# Chapter 17
# COST OF CAPITAL IN INTERNATIONAL MARKETS



## II.3 Capital Structure and Cost of Capital

• **Cost of Capital**

Cost of capital ($k_c$) = Discount rate for CFs.

Q: How do MNCs set discount rates for projects in foreign countries?

• Recall, Country Risk affects discount rates & NPVs:
  - Because of CR, different countries have different risk-free rates ($k_f$).
  - High CR, lower NPVs for projects.

• $k_c$ depends on the debt (D) & equity (E) mix of a firms & nature (diversified firm/diversified ownership) of firm.

**• Brief Review: Capital Structure**

• Firms raise new capital by:

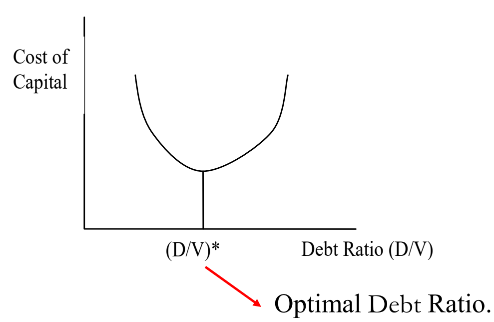
- Issuing **new equity** (E) –firms give away ownership; pay dividends
- Issuing **debt** (D) –firms borrow; pay interest.

Firms can use retained earnings, also E. (According to the *pecking order theory*, retained earnings are the first source of funds for firms.)

**• Trade-off Theory of Capital Structure**

- D has its (tax) advantages (reduces taxes), but also disadvantages (cost: bankruptcy).
- Firms use the E & D mix that minimizes cost of capital.

There is a U-shape relation between cost of capital & D relative to value of firm (V=E+D).




- There is an optimal Debt Ratio, (D/V)*:
    - Before (D/V)*, tax advantages dominate & $k_c$ decreases.
    - After (D/V)*, probability of bankruptcy dominates & $k_c$ increases.

- Desired capital structure is called *target capital structure*. It should be close to (D/V)*.

**• Measuring the cost of capital**

We use weighted average cost of capital (WACC).

WACC: $k_c = \frac{D}{D+E} * k_d * (1 - t) + \frac{E}{D+E} * k_e$

• $k_d$

- $k_d$: Cost of debt of a project. Interest rate a firm pays to borrow.
- Easy to determine: A firm calls a bank or an investment bank.

Q: How does a bank set the interest rate for a given firm?

A: Base rate (a risk-free rate, $k_f$) + *spread* (reflecting risk of project)

Note: Interest payments are tax deductible:

$\Rightarrow$ After-tax cost of debt = $k_d * (1 - t)$

**• Measuring the cost of capital**

• $k_e$

- $k_e$: Cost of equity of a project. In equilibrium, the cost of equity equals the return of equity. To be precise, the cost of equity, $k_e$, equals the *required* (**expected**) return on equity, $r_e$.

To get $r_e$, **model is needed** for returns. There are many models, like the **CAPM** or the more modern models, which include many factors, like the **Fama-French** factors.

- **CAPM**:

$r_e$ = E[r] = $r_f + \beta$ E[$r_m - r_f$]

- **Fama-French** three-factor model (Market, Size, Book-to-Market):

$r_e = \gamma_1$ E[$r_m - r_f$] + $\gamma_2$ E[$SMB$] + $\gamma_3$ E[$HML$]

**• Measuring the cost of capital**

- To keep things simple we use the CAPM to value the cost of equity:

$$k_e = r_e = \text{E[r]} = r_f + \beta\ \text{E}[r_m - r_f]$$

$r_f$ ($= k_f$): Risk-free rate (a government rate).

$r_m$ ($= k_m$): Expected return on a market portfolio (long-run return on a well-diversified market index).

β: Systematic Risk of the project/firm = $\text{Cov}(r_e, r_m)/\text{Var}(r_m)$ (a coefficient estimated by a regression).

$\text{E}[r_m - r_f]$: Estimated risk premium (ERP).

