Chapter 12: Estimating the Cost of Capital

Fundamental question: Where do we get the numbers to estimate the cost of capital?

=> How do we implement the CAPM discussed in chapter 10?

12.1 The Equity Cost of Capital

Cost of capital: **best expected return available in the market on investments with similar risk**

$$r_i = r_f + \beta_i \times \left(E(R_{Mkt}) - r_f\right) \quad (12.1)$$

Notes:

1) We don't really need equation (12.1) since it is identical to equation (10.11)
2) Risk premium for security *i*: $\beta_i \times \left(E(R_{Mkt}) - r_f\right)$

12.2 The Market Portfolio

A. Constructing the Market Portfolio

$$MV_i = NSO_i \times P_i \quad (12.2)$$

where:

MV_i = market value of *i*
NSO_i = number of shares of *i* outstanding
P_i = price of *i* per share

$$x_i = \frac{MV_i}{TMV} \quad (12.3)$$

where:

x_i = portfolio weight of security *i* =% of portfolio invested in security *i*
TMV = total market value of all securities in portfolio

Ex. Assume the market consists of five stocks: Alphabet, Ford, GE, Kellogg, and Wal-Mart. The number of outstanding shares and current stock price for each firm are as follows:

Name	Shares (Billions)	Price
Alphabet	0.4	650
Ford	4	15.05
GE	10	40
Kellogg	0.26	80
Wal-Mart	3.7	70

Assume also that you want to create a passive, value-weighted portfolio with $100,000 that mimics market. How much do you need to invest in each company's shares? How many shares do you need to buy?

Market						Portfolio			
Name	Shares (Billions)	Price	Market Cap (Billions)	*x(i)*		Investment	Shares	*x(i)*	Percent of Shares
Alphabet	0.4	650	260	0.26		$26,000.00	40	0.26	0.00001%
Ford	4	15.05	60.2	0.0602		$6,020.00	400	0.0602	0.00001%
GE	10	40	400	0.4		$40,000.00	1000	0.4	0.00001%
Kellogg	0.26	80	20.8	0.0208		$2,080.00	26	0.0208	0.00001%
Wal-Mart	3.7	70	259	0.259		$25,900.00	370	0.259	0.00001%
Total			1000			$100,000.00			

Q: What changes do you need to make if the price per share of: Alphabet rises to $800, Ford falls to $13, GE falls to $30, Kellogg rises to $95, and Wal-Mart rises to $85?

Market						Portfolio			
Name	Shares (Billions)	Price	Market Cap (Billions)	*x(i)*		Investment	Shares	*x(i)* for Portfolio	Percent of Shares
Alphabet	0.4	800	320	0.32		$32,000.00	40	0.32	0.00001%
Ford	4	13	52	0.052		$5,200.00	400	0.052	0.00001%
GE	10	30	300	0.3		$30,000.00	1000	0.3	0.00001%
Kellogg	0.26	95	24.7	0.0247		$2,470.00	26	0.0247	0.00001%
Wal-Mart	3.7	85	314.5	0.3145		$31,450.00	370	0.3145	0.00001%
Total			1011.2			$101,120.00			

Note: **No need to rebalance value-weighted portfolio as stock prices change, but only if a firm issues or repurchases shares**

Key: own same percent of each firm's outstanding shares as before the issue/repurchase (0.00001% in example).

B. Market Indexes

1. Examples of Market Indexes

Major U.S. stock indexes: S&P 500 index, Nasdaq Composite Index (value-weighted index of more than 3000 common stocks listed on the Nasdaq stock exchange), and Dow Jones Industrial Average

Problems with DJIA: **only 30 stocks, price- rather than value-weighted.**

Notes:
1) **we will use the S&P500 as a proxy for the market**
2) Dow Jones calculated by adding up prices and dividing by some number. Number started at 12 since there were 12 stocks, but equals 0.1517 as of the end of 2021 according to Investopedia.

