similar risk, say 20%. Yet, under the double leverage approach, the individual's fair return on this risky venture would be 8%, which is the cost of the capital source, and not 20%, which is the required return on investments of similar risk. Double leverage implies that for all investors who inherited stock or received stock as a gift, the allowed return on equity would be zero, since the cost of the stock to the investors is zero. It also implies that if, tomorrow morning, a subsidiary were sold to a company with a higher cost of capital than the parent, the subsidiary's cost of equity would suddenly become higher on the next morning as a result of the change in ownership. If we assumed that the double leverage concept were appropriate, we would also have to assume that the day following a divestiture or spinoff, the cost of equity of the newly divested or spunoff company suddenly rises by a substantial amount. This is logically absurd, as it is the use of capital that governs its cost, and not its source.

For example, if a subsidiary with a double leverage cost of equity of 12% were sold to another company with a higher cost of capital of, for example, 15%, would regulation alter the return accordingly just because of the change in ownership? If so, the same utility with the same assets and providing the same service under the new management would have a higher cost of service to ratepayers because of the transfer of ownership. Clearly, if a utility subsidiary were allowed an equity return equal to the parent's weighted cost of capital while the same utility were allowed a fair, presumably higher, return were it not part of a holding company complex, an irresistible incentive to dissolve the holding company structure would exist in favor of the one-company operating utility format. The attendant benefits of scale economies and diversification would then be lost to the ratepayers.

The cost of capital is governed by the risk to which the capital is exposed and not by the cost of those funds or whether they were obtained from bondholders or common shareholders. The identity of the subsidiary's shareholders should have no bearing on its cost of equity because it is the risk to which the subsidiary's equity is exposed that governs its cost of money, not whether it is borrowed from bondholders or sold to common shareholders for issued shares. Had the parent company not been in the picture, and had the subsidiary's stock been widely held by the public, the subsidiary would be entitled to a return that would fully cover the cost of both its debt and equity.

Just as individual investors require different returns from different assets in managing their personal affairs, why should regulation cause parent companies making investment decisions on behalf of their shareholders to act any differently? A parent company normally invests money in many operating companies of varying sizes and varying risks. These operating subsidiaries pay different rates for the use of investor capital, such as long-term debt capital, because investors recognize the differences in capital structure, risk, and

## Chapter 19: Double Leverage

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prospects between the subsidiaries. Yet, the double leverage calculation would assign the same return to each activity, based on the parent's cost of capital. Investors recognize that different subsidiaries are exposed to different risks, as evidenced by the different bond ratings and cost rates of operating subsidiaries. The same argument carries over to common equity. If the cost rate for debt is different because the risk is different, the cost rate for common equity is also different, and the double leverage adjustment should not obscure this fact.

The double leverage concept is also at odds with the opportunity cost concept of economics. According to this principle of economics, the cost of any resource is the cost of an alternative forgone. The cost of investing funds in an operating utility subsidiary is the return forgone on investments of similar risk. If the fair risk-adjusted return assigned by the market on utility investments is 15%, and the regulator assigns a return less than 15% because of a double leverage calculation, there is no incentive or defensible reason for a parent holding company to invest in that utility.

### **Fairness and Capital Attraction**

The double leverage approach is highly discriminatory, and violates the doctrine of fairness. If a utility is not part of a holding company structure, the cost of equity is computed using one method, say the CAPM method, while otherwise the cost of equity is computed using the double leverage adjustment. Estimating equity costs by one procedure for publicly held utilities and by another for utilities owned by a holding company is inconsistent with financial theory and discriminates against the holding company form of ownership. Two utilities identical in all respects but their ownership format should have the same set of rates. Yet, this would not be the case under the double leverage adjustment.

The capital attraction standard may also be impaired under the double leverage calculation. This is because a utility subsidiary must compete on its own in the market for debt capital, and therefore must earn an appropriate return on equity to support its credit rating. Imputing the parent's weighted cost to the utility's equity capital may result in inadequate equity returns and less favorable coverage, hence impairing the utility subsidiary's ability to attract debt capital under favorable terms.

### **Questionable Assumptions**

Several assumptions underlying the double leverage standard are highly questionable. One assumption, to which the previous numerical illustrations have already alluded, is the traceability of the subsidiary's equity capital to its parent. None of the subsidiary's retained earnings can be traced to the capital raised by the parent. Some analysts salvage the double leverage approach by

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assigning one cost rate to retained earnings and another to the common equity capital raised by the parent, with the curious result that equity has two cost rates. The traceability issue goes further. If a parent company issues bonds or preferred stock to acquire an operating subsidiary, the traceability assumption is broken. Corporate reorganizations and mergers further invalidate the traceability assumption.

By virtue of using the parent's weighted cost as the equity cost rate for the subsidiary, another questionable assumption is that the parent capital is invested in subsidiaries that all have the same risks. Lastly, the double leverage procedure makes the unlikely assumption that the parent holding company invests its funds in each subsidiary proportionately to each subsidiary's debt-equity ratio, which is unreasonable.

**Double Leverage: A Tautology**

The double leverage approach is a tautology. It is not the parent's weighted average cost of capital (WACC) that determines the subsidiary's cost of equity because the parent's WACC is itself a weighted average of equity costs of all subsidiaries. Double leverage adherents confuse the direction of cause and effect. The equity cost of subsidiaries must be found on a stand-alone basis.

The last nail in the double leverage coffin goes like this. If capital market equilibrium is to hold, the cash flows to the parent company's bondholders and stockholders must equal the cash flows from the parent's equity in each subsidiary. Letting  $K$  denote the cost of capital, the subscripts  $p$  and  $s$  denote the parent and subsidiary,  $D$  and  $E$  the dollar amounts of debt and equity, and the subscripts 'd' and 'e' denote debt and equity, we can therefore say:

$$K_{dp}D_p + K_{ep}E_p = \sum_s^n K_{es}E_s \quad (19-1)$$

The various unknowns, including the parent return on equity, can be found in terms of all the other given variables. What the above equation makes clear is that the parent cost of equity is determined by the subsidiary's cost of equity, and that parent capital costs cannot determine the subsidiary's capital costs. This can be seen even more clearly by dividing the above equation by total parent value  $V$  to obtain:

$$K_{dp}D_p/V + K_{ep}E_p/V = \sum_s^n K_{es}E_s/V \quad (19-2)$$

The left side of the equation is the usual expression for the parent's WACC, and the right side is the weighted average of equity costs of all subsidiaries. However,

Chapter 19: Double Leverage

$$\sum_s^n E_s = V \quad (19-3)$$

so that the parent's WACC is itself a weighted average of equity costs of all subsidiaries. The fundamental logical fault of double leverage is to arbitrarily equate the equity cost of each subsidiary to the left side of the above equation. The inescapable conclusion is that the subsidiary cost of equity must be found on a stand-alone basis, because the parent's WACC is itself a weighted average of subsidiary equity costs.

In summary, the double leverage adjustment has serious conceptual and practical limitations and violates basic notions of finance, economics, and fairness. The assumptions which underlie its use are questionable, if not unrealistic. The approach should not be used in regulatory proceedings.

**EXAMPLE 19-1**

In the numerical example provided at the beginning of the chapter, the parent's cost of equity capital was arbitrarily and wrongly assumed to be 15%. This example shows that the parent cost of equity consistent with the terms of the example is 23.33%, and not 15%. If the subsidiary was regulated in the correct way, the allowed return is computed as  $0.50 \times 10\% + .50 \times 20\% = 15\%$ . According to advocates of Double Leverage, this implies excess returns to the parent, that is:

Earnings from the subsidiary to the parent	$\$100 \times 15\% =$	\$15.00
Less total interest:	$\$50 \times 10\% + \$12.50 \times 10\% =$	\$6.25
Earnings to parent equity		\$8.75

which represents a return of  $\$8.75/\$37.50 = 23.33\%$ , far in excess of the *assumed* parent equity cost of 15%.

Double Leverage advocates adjust for this alleged excess by assigning the parent's overall return of 13.78% to the subsidiary's equity. The subsidiary's overall return becomes 11.88%, as shown below:

	\$ Amount	% Weight	Cost	Weighted Cost
Debt - Subsidiary	\$50.00	50.0%	10.0%	5.00%
Equity provided by parent				
Debt - Parent (25%)	\$12.50	12.5%	10.0%	1.25%
Equity - Parent (75%)	\$37.50	37.5%	15.0%	5.63%
		Weighted Cost		11.88%

(continued next page)

**EXAMPLE 19-1 (continued)**

The 11.88% becomes the Double Leverage allowed return on the subsidiary's total assets. Only with this allowed rate of return, according to the tenets of Double Leverage, does the parent's equity receive the *assumed* rate of return of 15%. That is, the parent receives  $\$100 \times 11.88\% = \$11.88$ , less the interest cost of \$6.25, or \$5.63, on an equity investment of \$37.50, which is a 15% return. And, so it seems, the parent receives the required rate of return.

The fundamental flaw of this approach is that the assumptions of the example are internally inconsistent and illogical. When an illustration is constructed with an assumed subsidiary cost of equity, the assumed parent cost of equity must be consistent with it. It is not the parent's weighted average cost of capital which determines the subsidiary's cost of equity because the parent's cost of capital is itself a weighted average of equity costs of all subsidiaries.

Equation 19-2 makes it clear that the parent cost of equity is determined by the subsidiary cost of equity, and that parent capital costs cannot determine subsidiary capital costs. Given the cost of debt  $K_D$ , the subsidiary's cost of equity  $K_E$ , and the amounts of capital, the above equation implies that the parent equity cost consistent with a 20% subsidiary cost of equity is 23.33%:

$$[\$50 \times 20\% - \$12.50 \times 10\%] / \$37.50 = 23.33\%$$

### Conclusions

The double leverage approach has serious conceptual and practical limitations and is not consistent with basic financial theory and the notion of fairness. The assumptions and logic underlying the method are questionable. The double leverage argument violates the core notion that an investment's required return depends on its particular risks. The Double Leverage approach has no place in regulatory practice and should be discarded.

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# Fundamentals of Financial Management

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Eugene F. Brigham  
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rate of return of 15 percent. Investors are averse to risk, so there would be a general preference for U.S. Water. People with money to invest would bid for U.S. Water rather than Kelly stock, and Kelly's stockholders would start selling their stock and using the money to buy U.S. Water stock. The buying pressure would tend to drive up the price of U.S. Water stock, and the selling pressure would simultaneously cause Kelly's price to decline.

These price changes, in turn, would cause changes in the expected rates of return on the two securities. Suppose, for example, that the price of U.S. Water stock was bid up from \$100 to \$150, whereas the price of Kelly's stock declined from \$100 to \$75. This would cause U.S. Water's expected return to fall to 10 percent, while Kelly's expected return would rise to 20 percent. The difference in returns,  $20\% - 10\% = 10\%$ , is a risk premium, RP, which represents the compensation investors require for assuming the additional risk of Kelly stock.

risk premium, RP  
The difference between the expected rate of return on a given risky asset and that on a less risky asset.

This example demonstrates a very important principle: *In a market dominated by risk-averse investors, riskier securities will have higher expected returns, as estimated by the average investor, than will less risky securities, for if this situation does not hold, actions will occur in the market to force it to occur.* We will consider the question of how much higher the returns on risky securities must be later in the chapter, after we see how diversification affects the way risk should be measured. Then, in Chapter 6, we will see how risk-adjusted rates of return affect the price investors are willing to pay for a security.

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## PORTFOLIO RISK AND THE CAPITAL ASSET PRICING MODEL

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In the preceding section we considered the riskiness of a stock held in isolation. Now we analyze the riskiness of stocks held in portfolios.<sup>6</sup> As we shall see, a stock held as part of a portfolio is less risky than the same stock held in isolation. This fact has been incorporated into a generalized framework for analyzing the relationship between risk and rates of return; this framework is called the Capital Asset Pricing Model, or CAPM. The CAPM framework is an extremely important analytical tool in both financial management and investment analysis. In the following sections we discuss the elements of the CAPM.<sup>7</sup>

Capital Asset Pricing Model (CAPM)  
A model based on the proposition that any stock's required rate of return is equal to the risk-free rate of return plus its risk premium, where risk reflects diversification

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<sup>6</sup>A *portfolio* is a collection of investment securities. If you owned some General Motors stock, some Exxon stock, and some IBM stock, you would be holding a three-stock portfolio. For reasons set forth in this section, the majority of all stocks are held as parts of portfolios.

<sup>7</sup>The CAPM is a relatively complex subject, and we present only the basic conclusions in this text. For a more detailed discussion, see any standard investments textbook.

F I F T H E D I T I O N

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*London Business School*

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# 9

## Capital Budgeting and Risk

Long before the development of modern theories linking risk and expected return, smart financial managers adjusted for risk in capital budgeting. They realized intuitively that, other things being equal, risky projects are less desirable than safe ones. Therefore financial managers demanded a higher rate of return from risky projects, or they based their decisions on conservative estimates of the cash flows.