Note: There are many versions of the CAPM. For example:

- World CAPM: $k_{e,W} = \text{E[r]} = r_{f,W} + \beta_W\ \mathbf{E}[r_m - r_f]_W$ (in FC)
- Domestic CAPM: $k_{e,D} = \text{E[r]} = r_{f,D} + \beta_D\ \mathbf{E}[r_m - r_f]_D$ (in DC)

**Example**: GE wants to calculate $k_e$ for an investment in Brazil. GE decides to use **Domestic CAPM**:

$$k_{e,D} = \text{E[r]} = r_{f,D} + \beta_D\ \mathbf{E}[r_m - r_f]_D \qquad \text{(in DC=BRL)}$$

Data:

$r_{f,D}$ = **7.40%** (Government Risk-free rate in Brazil)

$\text{E}[r_{m,D}]$ = 12% (Return of the BOVESPA Index in past 10 years)

$\Rightarrow \mathbf{E}[r_m - r_f]_D$ = .12 – **7.40%** = **.0460**

$\beta_{D,\text{GE-Brazil}}$ = **1.1** (Similar projects in Brazil)

$k_e = r_{f,D} + \beta_D\ \mathbf{E}[r_m - r_f]_D$ = **7.40%** + **1.1** * **.0460** = **0.1246** (12.46%).

Remark: The cost of equity is in local currency. We used domestic CAPM, with all inputs computed in local currency. ¶

• $k_e$: World or Domestic CAPM?

- World CAPM: $k_{e,W}$ = E[r] = $r_{f,W}$ + $\beta_W$ $\mathbf{E}[\boldsymbol{r_m - r_f}]_W$
- Domestic CAPM: $k_{e,D}$ = E[r] = $r_{f,D}$ + $\beta_D$ $\mathbf{E}[\boldsymbol{r_m - r_f}]_D$

Q: Which one should be used?

A: In theory, it **depends on the view** that a company has regarding capital markets or expected compensation to **shareholders**.

If capital markets are:

- Integrated (or **shareholders worldwide diversified**) ⇒ World
  $\mathbf{E}[\boldsymbol{r_m - r_f}]_W$ driven by world factors (world benchmark used)

- Segmented (or **shareholders hold domestic portfolios**) ⇒ Domestic
  $\mathbf{E}[\boldsymbol{r_m - r_f}]_D$ driven by domestic factors (domestic benchmark used)

Remark: Beta differs in both specifications.

• $k_e$: World or Domestic CAPM?

Differences can be significant:

- **5.55%** absolute difference in EM
- **3.58%** absolute difference in Developed Markets (DM).
- $\beta_W$ & $\beta_D$ also show significant absolute differences: **0.44** for EM & **0.21** for DM.

Evidence for integrated capital markets is weak. We think of capital markets as **partially integrated**. Then:

- Partially Integrated CAPM: $k_{e,D} = \omega_D \; k_{e,D*} + (1 - \omega_D) \; k_{e,W}$

where,

$k_{e,D*}$: FC-adjusted domestic cost of capital $k_{e,D}$ (both $k_e$ in same currency)

$\omega_D$: Weight of Domestic Market in world capital markets.

Note: Similar ideas can be extended to multi-factor models of expected returns like the Fama-French factor models.

In general, we find that **World CAPM** produces **low expected returns**. Practitioners like **Fama-French factor models** because they tend to produce higher (more realistic) expected returns.

Many **ad-hoc adjustments** are used. For example, estimate World CAPM and add a CR premium (sovereign yield spread).

**Example:** Cost of capital Adjustment for project in Brazil

$E[r_m - r_f]_{US}$ = **0.0382**

$\beta_W$ = **0.8**

$CR_{Brazil}$ = **2.80%** (= YTM of Brazilian bonds – YTM of US bonds)

$r_{f,US}$ = **4.50%**

$k_e$ = [**0.0450** + **0.8** * **0.0382**] + **.0280** = **10.36%** (in USD).

Remark: The cost of equity is in foreign currency (in USD). We used World CAPM, with all inputs computed in USD, plus CR, computed as spread over US Treasuries, also in USD. ¶

Details behind WACC:

WACC: $k_c = \frac{D}{D+E} * k_d * (1-t) + \frac{E}{D+E} * k_e$

- Dividends are not tax deductible. Advantage of using debt!

- Time-consistency between $k_e$ & $k_d$. **Same maturity** should be used for $k_e$ & $k_d$.

- In practice, many EM governments bonds should not be considered risk-free. Then, government bond rate includes a default spread, which, should be subtracted to get $r_f$.

- β is estimated by the slope of a regression against a market index. **Many estimation issues**: Choice of index, noisy data, adjustment by leverage, mean reversion, etc.