2. Investing in a Market Index

Main ways to invest in a market index: index mutual funds, exchange-traded funds

Note: In my 403B (the non-profit equivalent to a 401k), I hold several Vanguard funds:

Total Stock Market Index (basically tracks the Wilshire 5000)
Value Index (tracks value stocks in the S&P500),
Total International Stock Index (tracks all non-US stocks)
Small-Cap Value Index (tracks an index of small-cap value stocks)
Short-Term Investment Grade (a short-term bond fund)

Reasons: I overweight value stocks because historically they have outperformed growth stocks with less risk. Based on my theoretical retirement date, I should hold some bonds, but I want to avoid long-term bonds since they will get hammered when interest rates eventually rise.

Value stock: **slower growing firms with low PE ratios, high dividend yields, and low market to book ratios.**

C. The Market Risk Premium

1. Determining the Risk-Free Rate

Notes:

1) **We will use the yield on 10-year Treasuries as the risk-free rate.**
2) Treasuries are subject to interest rate risk unless select a maturity equal to our investment horizon **AND** buy a U.S. Treasury Strip (pays no coupons).
   => **Otherwise, the coupons create interest rate risk as reinvest at an unknown rate.**

2. The Historical Risk Premium

=> market risk premium over 10-year Treasuries:
1926 – 2015 = 5.9%
1962 – 2015 = 3.9%

Problems:

1) hard to know which past to use
2) difficult to have confidence in past since large standard errors
3) future may not be like the past

3. A Fundamental Approach

Key => **using current dividend yield and expected growth to estimate expected return on market**

$$r_{Mkt} = \frac{D_1}{P_0} + g \qquad (12.4)$$

Note: This is essentially equation (9.7), so we don't really need it.

Research: market risk premium estimated as being in 3 – 5% range.

12.3 Beta Estimation

A. Using Historical Returns

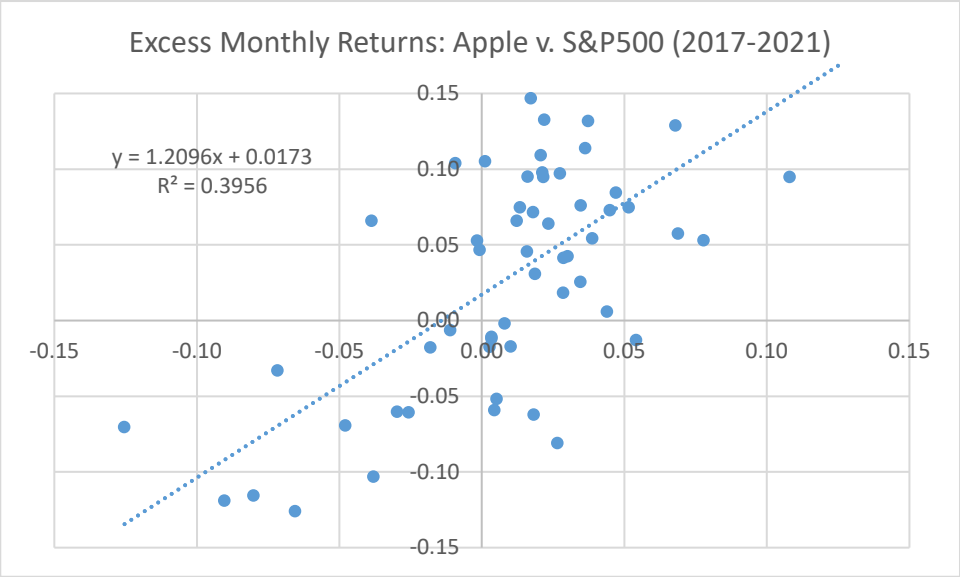
=> beta depends on how sensitive firm's returns are to market returns

B. Identifying the Best-Fitting Line

1. **beta equals slope of best-fitting line of excess returns on stock vs. excess returns on market**

excess returns: return – risk-free rate

Ex. Assume you plot the excess monthly returns of Apple against the excess returns on the S&P500 (see data at end of these notes) for 2017 – 2021.