Various rules of thumb are often used to make these risk adjustments. For example, many companies estimate the rate of return required by investors in their securities and use the **company cost of capital** to discount the cash flows on all new projects. Since investors require a higher rate of return from a very risky company, such a firm will have a higher company cost of capital and will set a higher discount rate for its new investment opportunities. For example, in Table 8-1 we estimated that investors expected a rate of return of .163 or about 16.5 percent from Microsoft common stock. Therefore, according to the company cost of capital rule, Microsoft should have been using a 16.5 percent discount rate to compute project net present values.<sup>1</sup>

This is a step in the right direction. Even though we can't measure risk or the expected return on risky securities with absolute precision, it is still reasonable to assert that Microsoft faced more risk than the average firm and, therefore, should have demanded a higher rate of return from its capital investments.

But the company cost of capital rule can also get a firm into trouble if the new projects are more or less risky than its existing business. Each project should be evaluated at its *own* opportunity cost of capital. This is a clear implication of the value-additivity principle introduced in Chapter 7. For a firm composed of assets A and B, the firm value is

$$\text{Firm value} = \text{PV}(\text{AB}) = \text{PV}(\text{A}) + \text{PV}(\text{B}) = \text{sum of separate asset values}$$

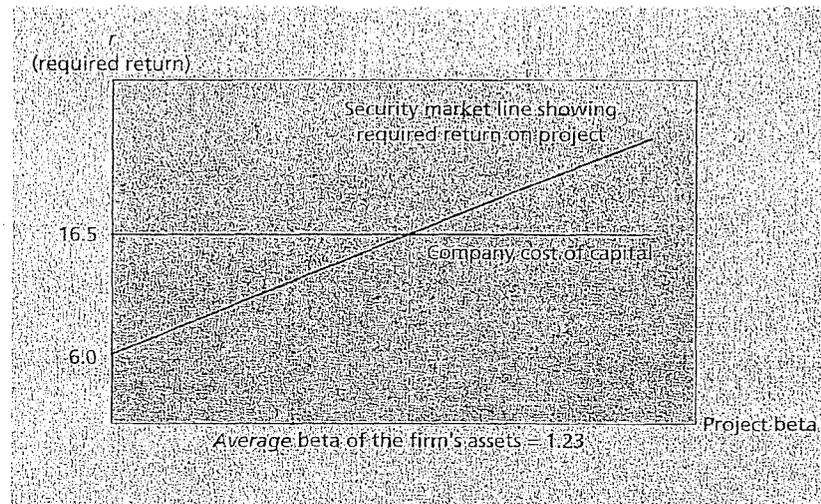
Here PV(A) and PV(B) are valued just as if they were mini-firms in which stockholders could invest directly. Investors would value A by discounting its forecasted cash flows at a rate reflecting the risk of A. They would value B by discounting at a rate reflecting the risk of B. The two discount rates will, in general, be different.

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<sup>1</sup>Microsoft did not use any significant amount of debt financing. Thus its cost of capital is the rate of return investors expect on its common stock. The complications caused by debt are discussed later in this chapter.

**Figure 9-1** A comparison between the company cost of capital rule and the required return under the capital asset pricing model.

Microsoft's company cost of capital is about 16.5 percent. This is the correct discount rate only if the project beta is 1.23. In general, the correct discount rate increases as project beta increases. Microsoft should accept projects with rates of return above the security market line relating required return to beta.



If the firm considers investing in a third project C, it should also value C as if C were a mini-firm. That is, the firm should discount the cash flows of C at the expected rate of return that investors would demand to make a separate investment in C. *The true cost of capital depends on the use to which the capital is put.*

This means that Microsoft should accept any project that more than compensates for the *project's beta*. In other words, Microsoft should accept any project lying above the upward-sloping line that links expected return to risk in Figure 9-1. If the project has a high risk, Microsoft needs a higher prospective return than if the project has a low risk. Now contrast this with the company cost of capital rule, which is to accept any project *regardless of its risk* as long as it offers a higher return than the *company's* cost of capital. In terms of Figure 9-1, the rule tells Microsoft to accept any project above the horizontal cost-of-capital line, i.e., any project offering a return of more than 16.5 percent.

It is clearly silly to suggest that Microsoft should demand the same rate of return from a very safe project as from a very risky one. If Microsoft used the company cost of capital rule, it would reject many good low-risk projects and accept many poor high-risk projects. It is also silly to suggest that just because Duke Power has a low company cost of capital, it is justified in accepting projects that Microsoft would reject. If you followed such a rule to its seemingly logical conclusion, you would think it possible to enlarge the company's investment opportunities by investing a large sum in Treasury bills. That would make the common stock safe and create a low company cost of capital.<sup>2</sup>

The notion that each company has some individual discount rate or cost of capital is widespread, but far from universal. Many firms require different returns from different categories of investment. For example, discount rates might be set as follows:

<sup>2</sup>If the present value of an asset depended on the identity of the company that bought it, present values would not add up. Remember, a good project is a good project is a good project.

Category	Discount Rate
Speculative ventures	30%
New products	20%
Expansion of existing business	15% (company cost of capital)
Cost improvement, known technology	10%

The capital asset pricing model is widely used by large corporations to estimate the discount rate. It states

$$\text{Expected project return} = r = r_f + (\text{project beta})(r_m - r_f)$$

To calculate this, you have to figure out the project beta. Before thinking about the betas of individual projects, we will look at some problems you would encounter in using beta to estimate a company's cost of capital. It turns out that beta is difficult to measure accurately for an individual firm: Much greater accuracy can be achieved by looking at an average of similar companies. But then we have to define *similar*. Among other things, we will find that a firm's borrowing policy affects its stock beta. It would be misleading, e.g., to average the betas of Chrysler, which has been a heavy borrower, and General Motors, which has generally borrowed less.

The company cost of capital is the correct discount rate for projects that have the same risk as the company's existing business but *not* for those projects that are safer or riskier than the company's average. The problem is to judge the relative risks of the projects available to the firm. To handle that problem, we will need to dig a little deeper and look at what features make some investments riskier than others. After you know *why* AT&T stock has less market risk than, say, Ford Motor, you will be in a better position to judge the relative risks of capital investment opportunities.

There is still another complication: Project betas can shift over time. Some projects are safer in youth than in old age; others are riskier. In this case, what do we mean by *the* project beta? There may be a separate beta for each year of the project's life. To put it another way, can we jump from the capital asset pricing model, which looks out one period into the future, to the discounted-cash-flow formula that we developed in Chapters 2 and 6 for valuing long-lived assets? Most of the time it is safe to do so, but you should be able to recognize and deal with the exceptions.

We will use the capital asset pricing model, or CAPM, throughout this chapter. But don't infer that the CAPM is the last word on risk and return. The principles and procedures covered in this chapter work just as well with other models such as arbitrage pricing theory (APT). For example, we could have started with an APT estimate of the expected rate of return on Microsoft stock; the discussion of company and project costs of capital would have followed exactly.

## 9.1 MEASURING BETAS

Suppose that you were considering an across-the-board expansion by your firm. Such an investment would have about the same degree of risk as the existing business. Therefore you should discount the projected flows at the company cost of capital. To estimate that, you could begin by estimating the beta of the company's stock.

An obvious way to measure the beta of the stock is to look at how its price has responded in the past to market movements. For example, in Figure 9-2a and b we have plotted monthly rates of return from AT&T and Hewlett-Packard against mar-

Thus we could view the project as offering an expected payoff of  $.5(1500) + .5(0) = 750$ , or \$750,000, at  $t = 1$  on a \$125,000 investment at  $t = 0$ . Of course, the certainty equivalent of the payoff is less than \$750,000, but the difference would have to be very large to justify rejecting the project. For example, if the certainty equivalent is half the forecasted cash flow and the risk-free rate is 7 percent, the project is worth \$225,500:

$$\begin{aligned} \text{NPV} &= C_0 + \frac{\text{CEQ}_1}{1 + r_f} \\ &= -125 + \frac{.5(750)}{1.07} = 225.5, \text{ or } \$225,500 \end{aligned}$$

This is not bad for a \$125,000 investment—and quite a change from the negative NPV that management got by discounting all future cash flows at 25 percent.



You sometimes hear people say that because distant cash flows are “riskier,” they should be discounted at a higher rate than earlier cash flows. That is quite wrong: Using the same risk-adjusted discount rate for each year’s cash flow implies a larger deduction for risk from the later cash flows. The reason is that the discount rate compensates for the risk borne *per period*. The more distant the cash flows, the greater the number of periods and the larger the *total* risk adjustment.

It makes sense to use a single risk-adjusted discount rate as long as the project has the same market risk at each point in its life. But look out for exceptions like the electric mop project, where market risk changes as time passes.

## 9.6 SUMMARY

In Chapter 8 we set out some basic principles for valuing risky assets. In this chapter we have shown you how to apply these principles to practical situations.

The problem is easiest when you believe that the project has the same market risk as the company’s existing assets. In this case, the required return equals the required return on a portfolio of the company’s securities. This is called the *company cost of capital*.

Capital asset pricing theory states that the required return on any asset depends on its risk. In this chapter we have defined risk as beta and used the capital asset pricing model to calculate expected returns.

The most common way to estimate the beta of a stock is to figure out how the stock price has responded to market changes in the past. Of course, this will give you only an estimate of the stock’s true beta. You may get a more reliable figure if you calculate an industry beta for a group of similar companies.

Suppose that you now have an estimate of the stock’s beta. Can you plug that into the capital asset pricing model to find the company’s cost of capital? No, the stock beta may reflect both business and financial risk. Whenever a company borrows money, it increases the beta (and the expected return) of its stock. Remember, the company cost of capital is the expected return on a portfolio of all the firm’s securities, not just the common stock. You can calculate it by estimating the expected return on each of the securities and then taking a weighted average of these separate returns. Or you can calculate the beta of the portfolio of securities and then plug this *asset beta* into the capital asset pricing model.

The company cost of capital is the correct discount rate for projects that have the same risk as the company's existing business. Many firms, however, use the company cost of capital to discount the forecasted cash flows on all new projects. This is a dangerous procedure. In principle, each project should be evaluated at its own opportunity cost of capital; the true cost of capital depends on the use to which the capital is put. If we wish to estimate the cost of capital for a particular project, it is *project risk* that counts. Of course the company cost of capital is fine as a discount rate for average-risk projects. It is also a useful starting point for estimating discount rates for safer or riskier projects.

We cannot give you a neat formula that will allow you to estimate project betas, but we can give you some clues. First, avoid adding fudge factors to discount rates to offset worries about bad project outcomes. Adjust cash-flow forecasts to give due weight to bad outcomes as well as good; *then* ask whether the chance of bad outcomes adds to the project's market risk. Second, you can often identify the characteristics of a high- or low-beta project even when the project beta cannot be calculated directly. For example, you can try to figure out how much the cash flows are affected by the overall performance of the economy: Cyclical investments are generally high-beta investments. You can also look at the project's operating leverage: Fixed production charges work like fixed debt charges; i.e., they increase beta.

There is one more fence to jump. Most projects produce cash flows for several years. Firms generally use the same risk-adjusted rate  $r$  to discount each of these cash flows. When they do this, they are implicitly assuming that cumulative risk increases at a constant rate as you look further into the future. That assumption is usually reasonable. It is precisely true when the project's future beta will be constant, i.e., when risk *per period* is constant.

But exceptions sometimes prove the rule. Be on the alert for projects where risk clearly does *not* increase steadily. In these cases, you should break the project into segments within which the same discount rate can be reasonably used. Or you should use the certainty-equivalent version of the DCF model, which allows separate risk adjustments to each period's cash flow.

#### APPENDIX: USING THE CAPITAL ASSET PRICING MODEL TO CALCULATE CERTAINTY EQUIVALENTS

When calculating present value, you can take account of risk in either of two ways. You can discount the expected cash flow  $C_1$  by the risk-adjusted discount rate  $r$ :

$$PV = \frac{C_1}{1 + r}$$

Alternatively, you can discount the certainty-equivalent cash flow  $CEQ_1$  by the risk-free rate of interest  $r_f$ :

$$PV = \frac{CEQ_1}{1 + r_f}$$

In this appendix we show how you can derive  $CEQ_1$  from the capital asset pricing model.

We know from our present value formula that  $1 + r$  equals the expected dollar payoff on the asset divided by its present value:

# Do Analyst Conflicts Matter? Evidence from Stock Recommendations

Anup Agrawal *University of Alabama*

Mark A. Chen *Georgia State University*

## Abstract

We examine whether conflicts of interest with investment banking and brokerage businesses induce sell-side analysts to issue optimistic stock recommendations and, if so, whether investors are misled by such biases. Using quantitative measures of potential conflicts constructed from a novel data set containing revenue breakdowns of analyst employers, we find that recommendation levels are indeed positively related to conflict magnitudes. The optimistic bias stemming from investment banking conflicts was especially pronounced during the late-1990s stock market bubble. However, evidence from the response of stock prices and trading volumes to upgrades and downgrades suggests that the market recognizes analysts' conflicts and properly discounts analysts' opinions. This pattern persists even during the bubble period. Moreover, the 1-year stock performance following revised recommendations is unrelated to the magnitude of conflicts. Overall, our findings do not support the view that conflicted analysts are able to systematically mislead investors with optimistic stock recommendations.