• **Issues:**

Q: Real or Nominal?

If CFs are **nominal** (usual situation), $k_c$ should be also in nominal terms.

Q: Which $r_f$ to use? Local or Foreign?

The $r_f$ that reflects the **risk of the cash flows**.

Q: Which maturity for $r_f$ to use?

The maturity that reflects the **duration of the cash flows**.

Q: Which β to use? The β of the company or the β of the project?

The β should reflect the **systematic risk of the project**.

Q: How do we calculate E[$r_{m,t}$]?

We need to determine a market portfolio (S&P? MSCI World?) and a method (and sample period) to compute the expectation.

◊ Calculating E[$r_{m,t}$]

There are three different ways to compute E[$r_{m,t}$]:

**1) Surveys.** Usually an average of ERPs provided by individual investors, institutional investors, managers and, even, academics.

**2) Historical data.** Expectations are computed using past data. This is the most popular approach. For example, compute E[$r_{m,t}$] with $\bar{X}$ (the mean). If we use this approach, it pays to use as much data as possible –more data, lower S.E. We think of E[$r_{m,t}$] as a *long-run* average of market returns.

**3) Forward-looking data.** An (implied) ERP is derived from market prices, for example, market indexes, options & futures on market indexes, etc. Of course, we also need a model (a formula) that extracts the ERP from market prices.

• Once we compute E[$r_{m,t}$] and chose a corresponding $r_f$, we are ready to determine the ERP. But, we make decisions along the way.

• Every time we compute an ERP, we make decisions along the way.

For example, using Shiller's monthly data, from 1871 (**150 years of data**), we produce an estimate of the ERP = E[$(r_m - r_f)$]. Decisions made:

– Computation of returns (log returns)

– Method of computing ERP (Historical data)

– Sample period (1871-2021)

– Market portfolio (S&P Composite Index)

– Risk-free rate (10-year U.S. bond rate).

Then,

Annualized Market return = **0.007378** * 12 = **0.088536**

Annualized risk-free rate = **0.04511**

ERP = **0.088536** - **0.04511** = **0.043426** (**4.34%**)

Aside: Many economists consider this estimated ERP as "*too high*." Why? The degree of risk aversion to justify it is unreasonable high.

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**Example**: GE wants to do an investment in Brazil.

Data:

Equity investment = **E** = **BRL 100M**

Debt issue = **D** = **BRL 150M**

Value of Brazil investment = **D** + **E** = **BRL 250M**

Brazilian Tax Rate = $t$ = 35%

$r_{f,Brazil}$ = **7.40%**

**E[$r_m - r_f$]$_D$ = .0460**

**$\beta_{D,GE\text{-}Brazil}$ = 1.1** (Similar projects in Brazil )

Cost of project = $k_c$ = ?

• Cost of debt ($k_d$)

GE can borrow in Brazil at 60 bps over Brazilian Treasuries ($r_f$)

$k_d = r_f$ + spread = **.0740** + .0060 = **.08** (8%)

**Example (continuation)**:

• Cost of debt ($k_d$)

$k_d = r_f$ + spread = **.0740** + .0060 = **.08** (8%)

• Cost of equity ($k_e$)

GE decides to use Domestic CAPM

$k_e = r_{f,Brazil} + \beta_D\, E[r_m - r_f]_D$ = **.0740** + **1.1** * **.0460** = **0.1246** (12.46%)

• Cost of Capital –WACC– ($k_c$)

$$k_c = \frac{D}{D+E} * k_d * (1-t) + \frac{E}{D+E} * k_e$$

$k_c$ = (.60) * **.08** * (.65) + (.40) * **0.1246** = **.08104** (**8.104%**)

Note: This is the discount rate that GE should use to discount CFs in Brazil. That is, GE requires an **8.104%** rate of return on the investment in Brazil. ¶

Remark: When $k_c \uparrow \Rightarrow$ NPV of projects $\downarrow$.

Anything that affects $k_c$, also affects the profitability (NPV) of a project.

Application: Argentina defaults.

Argentina's CR $\uparrow \Rightarrow r_{f,Arg} \uparrow$ & $k_{c,Arg} \uparrow$.

$\Rightarrow$ Some projects in Argentina become NPV<0 projects.

$\Rightarrow$ MNCs suddenly abandon Argentine projects.