Note: beta is approximately 1.21 based on the 5-years of monthly data
Note: Beta listed on Yahoo! Finance (as of 5/4/2022) = 1.19

2. **deviations from line due to risk specific to the company**

C. Using Linear Regression

$$\left(R_i - r_f\right) = \alpha_i + \beta_i\left(R_{Mkt} - r_f\right) + \varepsilon_i \quad (12.5)$$

where:

α_i = intercept term of regression
β_i = beta of stock
ε_i= error term = risk unrelated to the market

$$E[R_i] = r_f + \beta_i\left(E[R_{Mkt}] - r_f\right) + \alpha_i \quad (12.6)$$

Using Excel: Use the SLOPE() function to get β. Excess returns for the stock go in as the "y" variable and excess returns for the market go in for the "x" variable. In the same way, you can use the INTERCEPT() function to get α.

Note: If use SLOPE() function on excess return data at end of notes, also get beta of 1.21.

Ex. Calculate Apple's equity cost of capital if the risk-free rate equals 3% and the market risk premium equals 6%.

r_e = .1026 = **.03 + 1.21(.06)**

12.4 The Debt Cost of Capital

Note: Both methods in this chapter give only an approximate debt cost of capital.

A. Debt Yield Versus Returns

Key: **if chance of default, yield to maturity overstates the expected return on the bond**

$$r_d = (1 - p)y + p(y - L) = y - pL \quad (12.7)$$

where:

y = yield to maturity on debt
p = probability of default
L = expected loss per dollar of debt if default
r_d = debt cost of capital

Note: Table 12.2 is on the formula sheet

Table 12.2: Percent Annual Default Rates by Debt Rating

Rating	AAA	AA	A	BBB	BB	B	CCC	CC-C
Ave.	0.0	0.1	0.2	0.5	2.2	5.5	12.2	14.1
Recessions	0.0	1.0	3.0	3.0	8.0	16.0	48.0	78.0

Ex. Assume that Kortly Inc. bond trade at a yield to maturity of 9%. The bonds have a B rating and the expected loss in the event of default is 60%. What is the expected return on Kortly debt?

r_d = .057 = **.09 - .055(.6)**

=> once consider possible loss from default, expected return only equals 5.7%.

B. Debt Betas

=> **difficult to calculate because of infrequent trading**
=> **will use data on average debt beta for bond rating and maturity**
Note: The betas by maturity are for bonds rated BBB or above.

Table 12.3: Average Debt Betas

By Rating	A above	BBB	BB	B	CCC
Avg. Beta	<.05	.10	.17	.26	.31

By Maturity	*1-5 Yr*	*5-10 Yr*	*10-15Yr*	*> 15Yr*
Avg. Beta	0.01	0.06	0.07	0.14

Note: Table 12.3 is on the formula sheet

12.5 A Project's Cost of Capital

Key issue => can't directly estimate beta of project because not traded

=> **use cost of capital from firms in same line of business as project**

A. All-Equity Comparables

Optimal: firm in single line of business that is finance only with equity

=> use equity beta for comparables as beta for project

B. Levered Firms as Comparables

Key => **return on assets equals return on portfolio of firm's debt and equity**

C. The Unlevered Cost of Capital

$$r_u = \left(\frac{E}{E+D}\right) r_e + \left(\frac{D}{E+D}\right) r_d \qquad (12.8)$$

where:

r_u = unlevered cost of capital = expected return required by the firm's investors to hold the firm's underlying assets = weighted average of firm's equity and debt costs of capital
E = total market value of equity
D = total market value of debt
r_e = equity cost of capital
r_d = debt cost of capital

Ex. Assume Jaxter Inc. has $4 million of outstanding debt and $10 million of outstanding equity. Assume that the Jaxter's debt has a yield to maturity of 12%. Assume also that you estimate that there is a 3% chance that Jaxter will default and that the loss in default will equal 40%. Finally, assume that the equity cost of capital equals 16%. Calculate Jaxter's unlevered cost of capital.