## 1. Introduction

In April 2003, 10 of the largest Wall Street firms reached a landmark settlement with state and federal securities regulators on the issue of conflicts of interest

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faced by stock analysts.<sup>1</sup> The settlement requires the firms to pay a record \$1.4 billion in compensation and penalties in response to government charges that the firms issued optimistic stock research to win favor with potential investment banking (IB) clients. Part of the settlement funds are earmarked for investor education and for provision of research from independent firms. In addition to requiring large monetary payments, the settlement mandates structural changes in the firms' research operations and requires the firms to disclose conflicts of interest in analysts' research reports.

The notion that investors are victims of biased stock research presumes that (1) analysts respond to the conflicts by inflating their stock recommendations and (2) investors take analysts' recommendations at face value. Even if analysts are biased, it is possible that investors understand the conflicts of interest inherent in stock research and rationally discount analysts' opinions. This alternative viewpoint, if accurate, would lead to very different conclusions about the consequences of analysts' research. Indeed, investors' rationality and self-interested behavior imply that stock prices should accurately reflect a consensus about the informational quality of public announcements (Grossman 1976; Grossman and Stiglitz 1980). Rational investors would recognize and adjust for analysts' potential conflicts of interest and thereby largely avoid the adverse consequences of biased stock recommendations.

In this article, we provide evidence on the extent to which analysts and investors respond to conflicts of interest in stock research. We address four questions. First, is the extent of optimism in stock recommendations related to the magnitudes of analysts' conflicts of interest? Second, to what extent do investors discount the opinions of more conflicted analysts? In particular, do stock prices and trading volumes react to recommendation revisions in a manner that rationally reflects the degree of analysts' conflicts? Third, is the medium-term (that is, 3- to 12-month) performance of recommendation revisions related to conflict severity? And, finally, did conflicts of interest affect analysts or investors differently during the late-1990s stock bubble than during the postbubble period? The answers to these questions are clearly of relevance to stock market participants, public policy makers, regulators, and the academic profession.

We use a unique, hand-collected data set that contains the annual revenue breakdown for 232 public and private analyst employers. This information allows us to construct quantitative measures of the magnitude of potential conflicts not only from IB business but also from brokerage business. We analyze a sample of over 110,000 stock recommendations issued by over 4,000 analysts during the 1994–2003 time period. Using univariate tests as well as cross-sectional regressions that control for the size of the company followed and individual analysts' experience, resources, workloads, and reputations, we attempt to shed

<sup>1</sup> Two more securities firms (Deutsche Bank Securities Inc. and Thomas Weisel Partners LLC) were added to the formal settlement in August 2004.

light both on how analysts respond to pressures from IB and brokerage businesses and on how investors compensate for the existence of such conflicts of interest.

A number of studies (for example, Dugar and Nathan 1995; Lin and McNichols 1998; Michaely and Womack 1999; Dechow, Hutton, and Sloan 2000; Bradley, Jordan, and Ritter 2008) focus on conflicts faced by analysts in the context of existing underwriting relationships (see also Malmendier and Shanthikumar 2007; Cliff 2007).<sup>2</sup> Our article complements this literature in several ways. First, we take into account the pressure to generate underwriting business from both current and potential client companies. Even if an analyst's firm does not currently do IB business with a company that the analyst tracks, it might like to do so in the future. Second, we examine the conflict between research and all IB services (including advice on mergers, restructuring, and corporate control), rather than just underwriting. Third, we examine conflicts arising from brokerage business in addition to those from IB.<sup>3</sup>

Fourth, the prior empirical finding that underwriter analysts tend to be more optimistic than other analysts is consistent with two alternative interpretations: (a) an optimistic report on a company by an underwriter analyst is a reward for past IB business or an attempt to win future IB business by currying favor with the company or (b) a company chooses an underwriter whose analyst already likes the stock. The second interpretation implies that underwriter choice is endogenous and does not necessarily imply a conflict of interest. We sidestep this issue of endogeneity by not focusing on underwriting relations between an analyst's firm and the company followed. Instead, our conflict measures focus on the importance to the analyst's firm of IB and brokerage businesses, as measured by the percentage of its annual revenue derived from IB business and from brokerage commissions. Unlike underwriting relations between an analyst's firm and the company followed, the proportions of the entire firm's revenues from each of these businesses can reasonably be viewed as given, exogenous variables from the viewpoint of an individual analyst. Finally, our approach yields substantially larger sample sizes than those used in prior research, and it therefore leads to greater statistical reliability of the results.

Several articles adopt an approach that is similar in spirit to ours. For example, Barber, Lehavy, and Trueman (2007) find that recommendation upgrades (downgrades) by investment banks—which typically also have brokerage businesses—

<sup>2</sup> Bolton, Freixas, and Shapiro (2007) theoretically analyze a different type of conflict of interest in financial intermediation, one faced by a financial advisor whose firm also produces financial products (such as in-house mutual funds). Mehran and Stulz (2007) provide an excellent review of the literature on conflicts of interest in financial institutions.

<sup>3</sup> Hayes (1998) analyzes how pressure on analysts to generate brokerage commissions affects the availability and accuracy of earnings forecasts. Both Irvine (2004) and Jackson (2005) find that analysts' optimism increases a brokerage firm's share of the trading volume. Ljungqvist et al. (2007) find that analysts employed by larger brokerage houses issue more optimistic recommendations and more accurate earnings forecasts. However, none of these articles examines how investors' responses to analysts' recommendations and the investment performance of recommendations vary with the severity of brokerage conflicts, issues that we investigate here.

underperform (outperform) similar recommendations by non-IB brokerages and independent research firms. Cowen, Groysberg, and Healy (2006) find that full-service securities firms—which have both IB and brokerage businesses—issue less optimistic forecasts and recommendations than do non-IB brokerage houses. Finally, Jacob, Rock, and Weber (2008) find that short-term earnings forecasts made by investment banks are more accurate and less optimistic than those made by independent research firms. We extend this line of research by quantifying the reliance of a securities firm on IB and brokerage businesses. This is an important feature of our article for at least two reasons. First, given that many securities firms operate in multiple lines of business, it is difficult to classify them by business lines. By separately measuring the magnitudes of both IB and brokerage conflicts in each firm, our approach avoids the need to rely on a classification scheme. Second, since the focus of this research is on the consequences of analysts' conflicts, the measurement of those conflicts is important. Our conclusions sometimes differ from those in classification-based studies.

We find that analysts do indeed seem to respond to pressures from IB and brokerage businesses: larger potential conflicts of interest from these businesses are associated with more positive stock recommendations. We also document that the distortive effects of IB conflicts were larger during the late-1990s stock bubble than during the postbubble period. Nonetheless, the empirical analysis yields several pieces of evidence to suggest that investors are sophisticated enough to adjust for these biases. First, the short-term reactions of both stock prices and trading volumes to recommendation upgrades are negatively and statistically significantly related to the magnitudes of potential IB or brokerage conflicts. For downgrades, the corresponding relation is negative for stock prices but positive for trading volumes. Second, the 1-year investment performance after recommendation revisions bears no systematic relation to the magnitude of conflicts. Finally, investors continued to discount conflicted analysts' opinions during the bubble period, even amid the euphoria prevailing in the market at the time. Together these results strongly support the idea that the marginal investor, taking analysts' conflicts into account, rationally discounts optimistic stock recommendations.<sup>4</sup>

The remainder of the article is organized as follows. We discuss the issues in Section 2 and describe our sample and data in Section 3. Section 4 examines the relation between recommendation levels and the degree of IB or brokerage conflict faced by analysts. Section 5 analyzes how conflicts are related to the response of stock prices or trading volumes to recommendation revisions. Section

<sup>4</sup>In a companion paper (Agrawal and Chen 2005), we find that analysts appear to respond to conflicts when making long-term earnings growth projections but not short-term earnings forecasts. This finding is consistent with the idea that, with short-term forecasts, analysts worry about their deception being revealed with the next quarterly earnings release, but they have greater leeway with long-term forecasts. We also find that the frequency of forecast revisions is positively related to the magnitude of brokerage conflicts, and several tests suggest that analysts' trade generation incentives impair the quality of stock research.

6 investigates the relation between conflicts and the investment performance of recommendation revisions. Section 7 presents our results for the late-1990s stock bubble and postbubble periods, and Section 8 concludes.

## 2. Issues and Hypotheses

Investment banking activity is a potential source of analyst conflict that has received widespread attention in the financial media (for example, Gasparino 2002; Maremont and Bray 2004) as well as the academic literature (for example, Lin and McNichols 1998; Michaely and Womack 1999). When IB business is an important source of revenue for a securities firm, a stock analyst employed by the firm often faces pressure to inflate his or her recommendations. This pressure is due to the fact that the firm would like to sell IB services to a company that the analyst tracks.<sup>5</sup> The company, in turn, would like the analyst to support its stock with a favorable opinion. Thus, we expect that the more critical is IB revenue to an analyst's employer, the greater the incentives an analyst faces to issue optimistic recommendations.<sup>6</sup>

Analysts also face a potential conflict with their employers' brokerage businesses. Here, the pressure on analysts originates not from the companies that they follow but from within their employing firms. Brokerage business generates a large portion of most securities firms' revenues, and analyst compensation schemes are typically related explicitly or implicitly to trading commissions. Thus, analysts have incentives to increase trading volumes in both directions (that is, buys and sells). Given the many institutional constraints that make short sales relatively costly, many more investors participate in stock purchases than in stock sales.<sup>7</sup> Indeed, it is mostly existing shareholders of a stock who sell. This asymmetry between purchases and sales implies that the more important brokerage business is to an analyst's employer, the more pressure the analyst faces to be bullish when issuing recommendations.

Analysts who respond to the conflicts they face by issuing blatantly misleading stock recommendations can develop bad reputations that reduce their labor income and hurt their careers.<sup>8</sup> Stock recommendations, however, are not as easily evaluated as other outputs of analysts' research, such as 12-month price targets or quarterly earnings forecasts, which can be judged against public, near-

<sup>5</sup> Throughout this article, we refer to an analyst's employer as a "firm" and a company followed by an analyst as a "company."

<sup>6</sup> Ljungqvist, Marston, and Wilhelm (2006, forthcoming) find that, while optimistic recommendations do not help the analyst's firm win the lead underwriter or comanager positions in general, they help the firm win the comanager position in deals in which the lead underwriter is a commercial bank.

<sup>7</sup> Numerous regulations in the United States increase the cost of selling shares short (see, for example, Dechow et al. 2001). Therefore, the vast majority of stock sales are regular sales rather than short sales. For example, over the 1994–2001 period, short sales comprised only about 10 percent of the annual New York Stock Exchange trading volume (New York Stock Exchange 2002).

<sup>8</sup> See Jackson (2005) for a theoretical model showing that analysts' concerns about their reputations can reduce optimistic biases arising from brokerage business.

term realizations. So it is not clear whether analysts' career concerns can completely prevent them from responding to pressures to generate IB or brokerage business.

The relation between conflict severity and the short-term (2- or 3-day) stock price impact of a recommendation should depend on whether investors react to the opinion rationally or naively.<sup>9</sup> Under the rational discounting hypothesis, the relation should be asymmetric for upgrades and downgrades. For upgrades, the stock price response should be negatively related to the degree of conflict. This implication arises because analysts who face greater pressure from IB or brokerage business are likely to be more bullish in their recommendations, and rational investors should discount an analyst's optimism more heavily. For downgrades, however, the story is different. When an analyst downgrades a stock despite facing large conflicts, rational investors should find the negative opinion more convincing and should be more likely to revalue the stock accordingly. This implies that the short-term stock price response to a downgrade should be negatively related to the degree of conflict.

The rational discounting hypothesis also predicts cross-sectional relations between conflict severity and the short-term trading volume responses to recommendations. As Kim and Verrecchia (1991) demonstrate in a rational expectations model of trading, the more precise a piece of news, the more individuals will revise their prior beliefs and, hence, the more trading that will result. In the present context, investor rationality implies that an upgrade by a highly conflicted analyst represents less precise news to investors, and so such a revision should be followed by a relatively small abnormal volume. But when an analyst downgrades a stock despite a substantial conflict, the signal is regarded as being more precise, and thus the downgrade should lead to relatively large abnormal trading.

By contrast, under the naive investor hypothesis, investors are largely ignorant of the distortive pressures that analysts face and accept analysts' recommendations at face value. This implies that there should be no relation between conflict severity and the short-term response of either stock prices or trading volume to recommendation revisions. Furthermore, the absence of a systematic relation should hold true for both upgrades and downgrades.