**Estimating ERP, $E[r_m - r_f]$:**

ERPs are estimated with error. To minimize the problem, the historical data method use many years to build the long-run average. Remember, the sample average, $\bar{X}$, comes with an associated standard error:

$$\text{S.E.}(\bar{X}) = s/\sqrt{T}$$

where $s$ is the standard deviation (SD) and $T$ is the length of the data.

Remark: More data ($T\uparrow$) $\Rightarrow$ lower S.E. –i.e., more precision.

But, even with **100+ years** of data for DM there is no consensus on an ERP. For the U.S. market, Duarte and Rosa (2015) list over **20 approaches** to estimate ERP in the U.S. With **1960-2013** data, they report estimates from **-0.4%** to **13.1%,** with a **5.7%** average for all models. A wide range!

Table X.4 reports estimates for Developed Markets from 0.88% (Italy) to 11.56% (HK), using the average US T-Bill rate for the period (≈ **4.5%**).

Table X.5 reports estimates for EM, with, as expected, higher numbers.

**Estimating ERP, $E[r_m - r_f]$:** From Duarte and Rosa (2015), wide range:

Table VII: ERP models

| | | Mean | Std. dev. | PC coefficients $\widehat{w}^{(m)}$ | Exposure to PC $\widehat{load}_1^{(m)}$ |
|---|---|---|---|---|---|
| Based on historical mean | Long-run mean | 9.3 | 1.3 | 0.78 | -0.065 |
| | Mean of previous five years | 5.7 | 5.8 | 0.42 | -0.160 |
| DDM | Gordon (1926): E/P minus nominal 10yr yield | -0.1 | 2.1 | -0.01 | 0.001 |
| | Shiller (2005): 1/CAPE minus nominal 10yr yield | -0.4 | 1.8 | -0.10 | 0.011 |
| | Gordon (1962): E/P minus real 10yr yield | 3.5 | 2.1 | 0.69 | -0.077 |
| | Gordon (1962): Expected E/P minus real 10yr yield | 5.3 | 1.7 | -0.78 | 0.208 |
| | Gordon (1962): Expected E/P minus nominal 10yr yield | 0.4 | 2.3 | -0.79 | 0.077 |
| | Panigirtzoglou and Loeys (2005): Two-stage DDM | -1.0 | 2.3 | 0.07 | -0.011 |
| | Damodaran (2012): Six-stage DDM | 3.4 | 1.3 | -0.26 | 0.032 |
| | Damodaran (2012): Six-stage free cash flow DDM | 4.0 | 1.1 | -0.62 | 0.053 |
| Cross-sectional regressions | Fama and French (1992) | 12.6 | 0.7 | 0.80 | -0.040 |
| | Carhart (1997): Fama-French and momentum | 13.1 | 0.8 | 0.81 | -0.042 |
| | Duarte (2013): Fama-French, momentum and inflation | 13.1 | 0.8 | 0.82 | -0.044 |
| | Adrian, Crump and Moench (2014) | 6.5 | 6.9 | -0.05 | 0.114 |
| Time-series regressions | Fama and French (1988): D/P | 2.4 | 4.0 | -0.27 | 0.069 |
| | Best predictor in Goyal and Welch (2008) | 14.5 | 5.2 | -0.07 | 0.023 |
| | Best predictor in Campbell and Thompson (2008) | 3.1 | 9.8 | -0.12 | 0.081 |
| | Best predictor in Fama French (2002) | 11.9 | 6.8 | -0.72 | 0.321 |
| | Baker and Wurgler (2007) sentiment measure | 3.0 | 4.7 | -0.32 | 0.184 |
| Surveys | Graham and Harvey (2012) survey of CFOs | 3.6 | 1.8 | 0.72 | 0.264 |
| | All models | 5.7 | 3.2 | 0.78 | -0.065 |

**Estimating E$[r_m - r_f]$:** The international evidence (wide range too!)

**Table X.4**

MSCI Index USD Equity Returns and ERP: (1970 - 2021)

| **Market** (*T*=620) | **Equity Return** | **Standard Deviation** | **ERP** |
|---|---|---|---|
| **U.S.** | 8.31 | **15.01** | **0.0382** |
| **Canada** | 7.95 | 19.21 | 0.0346 |
| **France** | 8.80 | 21.95 | 0.0431 |
| **Germany** | 8.80 | 21.48 | 0.0431 |
| **Italy** | **5.37** | **25.25** | **0.0088** |
| **Switzerland** | 10.34 | 17.64 | 0.0585 |
| **U.K.** | 7.37 | 21.20 | 0.0288 |
| **Japan** | 9.56 | 20.46 | 0.0506 |
| **Hong Kong** | **16.06** | **33.23** | **0.1156** |
| **Singapore** | 11.71 | 27.48 | 0.0722 |
| **Australia** | 7.35 | 23.42 | 0.0273 |
| | | | |
| **World** | **7.66** | **14.54** | **0.0317** |
| **EAFE** | 7.69 | 16.64 | 0.0306 |