r_d = .108 =**.12 - .03(.4)**

$$r_u = .145 = \left(\frac{\mathbf{10}}{\mathbf{10+4}}\right).\mathbf{16} + \left(\frac{\mathbf{4}}{\mathbf{10+4}}\right).\mathbf{108} = \mathbf{(.7143).16 + (.2857).108}$$

1. Unlevered Beta

$$\beta_u = \left(\frac{E}{E+D}\right) \beta_e + \left(\frac{D}{E+D}\right) \beta_d \qquad (12.9)$$

where:

β_u = unlevered beta
β_e = equity beta
β_d = debt beta

Ex. Assume that Manstor Corp.'s equity has a beta of 1.1 and that its debt has a debt rating of BBB. Calculate Manstor's unlevered beta if it has 3,000,000 outstanding shares that trade at a price of $30 per share and has $25 million of outstanding debt.

β_d = **0.10**
E = $90 million = **3,000,000 x 30**

$$\beta_u = 0.883 \; = .7826(1.1) + \; .2173(0.1) = \left(\frac{\mathbf{90}}{\mathbf{90+25}}\right)\mathbf{1.1} + \left(\frac{\mathbf{25}}{\mathbf{90+25}}\right)\mathbf{0.1}$$

2. Cash and Net Debt

Key => **want to estimate risk of underlying assets**

=> **cash is risk-free and reduces risk of firm**
=> estimate risk of firm's enterprise value (underlying business operations)
=> can use net debt instead of debt when calculating unlevered cost of capital or unlevered beta

Note: The following is the same as equation (2.17).

$$ND = D - EC \qquad (12.10)$$

where:

ND = net debt
D = debt
EC = excess cash and short-term investments

Note: often difficult to determine what portion of a firm's cash is "in excess of operating needs".

$$\beta_{EV} = \left(\frac{E}{E+D}\right)\beta_e + \left(\frac{D}{E+D}\right)\beta_{nd} \qquad (12.A)$$

where:

β_{EV} = enterprise beta = beta of real assets
β_e = equity beta
β_{nd} = net debt beta

Ex. Assume a firm has $19 million in real assets that have a beta of 1.2, but also has cash of $1 million. Calculate the beta of the firm's assets. Note that cash free and so has a beta of 0.

Key: The firm is a portfolio of real assets and cash so we can calculate the beta like any portfolio.

$$\beta_A = \beta_u = 1.14 = (.95)1.2 + (.05)0 = \left(\frac{19}{19+1}\right)\mathbf{1.2} + \left(\frac{1}{19+1}\right)\mathbf{0}$$

Ex. Assume we do not know the beta of the firm's real assets but do know the beta of the securities issued by the firm. The beta of the firm's equity is 1.425 and its debt is risk-free. The firm's equity is worth $16 million and its debt is worth $4 million. The firm has $1 million of cash. Calculate the beta of the firm's operating assets

Net debt = 3 = 4 – 1.

$$\beta_{EV} = 1.2 = (0.842)1.425 + (.158)0 = \left(\frac{16}{16+3}\right)\mathbf{1.425} + \left(\frac{3}{16+3}\right)\mathbf{0}$$

D. Industry Asset Betas

=> **use average betas or average cost of capital for firms in same industry as project**

=> reduces estimation error

12.6 Project Risk Characteristics and Financing

A. Differences in Project Risk

Key issues:

1) firm asset beta reflects risk of average asset in firm
2) identify "pure play" comparables for projects
3) adjust for differences in operating leverage by discounting fixed costs at risk-free risk-free or calculating beta of project's cash flows by recognizing fixed costs as having a zero beta.