What are the implications of the two hypotheses for the medium-term (3- to 12-month) investment performance of analysts' recommendations? Under the rational discounting hypothesis, there should be no systematic relation between the magnitude of conflicts faced by an analyst and the performance of his or her stock recommendations: the market correctly anticipates the potential distortions up front and accordingly adjusts its response. But the naive investor hypothesis predicts that performance should be negatively related to conflict

<sup>9</sup> This framework follows Kroszner and Rajan (1994) and Gompers and Lerner (1999), who analyze the conflicts that a bank faces in underwriting securities of a company when the bank owns a (debt or equity) stake in it.

severity for both upgrades and downgrades. That is, investors ignore analysts' conflicts up front and pay for their ignorance later.

### 3. Sample and Data

#### 3.1. Sample

Our sample of stock recommendations comes from the Institutional Brokers Estimate System (I/B/E/S) U.S. Detail Recommendations History file. This file contains data on newly issued recommendations as well as revisions and reiterations of existing recommendations made by individual analysts over the period 1993–2003. Although the exact wording of recommendations can vary considerably across brokerage houses, I/B/E/S classifies all recommendations into five categories ranging from strong buy to strong sell. We rely on the I/B/E/S classification and encode recommendations on a numerical scale from 5 (strong buy) to 1 (strong sell).

Since we are primarily interested in examining how the nature and consequences of analysts' recommendations are related to IB or brokerage business, we require measures of the importance of these business lines to analysts' employers. Under U.S. law, all registered broker-dealer firms must file audited annual financial statements with the Securities and Exchange Commission (SEC) in x-17a-5 filings.<sup>10</sup> These filings contain information on broker-dealer firms' principal sources of revenue, broken down into revenue from IB, brokerage commissions, and all other businesses (such as asset management and proprietary trading). We use these filings to obtain various financial data, including data on our key explanatory variables: the fractions of total brokerage house revenues from IB and from brokerage commissions. Beginning with the names of analyst employers contained in the I/B/E/S Broker Translation file,<sup>11</sup> we search for all available revenue information in x-17a-5 filings from 1994 to 2003.<sup>12</sup> For publicly traded broker-dealer firms, we also use 10-K annual report filings over the sample period to gather information on revenue breakdowns, if necessary. We thus obtain annual data from 1994 to 2003 on IB revenue, brokerage revenue, and other revenue for 188 privately held and 44 publicly traded brokerage houses.<sup>13</sup> For each brokerage house, we match recommendations to the latest broker-year revenue data preceding the recommendation date. Over the sample period, we

<sup>10</sup> The Securities Exchange Act, sections 17(a)–17(e), requires these filings. We accessed them from Thomson Financial's Global Access database and the Securities and Exchange Commission's (SEC's) public reading room in Washington, D.C.

<sup>11</sup> We use the file supplied directly by the Institutional Brokers Estimate System (I/B/E/S) on CD-ROM. This file does not recode the name of an acquired brokerage firm to that of its acquirer for years before the merger.

<sup>12</sup> The electronic availability of x-17a-5 filings is very limited prior to 1994, the year the SEC first mandated electronic form filing. Hence, we do not search for revenue information prior to 1994.

<sup>13</sup> We exclude a small number of firm-years in which the total revenue is negative (for example, because of losses from proprietary trading).

are able to match in this fashion 110,493 I/B/E/S recommendations issued by 4,089 analysts.

All broker-dealer firms are required to publicly disclose their balance sheets as part of their x-17a-5 filings. But a private broker-dealer firm can withhold the public disclosure of its income statement, which contains the revenue breakdown information needed for this study, if the SEC deems that such disclosure would harm the firm's competitive position. Thus, our sample of private securities firms is limited to broker-dealers that disclose their revenue breakdowns in x-17a-5 filings. We examine whether this selection bias affects our main results by separately analyzing the subsample of publicly traded securities firms, for which public disclosure of annual revenue information is mandatory. Our findings do not appear to be affected by this selection bias. All of our results for the subsample of publicly traded securities firms are qualitatively similar to the results for the full sample reported in the article. In the Appendix, we describe the characteristics of disclosing and nondisclosing private securities firms, shed some light on the firms' income statement disclosure decisions, and use a selectivity-corrected probit model to examine whether the resulting selection bias can explain analysts' response to conflicts in these private firms. We find no evidence that selection bias affects our results for these firms.

### *3.2. Characteristics of Analysts, Their Employers, and Companies Followed*

We next measure characteristics of analysts, their employers, and the companies they cover. Prior research (for example, Clement 1999; Jacob, Lys, and Neale 1999) finds that analysts' experience and workloads affect the accuracy and credibility of their research. Using the I/B/E/S Detail History files, we measure an analyst's experience and workloads in terms of all research activity reported in I/B/E/S, including stock recommendations, quarterly and annual earnings-per-share forecasts, and long-term earnings growth forecasts. We measure general research experience as the number of days since an analyst first issued research on any company in the I/B/E/S database and company-specific research experience as the number of days since an analyst first issued research on a particular company. We measure an analyst's workload as the number of different companies or the number of different four-digit I/B/E/S sector industry groups (S/I/Gs)<sup>14</sup> for which the analyst issued research in a given calendar year.

The amount of resources devoted to investment research within brokerage houses also affects the quality of analysts' research (Clement 1999). Larger houses have access to better technology, information, and support staff. Accordingly, we use three measures of brokerage house size: the number of analysts issuing stock recommendations for a brokerage house over the course of a calendar year, book value of total assets, and net sales. All of our subsequent results are qual-

<sup>14</sup> The I/B/E/S sector industry group numbers are six-digit codes that provide information on the industry sectors and subsectors for companies in the I/B/E/S database. We use the first four digits, which correspond to broad industry groupings.

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Table 1  
Revenue Sources (%) of Analysts' Employers

Recommendation Level	Investment Banking		Brokerage Commission		Sample Size
	Mean	Median	Mean	Median	
5 (Strong buy)	13.94	11.81	29.87	24.09	28,901
4 (Buy)	13.81	11.21	26.68	17.22	37,478
3 (Hold)	12.68	11.13	28.44	24.07	37,883
2 (Sell)	11.61	10.55	23.13	16.12	4,875
1 (Strong sell)	16.27	14.90	33.44	24.95	1,356
p-Value (4 and 5) versus (1 and 2)	.0000	.0000	.0000	.0023	

Note. Shown are the percentages of analyst employer revenues from investment banking and brokerage commissions, by recommendation level. Data are for 110,493 stock recommendations and are drawn from the Institutional Brokers Estimate System U.S. Detail Recommendations History file for 1994–2003.

itatively similar under each of the three size measures. To save space, we report results only of tests based on the first size measure.

To capture the degree to which investors believe that individual analysts have skill in providing timely and accurate research, we use two measures of analysts' reputation. The first is based on *Institutional Investor (II)* magazine's All-America Research Team designation. Each year around October 15, *II* mails an issue to subscribers that lists the names of analysts who receive the most votes in a poll of institutional money managers. About 300–400 analysts are identified. We construct a variable that indicates, for each recommendation revision, whether the recommending analyst was named to the first, second, third, or honorable mention team in the latest annual survey. As a complementary, objective measure of analysts' reputation, we use a variable based on the *Wall Street Journal's (WSJ's)* annual All-Star Analysts Survey. The *WSJ* All-Star Analysts are determined by an explicit set of criteria relating to past stock-picking performance and forecasting accuracy.<sup>15</sup> The survey covers about 50 industries annually and names the top five stock pickers and top five earnings forecasters in each industry.<sup>16</sup>

Tables 1 and 2 report summary data on the characteristics of our sample. In Table 1, both the mean and the median percentages of analyst employer revenues derived from IB decline monotonically over the first four recommendation levels, but these values are the highest for strong sell recommendations. Similarly, it is the brokerage firms issuing strong sell recommendations that generally derive

<sup>15</sup> We recognize that the performance metrics used in the *Wall Street Journal (WSJ)* All-Star Analysts Survey are public information and can, in principle, be replicated by investors. However, to the extent that computing and evaluating analysts' performance is a costly activity, being named an All-Star Analyst can still affect an analyst's reputation and credibility.

<sup>16</sup> Since the I/B/E/S Broker Translation File provides only analysts' last names and first initials, in some instances it is not possible to ascertain from the I/B/E/S data alone whether an analyst in our sample was named to the *Institutional Investor (II)* or *WSJ* team. For these cases, we determine team membership of analysts from NASD BrokerCheck, an online database (<http://www.nasd.com>, accessed October 2004) that provides the full names of registered securities professionals as well as their employment and registration histories for the past 10 years. The database also keeps track of analysts' name changes (such as those resulting from marriage).

Table 2  
 Characteristics of Analysts, Firms, and Companies Followed

Characteristic	Mean	Median	SD	Sample Size
Investment banking revenue (%)	13.60	11.25	11.93	94,892
Brokerage commission revenue (%)	28.74	24.07	24.75	94,892
Analyst's company-specific experience (years)	2.42	1.20	3.29	85,531
Analyst's general experience (years)	6.41	4.90	5.32	85,531
Analysts employed by a firm	86.34	60	79.73	94,618
Companies followed by an analyst	17.24	15	12.93	84,016
Four-digit I/B/E/S S/I/Gs followed by an analyst	3.05	3	1.90	84,014
<i>Institutional Investor</i> All-America stock picker	.005	0	.07	85,531
<i>Institutional Investor</i> All-America Research Team member	.035	0	.18	85,531
<i>Wall Street Journal</i> All-Star stock picker	.018	0	.13	85,531
<i>Wall Street Journal</i> All-Star Analyst	.136	0	.34	85,531
Market capitalization (\$ millions)	8,804.46	1,367.22	27,758.81	81,333
Analyst following	9.14	7	6.88	92,869

Note. Data are for 94,892 recommendation revisions and are drawn from the Institutional Brokers Estimate System (I/B/E/S) U.S. Detail Recommendations History file for 1994–2003. Recommendation revisions include recommendation changes as well as initiations, resumptons, and discontinuations of coverage. Analysts' experience is measured from all analyst research activity reported in I/B/E/S, including earnings-per-share forecasts, long-term earnings growth forecasts, and stock recommendations. An analyst is considered to be a top stock picker or team member if he or she appeared in the relevant portion of the most recent analyst survey by *Institutional Investor* or the *Wall Street Journal* at the time of a recommendation revision. Market capitalization is measured 12 months before the end of the current month, and analyst following is measured on the basis of stock recommendation coverage. Market capitalization values are inflation adjusted (with Consumer Price Index numbers and with 2003 as the base year). S/I/G = sector industry group.

the highest percentage of their total revenues from brokerage commissions. Notably, in each of the five categories, the mean percentage of revenue from commissions is about twice as large as the mean percentage of revenue from IB. This fact underscores the importance of trading commissions as a source of revenue for many securities firms. The last column shows that about 95 percent of the recommendations in the sample are at levels 5 (strong buy), 4 (buy), or 3 (hold). Levels 1 (strong sell) and 2 (sell) represent only about 1 percent and 4 percent of all recommendations, respectively.

The data in Table 2 provide a flavor of our sample of analysts and their employers. As noted by Hong, Kubik, and Solomon (2000), careers as analysts tend to be relatively short. The median recommendation is made by an analyst with under 5 years of experience, of which just over a year was spent following a given stock. Stock analysts tend to be highly specialized, following a handful of companies in a few industries. The median recommendation is made by an analyst following 15 companies in three industries who works for a securities firm employing 60 analysts. Being named as an All-America Research Team member by *II* is a rare honor, received by under 5 percent of all analysts in our sample. Finally, the typical company followed is large, with mean (median) market capitalization of about \$8.8 billion (\$1.4 billion) in inflation-adjusted

2003 dollars. Over the time span of a year, a company is tracked by a mean (median) of 9.1 (7) analysts.

#### 4. Conflicts and the Levels of Analyst Recommendations Net of the Consensus

In this section, we examine whether the level of an analyst's stock recommendation net of the consensus (that is, median) recommendation level is related to the conflicts that he or she faces. We start by ascertaining the level of the outstanding recommendation on each stock by each analyst following it at the end of each quarter (March, June, September, December) from 1995 through 2003. An analyst's recommendation on a stock is included only if it is newly issued, reiterated, or revised in the preceding 12 months.

We estimate a regression explaining individual analysts' net stock recommendation levels at the end of a quarter (which is the recommendation level minus the median recommendation level across all analysts following a stock during the quarter).<sup>17</sup> The regression pools observations across analysts, stocks, and quarters and includes our two main explanatory variables: the percentage of an analyst employer's total revenues from IB and the percentage from brokerage commissions. Following Jegadeesh et al. (2004) and Kadan et al. (forthcoming), who find that momentum is an important determinant of analysts' recommendations, we control for the prior 6-month stock return.

