Profitability Analysis in Business Valuation:
New Perspectives

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Profitability and Value Investing

The value investor's rule:

Only buy firms that are profitable!

Is that a sound criterion?

Applying the Criterion

An investor must cover his or her cost of capital, *r:*

Return on Equity (ROE) > *r*

However, ROE is an accounting measure…..

Does ROE capture return on investment?

ROE in Valuation

A higher ROE implies a higher valuation:

$$Value_0 = B_0 + \frac{(ROE_1 - r)B_0}{r - g}$$

Does a higher ROE imply higher valuation?

The Message of This Talk

ROE conveys risk, not profitability

ROE is an accounting measure

The accounting measurement conveys risk

Pitfalls in Applying ROE in Valuation (1)

ROE is affected by leverage

The leveraging equation:

$$ROE = RNOA + \frac{Debt}{Equity}\left[RNOA - Borrowing\ Rate\right]$$

RNOA = Return on Net Operating Assets

Buying ROE is dangerous: Leverage can come back to hit you

Pitfalls in Applying ROE in Valuation (2)

ROE and RNOA are affected by accounting

- Numerator effect: Investment is muddied with earnings from investment
- Denominator effect: Investment is not on the balance sheet

How, then do we interpret ROE and RNOA?

The Accounting Principle for Booking Earnings
Conservative Accounting

Under uncertainty, the recognition of earnings is delayed until the uncertainty has largely been resolved

The Implementation of Conservative Accounting

1. Revenue Recognition

Recognize revenue only when receipt of cash is reasonably certain

(The Realization Principle)

In asset pricing terms: do not recognize earnings until you have a low-beta asset (like cash or accounts receivable)

ACS 606 and IFRS 15

The Implementation of Conservative Accounting

2. Expensing Investment

When the outcomes to investment are uncertain, expense immediately against earnings

-- R&D (or only R?)

-- Advertising

-- Employee training (human capital), distribution and supply chain development, software, start-up and organization costs, …..

In sum, don't book assets to book value when outcomes are uncertain

FASB Statement No. 2; IAS 38,

The Effect of the Accounting on ROE and RNOA

- Conservative accounting yields a *low* ROE under uncertainty: The numerator effect

BUT..

- Conservative accounting yields a *high* ROE *if*

  the investment pays off: The denominator effect

  --- Realized earnings (no amortization) on a low book value

ROE and RNOA Convey Risk, not Profitability

- A low ROE depressed by conservative accounting, indicates risk: Earnings may not be realized

- A high ROE as a result of conservative accounting indicates lower risk: Earnings are being realized

Penman, S. and X Zhang, A Theoretical Analysis Connecting Conservative Accounting to the Cost of Capital, forthcoming *Journal of Accounting and Economics,* 2019 makes the connection more formally. At http://ssrn.com/abstract=2874641.

Example 1: Twitter, Inc.

Investment at Risk of Not Paying Off?

Twitter, Inc. went to IPO in November 2013, closing on its first trading day priced at 26 times estimated 2014 sales, a price imbedding significant growth expectations. The firm was reporting losses (and a negative ROE) due largely to the expensing of R&D, advertising and promotion that amounted to 80 percent of revenue. These expenditures were made to generate revenue and earnings growth, but there was uncertainty about whether the expected revenues and earnings would be realized.

In 2018, profitability continued to be low with the expensing of investments:

ROE = 0.3%

Will the risky investment pay off?

Example 2: Facebook, Inc.

Investment Paying Off

Facebook, Inc. traded in 2013 with significant growth prospects built into its market price. However, the firm was reporting an ROE of only 4 percent, due to the expensing of development costs to foster the growth. The development costs were investments to gain future revenue.

Should those revenues be realized, Facebook will have significant earnings growth, not only from the revenues but because only variable costs will have to be covered: the fixed cost have already been expensed. The low ROE due to the expensing of these investments indicates potential earnings growth, but growth that is uncertain.

By 2018, Facebook had considerable success in generating those earnings, now reporting an ROE of 26 percent.

Example 3: Amazon, Inc.

Investment at Risk of Not Paying Off?