See example 12.8

4) execution risk should be factored into estimates of cash flow
=> new investments by firm likely riskier than assets of established firms
=> risk tends to be firm-specific and thus diversifiable
=> does not affect betas or cost of capital
=> does affect expected cash flows

B. Financing and the Weighted Average Cost of Capital

let:
r_{at} = effective after-tax interest rate
r_d = pre-tax interest rate
τ_c = corporate tax rate

1. Perfect Capital Markets:
=> **no taxes, transaction costs, or other frictions**
=> all financing transactions are zero-NPV
=> use equation (12.8) on p. 9 (and shown again below).

$$r_U = \left(\frac{E}{E+D}\right) r_E + \left(\frac{D}{E+D}\right) r_d \qquad (12.8)$$

2. Taxes – A Big Imperfection

Key issue => **interest is tax deductible for companies**

$$r_{at} = r_d\,(1 - \tau_c) \qquad (12.11)$$

Ex. Assume the yield to maturity on Lexing Inc's debt equals 8% and that there is a 10% chance that Lexing will default and the loss in case of default will equal 25%. Calculate Lexing's effective after-tax interest rate if the corporate tax rate equals 21%.

r_d = .055 = **.08 - .1(.25)**
r_{at} = .04345 = **.055(1 - .21)**

Note: Equation (12.11) is the same as equation (5.8)

3. The Weighted Average Cost of Capital

$$r_{wacc} = \left(\frac{E}{E+D}\right) r_E + \left(\frac{D}{E+D}\right) r_d(1 - \tau_c) \qquad (12.12)$$

Notes:

1) **incorporates tax shield from debt financing into NPV**
2) can use r_u to evaluate all-equity financed projects and r_{wacc} to evaluate projects with same financing as the firm.
3) corporate taxes are not the only market imperfection related to financing choices

$$r_{wacc} = r_u - \left(\frac{D}{E+D}\right)\tau_c r_d \qquad (12.13)$$

=> WACC equals unlevered cost of capital less tax savings of debt
=> lower cost of capital increases NPV

Ex. Assume that Waldy has 100,000 outstanding shares and that these shares have a market value of $40 per share. Assume also that Waldy has $500,000 of outstanding debt that is risk free. Assume that the risk-free rate equals 4% and that the expected return on the market equals 9%. If Waldy's stock has a beta of 1.3 and the corporate tax rate equals 21%, calculate Waldy's weighted average cost of capital?

E = 4,000,000 = **100,000 x 40**
r_e = .105 = **.04 + 1.3 (.09 – .04)**

$$r_{wacc} = .0968 = \left(\frac{\mathbf{4{,}000{,}000}}{\mathbf{4{,}000{,}000+500{,}000}}\right).\mathbf{105} + \left(\frac{\mathbf{500{,}000}}{\mathbf{4{,}000{,}000+500{,}000}}\right).\mathbf{04(1-.21)}$$
$$= (.889).105 + (.111).0316$$

or:

$$r_u = .09778 = \left(\frac{\mathbf{4{,}000{,}000}}{\mathbf{4{,}000{,}000+500{,}000}}\right).\mathbf{105} + \left(\frac{\mathbf{500{,}000}}{\mathbf{4{,}000{,}000+500{,}000}}\right).\mathbf{04}$$

$$r_{wacc} = .0968 = .\mathbf{09778} - \left(\frac{\mathbf{500{,}000}}{\mathbf{4{,}000{,}000+500{,}000}}\right) \times .\mathbf{21} \times .\mathbf{04}$$

12.7 Final Thoughts on Using the CAPM

1) **CAPM based on estimates, but so are cash flows**
2) errors in model tend to be smaller than if use other models
3) **using CAPM forces managers to think about cost of capital**
4) using CAPM forces managers to think about risk in correct way

Appendix: Practical Considerations When Forecasting Beta

A. Time Horizon

=> too short a horizon: **unreliable estimates**
=> too long a horizon: **older data no longer reflects firm's current risk**

B. The Market Proxy

=> **S&P 500 is usual proxy, but others are used**

=> especially when evaluating international investments
=> **match market risk premium with market proxy used**

C. Beta Variation and Extrapolation

=> **betas tend to regress towards 1.0 over time**
=> adjusted betas take weighted average of computed beta and 1.