The regression also controls for other factors that can affect the degree of analysts' optimism, such as the size of the company followed and the resources, reputation, experience, and workload of an analyst. As a measure of the resources available to an analyst, a dummy variable is used for a large brokerage house, and it equals one if the firm ranks in the top quartile of all houses in terms of the number of analysts employed during the year. The size of the company followed is measured by the natural logarithm of its market capitalization, measured 12 months before the end of the month. We measure an analyst's reputation by dummy variables that equal one if the recommending analyst was named in the most recent year as an All-America Research Team member by *II* or as an All-Star Analyst by the *WSJ*. An analyst's company-specific research experience is measured by the natural logarithm of one plus the number of days an analyst has been producing research (including earnings-per-share forecasts, long-term growth forecasts, or stock recommendations) on the company. We measure an analyst's workload by the natural logarithm of one plus the number of companies for which he or she produces forecasts or recommendations in the current year.

Finally, we control for industry and time period effects by adding dummy variables for I/B/E/S two-digit S/I/G industries and for each calendar quarter (March 1995, June 1995, and so forth). Since net recommendation levels can

<sup>17</sup> To ensure meaningful variation in the dependent variable, we omit stocks followed by only one analyst in a quarter.

Table 3  
 Ordered Probit Analysis of Recommendation Levels Net of the Consensus

Explanatory Variable	Coefficient	z-Statistic
Investment banking revenue (%)	.4167	17.35
Brokerage commission revenue (%)	.0363	3.00
Prior 6-month stock return	-.0068	-2.89
Large brokerage house dummy	-.0639	-8.60
Company size	.0038	2.89
<i>Institutional Investor</i> All-America Research Team dummy	.0032	.15
<i>Wall Street Journal</i> All-Star Analyst dummy	-.0196	-2.23
Company-specific research experience	.0012	1.42
Number of companies followed	.0070	4.64

**Note.** The results are from ordered probit regressions explaining individual analysts' stock recommendation levels net of the consensus (that is, median) recommendation level at the end of each quarter (March, June, September, December) for 1995–2003. Observations are excluded if the analyst issued no new or revised recommendation in the preceding 12 months. The regression includes observations pooled across analysts, stocks, and quarters. Data on recommendations are drawn from the Institutional Brokers Estimate System (I/B/E/S) U.S. Detail Recommendations History file for 1994–2003. Investment banking or brokerage commission revenue refer to the percentage of the brokerage firm's total revenues derived from investment banking or brokerage commissions. The large brokerage house dummy is an indicator variable that equals one if a brokerage house is in the top quartile of all houses, based on the number of analysts issuing stock recommendations listed in I/B/E/S in a given calendar year. Company size is the natural logarithm of the market capitalization of the company followed, measured 12 months prior to the end of the current month. The *Institutional Investor* All-America Research Team and *Wall Street Journal* All-Star Analyst dummies are indicator variables that equal one if the recommending analyst was listed as an All-America Research Team member or All-Star Analyst in the most recent analyst ranking. Company-specific research experience is the natural log of one plus the number of days that an analyst has been issuing I/B/E/S research on a company. Number of companies followed equals the natural log of one plus the number of companies followed by an analyst in the current calendar year. The regression includes dummy variables for two-digit I/B/E/S sector industry group industries and for calendar quarters. Test statistics are based on a robust variance estimator. The number of observations is 213,011; the  $p$ -value of the  $\chi^2$  test is <.0001.

take ordered values from  $-4$  (strongly pessimistic) to  $4$  (strongly optimistic) in increments of  $.5$ , we estimate the regression as an ordered probit model.<sup>18</sup> The Z-statistics are based on a robust (Huber-White sandwich) variance estimator.

Table 3 shows the regression estimate. The coefficients of IB revenue percentage and commission revenue percentage are both positive. This finding implies that greater conflicts with IB and brokerage businesses lead an analyst to issue a higher recommendation on a stock relative to the consensus. Stocks followed by busier analysts and stocks of larger companies receive higher recommendations relative to the consensus. Stocks that experience a price run-up over the prior 6 months, stocks followed by analysts at large brokerage houses, and stocks followed by WSJ All-Star Analysts all receive lower recommendations relative to the consensus. All of these relations are highly statistically significant.

To provide a sense of the magnitude of the main effects of interest, we show in Table 4 the derivatives of the probability of each net recommendation level

<sup>18</sup> Notice that recommendation levels can take integer values from 1 to 5, and the median recommendation can take values from 1 to 5 in increments of  $.5$ . See Greene (2003) for a detailed exposition of the ordered probit model.

Table 4  
 Marginal Effects and Sample Distribution for the Ordered Probit Regression in Table 3

	Recommendation Level Net of the Consensus														
	-4	-3.5	-3	-2.5	-2	-1.5	-1	-.5	0	.5	1	1.5	2	2.5	3
Investment banking revenue (%)	-.00031	-.0002	-.0026	-.0010	-.0199	-.0086	-.0744	-.0321	.0123	.0325	.0671	.0077	.0188	.0002	.0003
Brokerage commission revenue (%)	-.00003	-.00001	-.0002	-.00009	-.0017	-.0008	-.0065	-.0028	.0011	.0028	.0059	.0007	.0016	.00002	.00003
Observed frequency	.0001	.0001	.0016	.0007	.0176	.0094	.1241	.0948	.4940	.0937	.1289	.0111	.0233	.0002	.0003

Note. Shown is the derivative of the probability of each net recommendation level with respect to investment banking or brokerage revenue percentage, estimated from the ordered probit regression in Table 3. Investment banking and brokerage commission revenue refer to the percentage of the brokerage firm's total revenues derived from investment banking and brokerage commissions. The last row shows observed frequency of each net recommendation level as a proportion of the sample of 213,011 observations.

with respect to IB revenue and commission revenue percentages.<sup>19</sup> Thus, for example, a 1-standard-deviation increase in IB revenue percentage increases the probability of an optimistic recommendation (that is, a net recommendation level greater than zero) by  $.1193 \times (.0325 + .0671 + . . . + .0003) = .0151$ . Compared to the unconditional probability of an optimistic recommendation by an analyst, this represents an increase of about 5.9 percent ( $.0151/.2575$ ). The effect of a change in commission revenue percentage is much smaller. A 1-standard-deviation increase in commission revenue percentage increases the probability of an optimistic recommendation by  $.2475 \times .01105 = .0027$ , or about 1 percent ( $.0027/.2575$ ) of the unconditional probability. Thus, despite possible concerns about a loss of reputation, analysts seem to respond to conflicts of interest, particularly those stemming from IB.

## 5. Conflicts and Investor Response to Recommendation Revisions

### 5.1 Stock Price Response

This section examines whether an analyst's credibility with investors is related to the degree of conflict faced. We interpret the reaction of stock prices to a recommendation revision as an indication of an analyst's credibility. Our analysis focuses on revisions in recommendation levels, rather than on recommendation levels per se, because revisions are discrete events that are likely to be salient for investors, and previous research finds that revisions have significant information content (see, for example, Womack 1996; Jegadeesh et al. 2004). To capture the effects of the most commonly observed and economically important types of revisions, we structure our tests around four basic categories: added to strong buy, added to buy or strong buy, dropped from strong buy, and dropped from buy or strong buy.<sup>20</sup> These four categories are defined to include initiations, resumptions, and discontinuations of coverage because such events also reflect analysts' positive or negative views about a company.<sup>21</sup> Thus, for example, we consider a stock to be added to strong buy under two scenarios: (a) the recommendation level is raised to strong buy from a lower level or (b) coverage is

<sup>19</sup> Notice that, for each explanatory variable, these derivatives sum to zero across all the net recommendation levels.

<sup>20</sup> Our analysis focuses on these four types of revisions instead of the other four (added to strong sell, and so forth) because, as shown in Table 1, sell and strong sell recommendations are quite rare. But note that dropped-from-buy and dropped-from-buy-or-strong-buy revisions can entail movement to the sell or strong sell category.

<sup>21</sup> We use the I/B/E/S Stopped Recommendations file to determine instances in which a brokerage firm discontinued coverage of a company. This file contains numerous cases in which an analyst stops coverage of a stock only to issue a new recommendation a month or two later. Conversations with I/B/E/S representatives indicate that such events likely represent pauses in coverage due to company quiet periods or analysts' reassignments within a brokerage house. We define a stopped coverage event to be a true stoppage only if the analyst does not issue a recommendation on the stock over the subsequent 6 months.

initiated or resumed at the level of strong buy.<sup>22</sup> Defining revisions in this fashion yields a sample of 94,892 recommendation revisions made over the 1994–2003 period.

#### 5.1.1. Average Response

We compute the abnormal return on an upgraded or downgraded stock over day  $t$  as the return (including dividends) on the stock minus the return on the Center for Research in Security Prices equal-weighted market portfolio of New York Stock Exchange (NYSE), American Stock Exchange, and NASDAQ stocks. The cumulative abnormal return (CAR) on the stock over days  $t_1$  to  $t_2$  relative to the revision date (day 0) is measured as the sum of the abnormal returns over those days. Table 5 shows mean and median CARs for three windows: days  $-1$  to  $0$ ,  $-1$  to  $1$ , and  $-5$  to  $5$ . The  $t$ -statistics for the difference of the mean abnormal returns from zero are computed as in Brown and Warner (1985) and are shown in parentheses. The  $p$ -values for the Wilcoxon test are reported in parentheses with the medians.

It is clear from Table 5 that recommendation revisions have large effects on stock prices. For example, when a stock is added to the strong-buy list, it experiences a mean abnormal return of about 2 percent over the 2-day revision period. Downgrades have even larger effects on stock prices than do upgrades. Strikingly, the 2-day mean abnormal return around the dropped-from-strong-buy list is  $-4$  percent. Median values are consistently smaller in magnitude than are means, and this finding indicates that some revisions lead to price reactions of a very large magnitude. Mean and median 2-day abnormal returns are statistically different from zero for all four groups of forecast revisions. The magnitudes of abnormal returns are somewhat larger over the 3-day and 11-day windows than over the 2-day window. Overall, these returns are consistent with those found by prior research that examines the average stock price impact of recommendation revisions (for example, Womack 1996; Jegadeesh et al. 2004).

#### 5.1.2. Cross-Sectional Analysis

Table 6 contains cross-sectional regressions of stock price reactions to recommendation revisions over days  $-1$  to  $1$ . The main explanatory variables of interest in these regressions are our revenue-based measures of the magnitudes of IB and brokerage conflicts. We include controls for the size of an analyst's employer, the size of the company followed, and measures of an analyst's reputation, experience, and workload.<sup>23</sup> We estimate a separate regression for each

<sup>22</sup> Note that the definitions of our four recommendation revision groups imply that stocks can be added to a group more than once on a given day. Nonetheless, excluding days on which a stock experiences multiple revisions does not change any of our qualitative results.

<sup>23</sup> Prior research finds that analysts who have more experience, carry lower workloads, or are employed by larger firms tend to generate more precise research (see, for example, Clement 1999; Jacob, Lys, and Neale 1999; Mikhail, Walther, and Willis 1997). In addition, more reputed analysts tend to generate timelier and more accurate research (see, for example, Stickel 1992; Hong and Kubik 2003). We expect such analysts to be more influential with investors.

**Table 5**  
**Cumulative Abnormal Returns surrounding Revisions in Analyst Stock Recommendations**

Recommendation Revision	Days -1 to 0			Days -1 to 1			Days -5 to 5		
	Mean ( <i>t</i> -Statistic)	Median ( <i>p</i> -Value)	<i>N</i>	Mean ( <i>t</i> -Statistic)	Median ( <i>p</i> -Value)	<i>N</i>	Mean ( <i>t</i> -Statistic)	Median ( <i>p</i> -Value)	<i>N</i>
<b>Upgrades:</b>									
Added to strong buy	.0207 (49.53)*	.0109 (.000)	24,560	.0240 (46.89)*	-.0130 (.000)	24,556	.0263 (26.84)*	.0187 (.000)	24,499
Added to buy or strong buy	.0149 (46.47)*	.0071 (.000)	36,879	-.0165 (42.01)*	.0085 (.000)	36,875	.0207 (27.53)*	.0128 (.000)	36,780
<b>Downgrades:</b>									
Dropped from buy or strong buy	-.0337 (-56.21)*	-.0126 (.000)	33,322	-.0358 (-48.75)*	-.0155 (.000)	33,262	-.0491 (-34.92)*	-.0287 (.000)	33,197
Dropped from strong buy	-.0399 (-49.88)*	-.0153 (.000)	22,825	-.0427 (-43.58)*	-.0183 (.000)	22,795	-.0570 (-30.38)*	-.0326 (.000)	22,767

**Note.** The sample of recommendation revisions is drawn from the Institutional Brokers Estimate System (I/B/E/S) U.S. Detail Recommendations History file for 1994-2003. Recommendation revisions include recommendation changes and initiations, resumptions, and discontinuations in coverage. Day 0 is the revision date. Recommendation revisions are classified according to the level of any existing recommendation and whether coverage is being initiated or dropped. For example, a revision by an analyst is classified as added to strong buy if the new recommendation is strong buy and (a) the previous recommendation was lower than strong buy or (b) analyst coverage by the brokerage house is resumed or initiated. A recommendation is classified as dropped from strong buy if the previous recommendation was strong buy and (a) the new recommendation is lower than strong buy or (b) research coverage on the company is stopped. The *t*-statistics for the difference from zero are computed as in Brown and Warner (1985). The *p*-values for the difference from zero are from a Wilcoxon test.