Amazon.com, Inc. reported a loss for the third quarter of 2013, as it had done for the full year, 2012. Both losses were on rising sales and continued into 2014. The losses were attributed to "spending on technology and content, such as video streaming and grocery delivery to mobile devices" and the firm's "willingness to win customers by losing money." These investments were being expensed directly to the income statement, yielding a negative ROE. While high expectations were built into the share price, the results of these investments are uncertain; the added customers have yet to be realized.

Amazon is making some profits now (largely from its cloud business), but is not particularly profitable: ROE = 15 percent. But, it is a firm that is potentially very profitable: profitability has yet to be realized….but it is at risk.

Example 4: Starbucks Corp.

Investment Paying Off

During the 1990s, Starbucks Corporation was trading with considerable growth expectations built into its market price; the P/E was 51 in 1999.

However, it was reporting a book rate of return on its operations of only 9 percent. Starbucks was expanding stores aggressively, expensing store-opening expenses, advertising, employee training, and its development of coffee supply chains. This expensing depressed the book return, an indication that the growth strategy was risky.

As it happened, the strategy paid off, with the book rate of return rising to 52 percent by 2018. But the risky strategy could have gone the other way.

The Pricing of Earnings under Conservative Accounting

A simple valuation model:

$$P_t = \frac{E_t(Earnings_{t+1})}{r - g}$$

- For a given r, P/E increases with g
- But r may increase with g, if growth is risky.

To what extent is a given P/E ratio due to risk, growth, or both?

The Valuation Question

To what extent is a given P/E ratio due to risk, growth, or both?

What information supplies the answer?

The answer:

ROE under conservative accounting

Conservative accounting yield risky growth

Earnings Growth Rates Two Years Ahead for Nested E/P Portfolios and ROE Portfolios

All U.S. Firms, 1963-2013

		Negative E/P	*Positive E/P Quintile*					
			LOW	*2*	*3*	*4*	*HIGH*	*HIGH-LOW*
ROE Quintile	ALL	0.19	0.19	0.13	0.11	0.09	0.06	-0.13***
	LOW	0.16	0.27	0.20	0.17	0.14	0.10	
	2	0.25	0.29	0.17	0.13	0.09	0.08	
	3	0.21	0.21	0.13	0.10	0.09	0.06	
	4	0.24	0.16	0.12	0.10	0.08	0.04	
	HIGH	0.24	0.17	0.12	0.09	0.08	0.03	
	HIGH-LOW	0.08*	-0.10***	-0.08***	-0.09***	-0.06***	-0.08***	

Std Dev and Interdecile Range for Earnings Growth Rates Two Years Ahead

Panel B: Mean Standard Deviation of Earnings Growth Rates Two Years Ahead

		Negative E/P	*Positive E/P Quintile*					
			LOW	*2*	*3*	*4*	*HIGH*	*HIGH-LOW*
ROE Quintile	ALL	0.86	0.70	0.54	0.50	0.51	0.57	-0.12***
	LOW	0.78	0.86	0.70	0.66	0.63	0.67	
	2	0.81	0.78	0.60	0.52	0.53	0.57	
	3	0.86	0.69	0.50	0.43	0.47	0.52	
	4	0.90	0.62	0.41	0.41	0.43	0.55	
	HIGH	0.95	0.50	0.44	0.44	0.48	0.56	
	HIGH-LOW	0.16***	-0.36***	-0.27***	-0.22***	-0.15***	-0.11***	

Panel C: Mean Interdecile Range of Earnings Growth Rates Two Years Ahead

		Negative E/P	*Positive E/P Quintile*					
			LOW	*2*	*3*	*4*	*HIGH*	*HIGH-LOW*
ROE Quintile	ALL	2.31	1.79	1.18	1.06	1.12	1.32	-0.47***
	LOW	1.92	2.26	1.80	1.56	1.56	1.63	
	2	2.09	2.04	1.40	1.17	1.22	1.29	
	3	2.21	1.76	1.08	0.87	1.00	1.20	
	4	2.27	1.50	0.83	0.79	0.89	1.20	
	HIGH	2.41	1.16	0.91	0.93	1.05	1.29	
	HIGH-LOW	0.49***	-1.10***	-0.89***	-0.64***	-0.51***	-0.34***	

Earnings Betas over Next 12 Months

$$\text{Portfolio}\frac{Earnings_1}{P_0}(t) = \alpha + \beta \cdot \text{Market}\frac{Earnings_1}{P_0}(t) + \varepsilon_t$$