D. Outliers

=> beta estimates sensitive to outliers (especially large or small returns)

Comment: knowing which returns to exclude as outliers is tricky. Notice in Figure 12A.2 that Genentech had other returns that were higher and lower than those excluded.

E. Other considerations

=> be aware of changes in firm
=> **forecasting is more art than science**

Comment: this is generally true for finance as a whole

Data Appendix: Price Data for Apple and S&P500 and Yield on 10-year Treasuries

	Prices		Yield		Returns		Excess Returns	
Date	S&P500	Apple	10yTr	10y(mo)	S&P500	Apple	S&P500	Apple
12/31/2021	473.49	177.34	1.512	0.0013	0.0462	0.0742	0.0450	0.0730
11/30/2021	452.56	165.09	1.443	0.0012	-0.0080	0.1051	-0.0092	0.1039
10/31/2021	456.22	149.39	1.557	0.0013	0.0702	0.0587	0.0689	0.0574
9/30/2021	426.31	141.11	1.529	0.0013	-0.0466	-0.0680	-0.0479	-0.0693
8/31/2021	447.15	151.42	1.304	0.0011	0.0298	0.0425	0.0287	0.0414
7/31/2021	434.23	145.24	1.239	0.0010	0.0244	0.0650	0.0234	0.0640
6/30/2021	423.88	136.38	1.443	0.0012	0.0224	0.0991	0.0212	0.0979
5/31/2021	414.58	124.08	1.581	0.0013	0.0066	-0.0505	0.0053	-0.0518
4/30/2021	411.88	130.68	1.631	0.0013	0.0529	0.0762	0.0516	0.0749
3/31/2021	391.18	121.43	1.746	0.0014	0.0454	0.0073	0.0440	0.0059
2/28/2021	374.19	120.54	1.46	0.0012	0.0278	-0.0797	0.0266	-0.0809
1/31/2021	364.07	130.98	1.093	0.0009	-0.0102	-0.0055	-0.0111	-0.0064
12/31/2020	367.82	131.71	0.917	0.0008	0.0370	0.1146	0.0363	0.1138
11/30/2020	354.68	118.17	0.844	0.0007	0.1088	0.0955	0.1081	0.0948
10/31/2020	319.88	107.87	0.86	0.0007	-0.0249	-0.0600	-0.0256	-0.0607
9/30/2020	328.06	114.76	0.677	0.0006	-0.0374	-0.1025	-0.0380	-0.1031
8/31/2020	340.82	127.87	0.693	0.0006	0.0698	0.2166	0.0692	0.2160
7/31/2020	318.59	105.10	0.536	0.0004	0.0589	0.1651	0.0584	0.1647
6/30/2020	300.87	90.21	0.653	0.0005	0.0177	0.1474	0.0172	0.1468
5/31/2020	295.63	78.62	0.648	0.0005	0.0476	0.0851	0.0471	0.0846
4/30/2020	282.18	72.45	0.622	0.0005	0.1270	0.1554	0.1265	0.1549
3/31/2020	250.39	62.71	0.698	0.0006	-0.1249	-0.0698	-0.1255	-0.0703
2/29/2020	286.11	67.41	1.127	0.0009	-0.0792	-0.1147	-0.0801	-0.1156
1/31/2020	310.71	76.15	1.52	0.0013	-0.0004	0.0540	-0.0017	0.0528
12/31/2019	310.84	72.25	1.919	0.0016	0.0291	0.0988	0.0275	0.0972
11/30/2019	302.06	65.75	1.776	0.0015	0.0362	0.0776	0.0347	0.0761
10/31/2019	291.51	61.02	1.691	0.0014	0.0221	0.1107	0.0207	0.1093
9/30/2019	285.20	54.94	1.675	0.0014	0.0195	0.0730	0.0181	0.0716