\* Statistically significant at the 1% level in two-tailed tests.

Table 6  
 Cross-Sectional Regressions of Cumulative Abnormal Returns over Days -1 to +1 surrounding Recommendation Revisions

Explanatory Variable	Added to Strong Buy	Added to Buy or Strong Buy	Dropped from Buy or Strong Buy	Dropped from Strong Buy
Intercept	.0369 (7.66)**	-.0412 (11.21)**	-.2294 (-31.31)**	-.2224 (-29.25)**
Investment banking revenue (%)	-.0262 (-5.65)**	-.0139 (-3.57)**	-.0200 (-2.74)**	-.0354 (-3.92)**
Brokerage commission revenue (%)	-.0187 (-6.51)**	-.0148 (-6.43)**	-.0089 (-2.39)**	-.0013 (-.29)
Large brokerage house dummy	.0116 (7.46)**	.0088 (6.88)**	-.0242 (-12.79)**	-.0220 (-10.25)**
Company size	-.0056 (-16.13)**	-.0041 (-15.40)**	-.0004 (-.97)	.0018 (3.77)**
<i>Institutional Investor</i> All-America Research Team dummy	.0159 (4.11)**	-.0122 (3.82)**	-.0148 (-2.93)**	-.0207 (-3.28)**
<i>Wall Street Journal</i> All-Star Analyst dummy	.0015 (.81)	.0013 (.84)	-.0011 (-.48)	.0045 (1.78)
Company-specific research experience	.0017 (8.42)**	-.0019 (12.49)**	.0039 (7.37)**	.0018 (3.21)**
Number of companies followed	-.0012 (-2.97)**	-.0016 (-5.37)**	.0007 (1.49)	.0008 (1.31)
Observations	19,440	28,665	28,618	19,632
Adjusted R <sup>2</sup>	.038	.0240	.028	.035
P-Value of F-test	<.0001	<.0001	<.0001	<.0001

Note. Shown are coefficient estimates and (in parentheses) *t*-statistics from ordinary least squares regressions. Day 0 is the recommendation revision date. Data on recommendations are drawn from the Institutional Brokers Estimate System (I/B/E/S) U.S. Detail Recommendations History file for 1994-2003. Investment banking and brokerage commission revenue refer to the percentages of a brokerage firm's total revenues derived from investment banking and brokerage commissions. The large brokerage house dummy is an indicator variable that equals one if a brokerage house is in the top quartile of all houses, based on the number of analysts issuing stock recommendations listed in I/B/E/S in a given calendar year. Company size is the natural logarithm of the market capitalization of the company followed, measured 12 months prior to the end of the current month. The *Institutional Investor* All-America Research Team and *Wall Street Journal* All-Star Analyst dummies are indicator variables that equal one if the recommending analyst was listed as an All-America Research Team member or All-Star Analyst in the most recent analyst ranking. Company-specific research experience is the natural log of one plus the number of days that an analyst has been issuing I/B/E/S research on a company. Number of companies followed equals the natural log of one plus the number of companies followed by an analyst in the current calendar year. All regressions include dummy variables for calendar-year and two-digit I/B/E/S sector industry group industries (not reported). The *t*-statistics are based on a robust variance estimator. \* Statistically significant at the 5% level in two-tailed tests. \*\* Statistically significant at the 1% level in two-tailed tests.

of the four groups of recommendation revisions. The *t*-statistics based on a robust variance estimator are reported in parentheses.

The coefficient on IB revenue percentage is statistically significantly negative for both upgrades and downgrades. The coefficient on brokerage commission revenue percentage is also negative in all four regressions; it is statistically significant in all cases, except for the dropped-from-strong-buy revisions.<sup>24</sup> Collectively, these results favor the rational discounting hypothesis over the naive investor hypothesis. The magnitudes of these effects are nontrivial. For instance, a 1-standard-deviation increase in IB revenue percentage leads to a change of about  $-.31$  ( $-.42$ ) percentage points in the 3-day abnormal return around the move to (from) a strong buy recommendation. Similarly, a 1-standard-deviation increase in brokerage commission revenue percentage leads to a change of about  $-.37$  ( $-.22$ ) percentage points in the corresponding abnormal return around the move to (from) a buy or strong buy recommendation.<sup>25</sup>

The results for control variables are also noteworthy. The dummy variable for a large analyst employer is positively (negatively) related to the market reaction to upgrades (downgrades). This finding is consistent with the idea that revisions by analysts employed at larger brokerage houses (which tend to be more reputable) have more credibility with investors. The size of the company followed is negatively (positively) related to the market reaction to upgrades (downgrades), which is consistent with the notion that, for larger companies, an analyst's recommendation competes with more alternative sources of information and advice.

Revisions by *II* All-America Research Team analysts are positively (negatively) related to the stock price reaction to upgrades (downgrades), which suggests that they wield more influence with investors. This is a notable finding; we are unaware of previous work documenting a relation between an analyst's reputation and the stock price reaction to both upgrades and downgrades. As the coefficient on the *WSJ* All-Star Analyst dummy indicates, however, being designated as a *WSJ* All-Star Analyst does not seem to enhance the credibility of an analyst's recommendations.<sup>26</sup> The absence of an effect here is somewhat

<sup>24</sup> These and all subsequent regression results in this article are qualitatively similar when we winsorize the dependent variable at the first and ninety-ninth percentiles of its distribution.

<sup>25</sup> For each group of revisions (such as added to strong buy), we also estimate the regression after excluding similar revision events that a stock experiences within 3 days of a given revision event. These results are qualitatively similar to those reported in Tables 6 and 8. We also examine the possibility that investors perceived the conflicts to be more severe, and hence discounted them more, in securities firms that were charged by regulators (that is, the 10 firms that were part of the global analyst settlement) than in other firms. We do this by interacting both investment banking (IB) revenue percentage and brokerage commission revenue percentage variables in the regression with binary (0, 1) dummy variables for securities firms that are part of the global analyst settlement and firms that are not. We find no significant differences between the two groups of firms in their coefficients on IB revenue percentage and commission revenue percentage.

<sup>26</sup> Although *II* All-America Research Team and *WSJ* All-Star Analyst dummies both measure aspects of an analyst's reputation, they are not highly correlated. The correlation coefficient is .14 across all upgrades and .13 across all downgrades.

surprising given that the *WSJ* has a much broader readership base than that of *II*. One explanation is that *II* analyst rankings are based on an opinion poll of money managers, who control substantial assets and therefore directly affect stock prices, while *WSJ* rankings are based on strictly quantitative measures of analysts' past stock-picking or forecasting performance.

The market reaction to upgrades is positively related to an analyst's company-specific research experience. This finding suggests that more experienced analysts tend to be more influential with investors. But the reaction to downgrades is also positively related to analysts' experience. Finally, the stock price reaction to upgrades is negatively related to analysts' workload. This finding suggests that busier analysts' opinions tend to get discounted by the market. All of these relations are statistically significant.

### 5.2. Response of Trading Volume

In this section, we measure analysts' credibility via changes in the volume of trade around recommendation revisions.<sup>27</sup> Revisions of analysts' recommendations can affect trading volumes by inducing investors to rebalance their portfolios to reflect updated beliefs.

#### 5.2.1. Average Response

We compute the abnormal volume for a trading day  $t$  as the mean-adjusted share turnover for stock  $i$ :<sup>28</sup>

$$e_{it} = v_{it} - \bar{v}_i, \quad (1)$$

where  $v_{it}$  is the trading volume of stock  $i$  over day  $t$  divided by common shares outstanding on day  $t$  and  $\bar{v}_i$  is the mean of  $v_{it}$  over days  $-35$  to  $-6$ .

The cumulative abnormal volume (CAV) for stock  $i$  over days  $t_1$  to  $t_2$  is measured in the following way:

$$CAV^i_{t_1, t_2} = \sum_{t=t_1}^{t_2} e_{it}. \quad (2)$$

Table 7 shows mean and median CAV values over three windows surrounding revisions in analyst stock recommendations. Over the 2-day revision period, the mean abnormal volume is positive for both upgrades and downgrades, but its magnitude is substantially larger for downgrades. The move to (from) the strong-buy list increases a stock's trading volume by a mean of about .9 percent (2.6 percent) of the outstanding shares, compared to a normal day's volume. For longer windows, the mean abnormal volumes are substantially higher for down-

<sup>27</sup> Many prior studies have used trading volume to examine investors' response to informational events (see, for example, Shleifer 1986; Jain 1988; Jarrell and Poulsen 1989; Meulbroeck 1992; Sanders and Zdanowicz 1992).

<sup>28</sup> This approach has been used in a number of prior studies (for example, Shleifer 1986; Vihj 1994; Michaely and Vila 1996).

Table 7  
 Cumulative Abnormal Trading Volumes surrounding Announcements of Revisions in Stock Recommendations by Analysts

Recommendation revision	Days -1 to 0			Days -1 to 1			Days -5 to 5		
	Mean ( <i>t</i> -Statistic)	Median ( <i>p</i> -Value)	N	Mean ( <i>t</i> -Statistic)	Median ( <i>p</i> -Value)	N	Mean ( <i>t</i> -Statistic)	Median ( <i>p</i> -Value)	N
Upgrades:									
Added to strong buy	.0086 (8.89)*	.0011 (.000)	24,506	.0097 (8.18)*	.0015 (.000)	24,502	.0071 (3.13)*	.0030 (.000)	24,488
Added to buy or strong buy	.0053 (5.08)*	.0002 (.000)	36,800	.0058 (4.54)*	.0004 (.000)	36,796	.0020 (.818)	.0008 (.000)	36,766
Downgrades:									
Dropped from buy or strong buy	.0217 (114.47)*	.0010 (.000)	33,291	.0265 (114.14)*	.0014 (.000)	33,232	.0381 (85.70)*	.0039 (.000)	33,175
Dropped from strong buy	.0259 (128.76)*	.0017 (.000)	22,808	.0315 (127.86)*	.0025 (.000)	22,779	.0453 (96.03)*	.0057 (.000)	22,756

Note. The abnormal volume for stock *i* on day *t* is computed from daily Center for Research in Security Prices data as  $v_{it} - v_i$ , where  $v_{it}$  is the volume on day *t* and  $v_i$  is the average volume over days -35 to -6 relative to the recommendation revision date (day 0). All share volumes are normalized by dividing by common shares outstanding on the same day. The *p*-values are from a Wilcoxon test.

\* Statistically significant at the 1% level in two-tailed tests.

grades. The median values are lower than the mean values. Each mean and median abnormal volume is statistically greater than zero, with a  $p$ -value below .01. Clearly, revisions of stock recommendations by analysts generate trading.

#### 5.2.2. Cross-Sectional Analysis

Table 8 presents cross-sectional regressions explaining CAVs over days  $-1$  to  $1$  surrounding the recommendation revisions. The explanatory variables in the regressions are the same as in regressions of CARs in Section 5.1.2. The results provide strong support for the rational discounting hypothesis. The coefficients on both the IB revenue percentage and commission revenue percentage variables are generally statistically significant and negative (positive) for both groups of upgrades (downgrades). The magnitudes of these effects are nontrivial. For example, a 1-standard-deviation increase in IB revenue percentage leads to a change in the 3-day abnormal volume around the addition (omission) of a stock to (from) the strong-buy list of about  $-.12$  percent (.36 percent) of the outstanding shares; a corresponding change in the commission revenue percentage results in a change in the abnormal volume of about  $-.15$  percent (.22 percent).

Recommendation revisions by larger brokerage houses generate more trading. The abnormal volume is also larger for revisions involving smaller companies. Revisions by *II* All-America Research Team members generate statistically significantly more abnormal volume for the dropped from buy or strong-buy group. Upgrades (downgrades) by more experienced analysts result in larger (smaller) abnormal volumes, and upgrades by busier analysts are less credible.

### 6. Conflicts and the Performance of Recommendation Revisions

We next consider the investment performance of analysts' recommendation revisions over periods of up to 12 months. Here, the choice of the benchmark used to compute abnormal returns is somewhat more important than it is in Section 5.1, where we measure abnormal returns over a few days around the revision. But the results here are likely to be less sensitive to the benchmark employed than are those in studies of long-run stock performance, where the time period of interest can be as long as 5–10 years (see, for example, Agrawal, Jaffe, and Mandelker 1992; Agrawal and Jaffe 2003).