Panel B: Up-market Earnings Betas

		Negative E/P	*Positive E/P Quintile*					
			LOW	*2*	*3*	*4*	*HIGH*	*HIGH-LOW*
ROE Quintile	ALL	0.50	0.66	0.60	0.91	1.14	1.12	0.46***
	LOW	0.92	0.88	1.18	1.12	1.29	1.18	
	2	1.21	0.82	0.51	1.00	1.16	1.14	
	3	0.43	0.67	0.57	0.87	1.24	0.90	
	4	0.48	0.49	0.54	0.68	0.98	1.03	
	HIGH	0.32	0.53	0.64	0.76	0.99	1.29	
	HIGH-LOW	-0.60*	-0.35	-0.55***	-0.36*	-0.30*	0.11	

Panel C: Down-market Earnings Betas

		Negative E/P	*Positive E/P Quintile*					
			LOW	*2*	*3*	*4*	*HIGH*	*HIGH-LOW*
ROE Quintile	ALL	0.52	0.62	0.72	1.03	1.01	1.41	0.78***
	LOW	0.72	0.79	1.13	1.14	1.52	1.94	
	2	1.02	0.89	0.78	1.02	1.36	1.27	
	3	0.40	0.56	0.80	1.13	1.05	1.03	
	4	0.59	0.59	0.69	1.01	0.82	1.73	
	HIGH	0.03	0.49	0.64	0.93	0.93	1.53	
	HIGH-LOW	-0.69	-0.31	-0.50*	-0.21	-0.59*	-0.41	

The Returns to the E/P – ROE Portfolios

All U.S. Firms, 1963-2013

Are these Returns for Risk Bearing?

		Negative E/P	*Positive E/P Quintile*					
			LOW	*2*	*3*	*4*	*HIGH*	*HIGH-LOW*
ROE Quintile	ALL	18.23	13.50	14.57	16.49	19.06	23.46	9.97***
	LOW	10.07	19.05	20.62	21.67	22.88	25.46	
	2	17.06	15.85	14.86	15.68	18.70	24.56	
	3	19.83	13.35	11.78	15.02	18.17	22.74	
	4	24.25	9.18	12.16	15.25	17.02	23.01	
	HIGH	18.65	10.09	13.63	14.97	18.55	21.54	
	HIGH-LOW	8.58***	-8.96***	-6.99***	-6.70***	-4.33**	-3.93*	

The Returns to the E/P – ROE Portfolios with the added effect of Conservative Accounting

ROE Quintile		*Negative E/P*	*Positive E/P Quintile*					
			LOW	*2*	*3*	*4*	*HIGH*	*HIGH-LOW*
	ALL	18.23	13.50	14.57	16.49	19.06	23.46	9.97***
	LOW	15.88	24.96	21.61	23.63	26.96	23.52	
	2	17.55	15.26	16.36	19.14	19.60	29.77	
	3	17.70	13.21	11.78	15.69	17.99	22.31	
	4	19.03	8.84	11.61	15.32	15.39	21.51	
	HIGH	17.87	6.98	11.62	12.53	14.34	18.54	
	HIGH-LOW	1.99	-17.98***	-9.99***	-11.11***	-12.62***	-4.98**	

The Risk
2008: S&P 500 Return = -37.00%

BP	EP				
	Low	*2*	*3*	*4*	*High*
Low	-46.9	-42.5	-32.8	-36.8	-36.9
2	-46.0	-39.4	-38.6	-34.6	-46.6
3	-46.1	-38.1	-34.0	-32.5	-41.4
4	-45.5	-44.9	-33.3	-35.3	-34.8
High	-57.9	-57.8	-44.5	-38.9	-44.0
H-L	-11.0	-15.3	-11.7	-2.1	-7.1

Source Material

Penman, S., and F. Reggiani. Fundamentals of Value versus Growth Investing and an Explanation for the Value Trap. *Financial Analysts Journal* 74 No. 4 (Fourth Quarter, 2016), pp. 102 – 119.

Penman, S., and Zhang, X. Connecting Book Rate of Return to Risk: The Information Conveyed by Conservative Accounting, 2015. At www.ssrn.com/abstract=2402933