8/31/2019	279.76	51.20	1.506	0.0012	-0.0167	-0.0165	-0.0180	-0.0177
7/31/2019	284.52	52.06	2.021	0.0017	0.0151	0.0764	0.0135	0.0747
6/30/2019	280.29	48.36	2	0.0017	0.0696	0.1305	0.0679	0.1289
5/31/2019	262.05	42.78	2.142	0.0018	-0.0638	-0.1242	-0.0655	-0.1260
4/30/2019	279.90	48.85	2.509	0.0021	0.0409	0.0564	0.0388	0.0544
3/31/2019	268.92	46.24	2.414	0.0020	0.0181	0.0970	0.0161	0.0950
2/28/2019	264.13	42.15	2.711	0.0022	0.0324	0.0448	0.0302	0.0425
1/31/2019	255.84	40.34	2.635	0.0022	0.0801	0.0552	0.0779	0.0530
12/31/2018	236.88	38.23	2.686	0.0022	-0.0880	-0.1167	-0.0903	-0.1189
11/30/2018	259.75	43.29	3.013	0.0025	0.0185	-0.1812	0.0161	-0.1837
10/31/2018	255.02	52.86	3.159	0.0026	-0.0691	-0.0305	-0.0717	-0.0331
9/30/2018	273.95	54.53	3.056	0.0025	0.0059	-0.0083	0.0034	-0.0108
8/31/2018	272.33	54.98	2.853	0.0023	0.0319	0.2004	0.0296	0.1981
7/31/2018	263.90	45.80	2.964	0.0024	0.0370	0.0280	0.0346	0.0255
6/30/2018	254.48	44.56	2.849	0.0023	0.0058	-0.0094	0.0034	-0.0118
5/31/2018	253.02	44.98	2.822	0.0023	0.0243	0.1351	0.0220	0.1328
4/30/2018	247.02	39.63	2.936	0.0024	0.0052	-0.0150	0.0028	-0.0174
3/31/2018	245.75	40.23	2.741	0.0023	-0.0274	-0.0581	-0.0297	-0.0603
2/28/2018	252.67	42.71	2.868	0.0024	-0.0364	0.0682	-0.0387	0.0658
1/31/2018	262.21	39.98	2.72	0.0022	0.0564	-0.0106	0.0541	-0.0129
12/31/2017	248.22	40.41	2.405	0.0020	0.0121	-0.0152	0.0101	-0.0172
11/30/2017	245.24	41.04	2.417	0.0020	0.0306	0.0203	0.0286	0.0183
10/31/2017	237.97	40.22	2.376	0.0020	0.0236	0.0968	0.0216	0.0948
9/30/2017	232.49	36.67	2.326	0.0019	0.0201	-0.0602	0.0182	-0.0622
8/31/2017	227.90	39.02	2.121	0.0018	0.0029	0.1070	0.0012	0.1052
7/31/2017	227.24	35.25	2.292	0.0019	0.0206	0.0327	0.0187	0.0308
6/30/2017	222.66	34.13	2.302	0.0019	0.0064	-0.0572	0.0045	-0.0591
5/31/2017	221.25	36.21	2.196	0.0018	0.0141	0.0678	0.0123	0.0660
4/30/2017	218.17	33.91	2.282	0.0019	0.0099	-0.0001	0.0080	-0.0020
3/31/2017	216.03	33.91	2.396	0.0020	0.0012	0.0487	-0.0007	0.0467
2/28/2017	215.76	32.34	2.358	0.0019	0.0393	0.1338	0.0373	0.1318
1/31/2017	207.60	28.52	2.451	0.0020	0.0179	0.0477	0.0159	0.0457
12/31/2016	203.95	27.22	2.446	0.0020				

Notes:

1) Last Trade = last trading day of each month. Prices are Yahoo's Adjusted Close which adjusts for dividends
2) 10y(mo) = return per month on 10-year Treasuries (to match monthly stock returns)
3) Returns = (price(current) – price (prior))/price(prior)
4) Excess returns = returns – 10y(mo)