#### 6.1. Average Performance

We use an approach similar to Barber, Lehavy, and Trueman (2007). To evaluate the performance of stocks over a given window, say, months 1–12 following the month of their inclusion (month 0) in a given group of revisions such as the added-to-strong-buy list, we form a portfolio  $p$  that initially invests \$1 in each recommendation. Each recommended stock remains in the portfolio until month 12 or the month that the stock is either downgraded or dropped from coverage by the securities firm, whichever is earlier. If multiple securities firms recommend a stock in a given month, the stock appears multiple times in the

Table 8  
 Cross-Sectional Regressions of Cumulative Abnormal Trading Volumes over Days -1 to +1 surrounding Recommendation Revisions

Explanatory Variable	Added to Strong Buy	Added to Buy or Strong Buy	Dropped from Buy or Strong Buy	Dropped from Strong Buy
Intercept	.0083 (2.65)**	-.0042 (1.90)	-.0946 (13.72)**	.0828 (15.01)**
Investment banking revenue (%)	-.0100 (-3.31)**	-.0085 (-2.26)*	.0140 (2.18)*	.0304 (3.63)**
Brokerage commission revenue (%)	-.0057 (-1.76)	-.0059 (-4.13)**	.0087 (2.76)**	.0055 (1.45)
Large brokerage house dummy	.0058 (3.72)**	.0038 (4.50)**	.0168 (11.12)**	.0171 (9.48)**
Company size	-.0031 (-9.54)**	-.0018 (-12.30)**	-.0023 (-7.60)**	-.0041 (-11.40)**
<i>Institutional Investor</i> All-America Research Team dummy	.0035 (1.74)	.0033 (1.88)	.0084 (2.32)*	.0046 (1.21)
<i>Wall Street Journal</i> All-Star Analyst dummy	.0008 (.74)	.0013 (1.42)	.0023 (1.36)	-.0006 (-.29)
Company-specific research experience	.0010 (8.39)**	.0010 (11.19)**	-.0041 (-6.18)**	-.0019 (-4.11)**
Number of companies followed	-.0009 (-3.49)**	-.0013 (-6.23)**	-.0001 (-.38)	-.0005 (-.99)
Observations	19,431	28,653	28,594	19,619
Adjusted R <sup>2</sup>	.025	.019	.030	.042
p-Value of F-test	<.0001	<.0001	<.0001	<.0001

Note. Shown are coefficient estimates and (in parentheses) t-statistics from ordinary least squares regressions. Day 0 is the recommendation revision date. Data on recommendations are drawn from the Institutional Brokers Estimate System (I/B/E/S) U.S. Detail Recommendations History file for 1994-2003. Investment banking and brokerage commission revenue refer to the percentage of brokerage firm's total revenues derived from investment banking and brokerage commissions. The large brokerage house dummy is an indicator variable that equals one if a brokerage house is in the top quartile of all houses, based on the number of analysts issuing stock recommendations listed in I/B/E/S in a given calendar year. Company size is the natural logarithm of the market capitalization of the company followed, measured 12 months prior to the end of the current month. The *Institutional Investor* All-America Research Team and *Wall Street Journal* All-Star Analyst dummies are indicator variables that equal one if the recommending analyst was listed as an All-America Research Team member or All-Star Analyst in the most recent analyst ranking. Company-specific research experience is the natural log of one plus the number of days that an analyst has been issuing I/B/E/S research on a company. Number of companies followed equals the natural log of one plus the number of companies followed by an analyst in the current calendar year. All regressions include dummy variables for calendar-year and two-digit I/B/E/S sector industry group industries (not reported). The t-statistics are based on a robust variance estimator.

\* Statistically significant at the 5% level in two-tailed tests.

\*\* Statistically significant at the 1% level in two-tailed tests.

portfolio that month, once for each securities firm with a strong buy recommendation. The portfolio return for calendar month  $t$  is given by

$$R_{pt} = \frac{\sum_{i=1}^{n_t} x_{it} \times R_{it}}{\sum_{i=1}^{n_t} x_{it}} \quad (3)$$

where  $R_{it}$  is the month  $t$  return on recommendation  $i$ ,  $x_{it}$  is one plus the compound return on the recommendation from month 1 to month  $t - 1$  (that is,  $x_{it}$  equals one for a stock that was recommended in month  $t$ ), and  $n_t$  is the number of recommendations in the portfolio. This calculation yields a time series of monthly returns for portfolio  $p$ .

We compute the abnormal performance of portfolio  $p$  as the estimate of the intercept term  $\alpha_p$  from the Fama and French (1993) three-factor model. Accordingly, we estimate the following time-series regression for portfolio  $p$ :

$$R_{pt} - R_{ft} = \alpha_p + \beta_{1p}(R_{mt} - R_{ft}) + \beta_{2p}\text{SMB}_t + \beta_{3p}\text{HML}_t + \varepsilon_{pt} \\ t = \text{January 1994 to December 2003}, \quad (4)$$

where  $R_f$  is the risk-free rate,  $R_m$  is the return on the value-weighted market index, SMB equals the monthly return on a portfolio of small firms minus the return on a portfolio of big firms, and HML is the monthly return on a portfolio of firms with high book-to-market ratio minus the return on a portfolio of firms with low book-to-market ratio. The error term in the regression is denoted  $\varepsilon$ . The time series of monthly returns on  $R_m - R_f$ , SMB, and HML are obtained from Kenneth French's Web site.<sup>29</sup> We repeat this procedure for each time window of interest, such as months 1-3, and for each group of revisions, such as the dropped-from-strong-buy list.

Table 9 shows the performance of analysts' recommendation revisions. Over the period of 3 months following the month of recommendation revision, the average abnormal returns for upgrades are positive, and the returns for downgrades are negative. The magnitudes of these returns are nontrivial. For example, the addition of a stock to the strong-buy list has an abnormal monthly return of about .875 percent, or about 2.62 percent over the 3-month period. The pattern is generally similar over longer windows. For example, over months 1-12, the abnormal monthly return for the added-to-strong-buy list is .679 percent, or about 8.15 percent over the 12-month period. The abnormal returns are significantly different from zero for upgrades in all cases; they are statistically insignificant for downgrades in all cases except one.

<sup>29</sup> Kenneth R. French, Fama/French Factors (file F-F\_Research\_Data\_Factors.zip at [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)).

Table 9  
 Medium-Term Investment Performance of Recommendation Revisions

Portfolio	Months 1-3		Months 1-6		Months 1-12	
	Abnormal Monthly Return (%)	t-Statistic	Abnormal Monthly Return (%)	t-Statistic	Abnormal Monthly Return (%)	t-Statistic
Added to strong buy	.875	6.12**	.758	6.12**	.679	5.70**
Added to buy or strong buy	.586	4.49**	.511	4.82**	.503	5.38**
Dropped from buy or strong buy	-.361	-1.60	-.260	-1.28	-.072	-.44
Dropped from strong buy	-.367	-1.58	-.395	-2.00*	-.231	-1.49

Note. Abnormal returns are reported for three event windows relative to the month of revision (month 0) and are computed using an approach similar to that in Barber, Lehavy, and Trueman (2007). The abnormal return is the estimated intercept from a time-series regression of 114 monthly portfolio returns using the Fama and French (1993) three-factor model.

\* Statistically significant at the 5% level in two-tailed tests.  
 \*\* Statistically significant at the 1% level in two-tailed tests.

### 6.2. Cross-Sectional Analysis

Table 10 shows the results of a regression similar to that in Section 5.1.2, except that the dependent variable here is the average monthly abnormal return for a firm over months 1-12 following the month of a recommendation revision. We compute this abnormal return by estimating a time-series regression similar to that in equation (4) over months 1-12 for each stock in a sample of recommendation revisions. The intercept from this regression is our estimate of the performance of the recommendation revision. Observations involving recommendation revisions on a stock that occur within 12 months of an earlier revision are omitted from each regression.<sup>30</sup>

In each regression result reported in Table 10, the coefficients of IB revenue percentage and commission revenue percentage are not statistically significantly different from zero. These results favor the rational discounting hypothesis, at least for the marginal investor. The performance of both groups of recommendation upgrades is negatively related to company size; the performance of one group of downgrades is positively related to the dummy variable for *WSJ All-Star Analysts*. None of the other variables is statistically significant.

### 7. Bubble versus Postbubble Periods

We next exploit the fact that our sample spans both the late-1990s U.S. stock bubble and a postbubble period. During the bubble period, initial public offerings, merger activities, and stock prices were near record highs, and media attention was focused on analysts' pronouncements. We therefore examine whether analysts' behavior and investors' responses to analysts' recommendations differed during the bubble and postbubble periods. Given the euphoria on Wall

<sup>30</sup> The results are qualitatively similar when we include these observations.

Table 10  
 Cross-Sectional Regressions of Average Monthly Abnormal Returns following Recommendation Revisions over Months 1-12

Explanatory Variable	Added to Buy or		Dropped from Buy or		Dropped from	
	Strong Buy	Strong Buy	Strong Buy	Strong Buy	Strong Buy	Strong Buy
Intercept	.0523 (1.81)	.0089 (.49)	-.0646 (-6.81)**	-.0821 (-6.55)**		
Investment banking revenue (%)	-.0089 (-1.23)	-.0018 (-.29)	.0042 (.64)	-.0068 (-.87)		
Brokerage commission revenue (%)	.0064 (1.32)	.0059 (1.54)	.0057 (1.21)	.0031 (.75)		
Large brokerage house dummy	.0009 (.38)	-.0027 (-1.32)	.0016 (.72)	.0015 (.77)		
Company size	-.0013 (-2.74)**	-.0017 (-4.18)**	-.0007 (-1.71)	-.0007 (-1.54)		
<i>Institutional Investor</i> All-America analyst dummy	-.0029 (-.58)	.0001 (.01)	-.0016 (-.44)	-.0009 (-.23)		
<i>Wall Street Journal</i> All-Star Analyst dummy	.0031 (1.24)	.0002 (.12)	-.0029 (-1.42)	.0056 (2.29)*		
Company-specific research experience	.0004 (1.08)	.0004 (1.80)	.0004 (.76)	.0004 (.92)		
Number of companies followed	-.0011 (-1.61)	-.0008 (-1.79)	-.0002 (-.45)	-.0002 (-.47)		
Observations	6,411	8,851	10,644	8,368		
Adjusted R <sup>2</sup>	.026	.023	.019	.020		
p-Value of F-test	<.0001	<.0001	<.0001	<.0001		

Note. Shown are the coefficient estimates and (in parentheses) *t*-statistics from ordinary least squares regressions. Month 0 is the month of recommendation revision. The abnormal return is the estimated intercept from a time-series regression of monthly portfolio returns in accordance with the Fama and French (1993) three-factor model. Data on recommendations are drawn from the Institutional Brokers Estimate System (I/B/E/S) U.S. Detail Recommendations History file for 1994-2003. Investment banking and brokerage commission revenue data refer to the percentage of the brokerage firm's total revenues derived from investment banking and brokerage commissions. The large brokerage house dummy is an indicator variable that equals one if a brokerage house is in the top quartile of all houses, based on the number of analysts issuing stock recommendations on I/B/E/S in a given calendar year. Company size is the natural logarithm of the market capitalization of the company followed, measured 12 months prior to the end of the current month. The *Institutional Investor* All-America Research Team and *Wall Street Journal* All-Star Analyst dummies are indicator variables that equal one if the recommending analyst was listed as an All-America Research Team member or All-Star Analyst in the most recent analyst ranking. Company-specific research experience is the natural log of one plus the number of days that an analyst has been issuing I/B/E/S research on a company. Number of companies followed equals the natural log of one plus the number of companies followed by an analyst in the current calendar year. All regressions include dummy variables for calendar-year and two-digit I/B/E/S sector industry group industries (not reported). The *t*-statistics are based on a robust variance estimator.

\* Statistically significant at the 5% level in two-tailed tests.

\*\* Statistically significant at the 1% level in two-tailed tests.

Table 11  
 Ordered Probit Regression of Recommendation Levels Net of the Consensus  
 for Bubble versus Postbubble Periods

	Bubble	Postbubble	p-Value
Investment banking revenue (%)	.5103*	.3089*	<.001
Brokerage revenue (%)	-.1868*	.2286*	<.001

Note. The explanatory variables are as in Table 3, except that (a) the investment banking revenue and brokerage commission revenue percentage variables are interacted with dummy variables for the bubble or postbubble period and (b) calendar-quarter dummies are replaced with a postregulation indicator (which is equal to one for quarters after May 2002). Shown are the coefficient estimates of investment banking and brokerage revenue percentage variables for the bubble and postbubble periods and the p-value for the difference in the coefficient estimate between the two periods. All test statistics use robust variance estimators.  
 \* Statistically significant at the 1% level in two-tailed tests.

Street and among investors during the bubble, analysts appear to have been under acute pressure to generate IB fees and brokerage commissions. As for the response of investors, the rational discounting hypothesis predicts greater discounting of analysts' opinions during this period in response to heightened conflicts, while the naive investor hypothesis predicts less discounting.

We estimate regressions similar to those for relative recommendation levels (Table 3), those for announcement abnormal returns (Table 6), those for announcement abnormal volumes (Table 8), and those for 12-month investment performance of recommendation revisions (Table 10), except that we now interact IB revenue percentage and commission revenue percentage with dummy variables for the bubble (January 1996–March 2000) and postbubble (April 2000–December 2003) periods. Accordingly, we restrict the sample period for these regressions to January 1996–December 2003. For regressions corresponding to those with results shown in Table 3, we also replace the calendar-quarter dummies with a postregulation indicator (equal to one for quarters ending after May 2002). In May 2002, both the NYSE and the National Association of Securities Dealers considerably tightened the regulations on the production and dissemination of sell-side analyst research.<sup>31</sup> The findings of Barber et al. (2006) and Kadan et al. (forthcoming) suggest that these regulations exerted a downward pressure on recommendation levels. The regression results are presented in Tables 11 and 12. To save space, we report only the coefficient estimates for IB revenue percentage and commission revenue percentage.

The results in Table 11 show that analysts appear to have inflated their recommendations in response to IB conflicts during both the bubble and postbubble periods. But the magnitude of this effect is substantially greater during the bubble period than during the postbubble period. This difference is statistically significant. The magnitude of the effect is smaller for brokerage conflicts than for IB conflicts during both periods. In fact, the effect for brokerage conflicts is negative

<sup>31</sup> See NYSE Amended Rule 472, "Communications with the Public," and National Association of Securities Dealers Rule 2711, "Research Analysts and Research Reports."

Table 12  
 Ordinary Least Squares Regressions of Abnormal Returns, Abnormal Volumes, and  
 Abnormal Stock Performance for Bubble and Postbubble Periods

	Added to Strong Buy		Added to Buy or Strong Buy		Dropped from Buy or Strong Buy		Dropped from Strong Buy					
	Bubble	Postbubble	Bubble	Postbubble	Bubble	Postbubble	Bubble	Postbubble				
CARs, days -1 to 1:												
Investment banking revenue (%)	-.0248**	-.0120	.083	-.0121**	-.0080	.517	-.0125	-.0379**	.027	-.0361**	-.0345**	.908
Brokerage revenue (%)	-.0114**	-.0105**	.827	-.0099**	-.0110**	.720	-.0063	-.0208**	.003	.0017	-.0114*	.024
CAVs, days -1 to 1:												
Investment banking revenue (%)	-.0076	-.0052	.655	-.0065	-.0082*	.699	.0257**	.0130	.214	.0555**	.0153	.002
Brokerage revenue (%)	-.0042	-.0008	.376	-.0054**	-.0031	.179	.0106*	.0139**	.521	.0046	.0141**	.056
Average monthly CARs, months 1-12:												
Investment banking revenue (%)	-.0016	-.0151	.273	.00001	.0083	.420	-.0085	.0223**	.003	-.0123	-.0051	.564
Brokerage revenue (%)	.0069	.0108	.511	.0086	.0096	.842	.0035	.0136	.101	-.0036	.0091	.019

Note. The explanatory variables are as in Tables 6, 8, and 10, except that the investment banking revenue and brokerage commission revenue percentage variables are interacted with dummy variables for the bubble or postbubble period. Shown are the coefficient estimates of the investment banking and brokerage revenue percentage variables for the bubble and postbubble periods and the *p*-value for the difference in the coefficient estimate between the two periods. Day (month) 0 is the recommendation revision date. All test statistics use robust variance estimators. CAR = cumulative abnormal return; CAV = cumulative abnormal volume.

\* Statistically significant at the 5% level in two-tailed tests.  
 \*\* Statistically significant at the 1% level in two-tailed tests.

during the bubble; it is positive and statistically significantly higher during the postbubble period.

Table 12 shows that, in regressions of 3-day abnormal returns, the coefficients of both IB revenue percentage and commission revenue percentage are negative and statistically significant during the bubble period for both groups of upgrades. For the added-to-strong-buy group, the coefficient of IB revenue percentage is significantly lower during the bubble period than during the postbubble period. For downgrades, the coefficients of both variables are generally negative in both periods, and they are statistically significantly lower during the postbubble period.

In regressions of 3-day abnormal volumes, the coefficients of IB revenue percentage and commission revenue percentage are negative for upgrades and positive for downgrades in all cases, both during and after the bubble. These coefficients are not statistically significantly different between the bubble and postbubble periods for both groups of upgrades and one group of downgrades. For the dropped-from-strong-buy group, the coefficient of IB revenue percentage is statistically significantly larger during the bubble period than during the postbubble period, but the coefficient of the commission revenue percentage is statistically significantly smaller. In regressions of 12-month postrecommendation stock performance, the coefficients of both variables are statistically insignificant both during and after the bubble period in nearly all cases, and this finding is consistent with the results shown in Table 10 for the full sample period.

Overall, analysts appear to respond to IB conflicts both during and after the bubble, but the magnitude of their response declines during the postbubble period. Perversely, while analysts do not seem to respond to brokerage conflicts during the bubble, they appear to do so after the bubble. Perhaps the intense regulatory and media focus on IB conflicts has led analysts to look for alternative avenues. Did investors discount conflicted analysts' opinions more during the bubble than in the postbubble period? The answer to this question is unclear. However, our evidence does not support the notion that investors threw caution to the wind during the bubble.

## 8. Summary and Conclusions

Following the collapse of the late-1990s U.S. stock market bubble, there has been a widespread hue and cry from investors and regulators over the conflicts of interest faced by Wall Street stock analysts. The discovery of e-mail messages, in which analysts were privately disparaging stocks that they were touting publicly, led to the landmark \$1.4 billion settlement between a number of leading Wall Street firms and securities regulators in April 2003. The settlement requires the firms to disclose IB conflicts in analyst reports and imposes a variety of restrictions designed to strengthen the firewalls that separate research from IB. Part of the settlement funds are set aside for investor education and for research produced by independent firms. The settlement basically presumes that analysts

respond to the conflicts by inflating their stock recommendations and that investors take analysts' recommendations at face value.

Consistent with the view of the media and regulators, we find that optimism in stock recommendations is positively related to the importance of both IB and brokerage businesses to an analyst's employer. This pattern is more pronounced during the late-1990s stock market bubble with respect to IB conflicts. However, we provide several pieces of empirical evidence that suggest that investors are sophisticated enough to adjust for this bias. First, the short-term reactions of both stock prices and trading volumes to recommendation upgrades vary negatively with the magnitude of potential IB or brokerage conflicts faced by analysts. For instance, over the 3 days surrounding an upgrade to strong buy, a 1-standard-deviation increase in the proportion of revenue from IB is associated with a .31 percentage point decrease in abnormal returns and a .12 percentage point decrease in abnormal volume. These results suggest that investors ascribe lower credibility to an analyst's upgrade when the analyst is subject to greater pressures to issue an optimistic view. For downgrades, conflict severity varies negatively with the short-term stock price reaction and positively with the short-term trading volume impact. This pattern is consistent with the idea that investors perceive an analyst to be more credible if he or she is willing to voice an unfavorable opinion on a stock despite greater pressures to be optimistic.

Second, we find no evidence that the 1-year investment performance of recommendation revisions is related to the magnitude of analysts' conflicts, either for upgrades or for downgrades. This finding suggests that, on average, investors properly discount an analyst's opinions for potential conflicts at the time the opinion is issued. Finally, investors discounted conflicted analysts' opinions during the late-1990s stock bubble, even in the face of the prevailing market euphoria. This evidence does not support the popular view that recommendations of sell-side analysts led investors to throw caution to the wind during the bubble period.

Overall, our empirical findings suggest that while analysts do respond to IB and brokerage conflicts by inflating their stock recommendations, the market discounts these recommendations after taking analysts' conflicts into account. These findings are reminiscent of the story of the nail soup told by Brealey and Myers (1991), except that here analysts (rather than accountants) are the ones who put the nail in the soup and investors (rather than analysts) are the ones to take it out. Our finding that the market is not fooled by biases stemming from conflicts of interest echoes similar findings in the literature on conflicts of interest in universal banking (for example, Kroszner and Rajan 1994, 1997; Gompers and Lerner 1999) and on bias in the financial media (for example, Bhattacharya et al., forthcoming; Reuter and Zitzewitz 2006). Finally, while we cannot rule out the possibility that some investors may have been naive, our findings do not support the notion that the marginal investor was systematically misled over the last decade by analysts' recommendations.

### Appendix

This Appendix describes the characteristics of disclosing and nondisclosing private securities firms, sheds some light on their decisions to publicly disclose their income statements, and examines whether the resulting selection bias affects our main results in Table 3. Table A1 provides summary statistics of recommendation levels and characteristics of disclosing and nondisclosing private securities firms. Compared with nondisclosing firms, disclosing firms tend to be smaller and more liquid and issue somewhat more optimistic stock recommendations. The mean recommendation level is slightly higher for disclosing firms than for nondisclosing firms. The median disclosing firm is smaller and holds more liquid assets than the median nondisclosing firm. All these differences are statistically significant. The two groups of firms have similar financial leverage ratios and 2-year growth rates in total assets.

We next examine cross-sectional determinants of a private securities firm's decision to disclose its income statement. In an excellent review of the corporate disclosure literature, Healy and Palepu (2001) point out that a firm is more willing to voluntarily disclose financial information when it needs to raise external financing and when it is less concerned that the disclosure would damage its competitive position in product markets. *Ceteris paribus*, firms with greater growth opportunities, higher financial leverage, and less liquid resources are more likely to need external financing. They are more likely to be open with potential investors by disclosing financial information, including their income statements. Similarly, smaller firms are likely to have greater need for external financing as they try to grow. In addition, given the intense competition in the securities business, smaller private firms are also likely to be more willing to disclose their profits and profitability because they have less business at stake. For both reasons, smaller firms are likely to be more willing to disclose financial information. We control for firm size by the natural logarithm of one plus total assets in millions of dollars, for growth opportunities by the 2-year growth rate of total assets, for financial leverage by the ratio of long-term debt to total assets, and for liquidity by the ratio of cash and equivalents to total assets. We estimate a probit regression of DISCLOSER, which equals one for a disclosing firm and is zero otherwise.

In accordance with the predictions of corporate disclosure theory, the coefficients on firm size and liquidity are negative, and the coefficient on growth is positive. Contrary to the prediction, however, the coefficient on leverage is negative. All of these coefficients are highly statistically significant. The pseudo- $R^2$ -value of this model is .08. To save space, these results are not shown in a table.

Finally, we examine whether the selection bias caused by a private securities firm's disclosure choice (and, consequently, the availability of data on IB revenue percentage and commission revenue percentage) affects our main results in Table 3. While there is no Heckman selectivity correction for the ordered probit model, there is one for the regular probit model. So we define a binary variable to

Table A1  
 Summary Statistics for Disclosing and Nondisclosing Private Securities Firms

Variable	Mean		Median		P-Value of Rank Sum Test		Sample Size	
	Disclosers	Nondisclosers	Disclosers	Nondisclosers	Sum Test	Sum Test	Disclosers	Nondisclosers
Recommendation level:								
Level minus median level	3.902	3.810	4	4	<.001	<.001	62,417	181,068
Level	.036	.010	0	0	<.001	<.001	62,417	181,068
Firm size:								
Total assets (\$ millions)	383.37	1,863.52	4.05	28.43	<.001	<.001	365	615
Book equity (\$ millions)	26.40	68.98	1.97	10.56	<.001	<.001	365	615
Financial leverage:								
Long-term debt to total assets	.0539	.0653	0	.002	.253	.004	365	615
Total debt to total assets	.0685	.1823	0	.018	.295	<.001	365	615
Liquidity: cash and equivalents to total assets	.2392	.1816	.101	.052	.001	.0001	365	615
2-Year growth rate	.0849	.0697	.052	.020	.440	.099	246	541

Note. Disclosers are brokers that publicly disclose their income statements, while nondisclosers are brokers that do not disclose them. The statistics for recommendation level are computed from individual analysts' recommendation levels at the end of each quarter in the sample. The median recommendation level is computed at the end of each quarter and is based on all analysts recommending a stock. The statistics for broker characteristics are computed across broker years. The firm size statistics are inflation adjusted (with Consumer Price Index numbers and with 2003 as the base year). The 2-year growth rate is  $(\text{Total assets}_{t+2} / \text{Total assets}_t)^{1/2} - 1$ .

measure an optimistic recommendation that equals one if an analyst's recommendation level on a stock exceeds the consensus level and equals zero otherwise. We then replace the dependent variable in the regression in Section 4 with this optimistic recommendation dummy. Using the subsample of private securities firms, we estimate the resulting equation in two ways: (a) with a regular probit model and (b) with a Heckman selectivity-corrected probit model, where we use the equation described in the second paragraph of this Appendix as the selection equation. When we use approach b, the coefficient of the selection term (that is, the inverse Mills ratio) is statistically significant in the second-stage probit regression. What is more important for our purposes is that the sign, magnitude, and statistical significance of our main explanatory variables, the IB revenue percentage and the commission revenue percentage, are similar in the regular probit and the Heckman-corrected probit regressions. These results do not support the idea that our main findings are driven by the selection bias caused by a private securities firm's decision to disclose its revenue breakdown. To save space, these results are not shown in a table.

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