**Estimating E$[r_m - r_f]$:** The international evidence (wide range too!)

**Table X.5**

MSCI Index USD Equity Returns and ERP: (1987* - 2021)

| **Market** (*T*) | **Equity Return** | **Standard Deviation** | **ERP** |
|---|---|---|---|
| **Argentina** (404) | 24.21 | 51.49 | 0.1972 |
| **Brazil** (404) | **22.23** | **47.67** | **0.1774** |
| **Mexico** (404) | 17.67 | 29.26 | 0.1318 |
| **Poland** (344) | 15.88 | 43.24 | 0.1139 |
| **Russia** (320) | **21.09** | **47.54** | **0.1660** |
| **India** (344) | **12.10** | **28.35** | **0.0760** |
| **China** (344) | **4.90** | **31.94** | **0.0041** |
| **Korea** (404) | 11.75 | 34.08 | 0.0726 |
| **Thailand** (404) | 11.58 | 32.24 | 0.0606 |
| **Egypt** (320) | 11.61 | 31.69 | 0.0862 |
| **South Africa** (344) | 9.47 | 26.31 | 0.0498 |
| | | | |
| **World (620)** | **7.66** | **14.54** | **0.0317** |
| **EM Asia** | 8.85 | 23.13 | 0.0436 |

**Estimating $E[r_m - r_f]$:** Precision of estimates

We use the SE as a measure of precision of an estimate. For the sample mean, $\bar{X}$, we have:

$$S.E.(\bar{X}) = {}^{s}/_{\sqrt{T}}$$

where $s$ is the SD.

Using the previous data, we calculate the S.E.($\bar{X}$) for several markets:

| | |
|---|---|
| U.S.: | **15.01**/sqrt(620/12) = 2.0882% |
| Germany: | 21.48/sqrt(620/12) = 2.9883% |
| Hong Kong: | **33.23**/sqrt(620/12) = 4.6230 % ⇐ Effect of $T$ |
| Brazil: | **47.67**/sqrt(404/12) = 8.2157 % |
| Russia: | **47.54**/sqrt(320/12) = 9.2061% |
| India: | **28.35**/sqrt(344/12) = 5.2950% |
| China: | **31.94**/sqrt(344/12) = 5.9654% |

⇒ Big difference in precision between Developed and EM.

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**Estimating $E[r_m - r_f]$:**

• **Short history** & **quality** of data are problematic for EM.

• For these markets, say Country J, it is easier to adjust the ERP from a developed market, say, the U.S., to estimate the $ERP_J$.

• Several ad-hoc adjustments:

◊ ***Relative Equity Market Approach***:

U.S. risk premium is **modified by volatility** of the Country J's equity market, $\sigma_J$, relative to volatility of U.S equity market, $\sigma_{US}$:

$$E[r_m - r_f]_J = E[r_m - r_f]_{US} * \sigma_J / \sigma_{US}$$

(Potential problem: $\sigma_J$ is also an indicator of liquidity!)

Remark: The estimated $E[r_m - r_f]_J$ is a USD rate.

**Estimating $E[r_m - r_f]$:**

◊ ***Country Bond Approach*:**

The **bond spread** is **added** to the U.S. market risk premium:

$$E[r_m - r_f]_J = \mathbf{E[r_m - r_f]_{US}} + CR_J \text{ (bond spread)}$$

◊ ***Mixed Approach*:**

Since we expect equity spreads to be higher than debt spread, we **adjust** the CR upward **using volatilities** as a measure of risk:

$$E[r_m - r_f]_J = \mathbf{E[r_m - r_f]_{US}} + CR_J * \sigma_J / \sigma_{J,bond}.$$

Note: We may have very different numbers from these three approaches.

Remark: We produced **USD rates**. For the **local currency** rate, **IFE** (+PPP) can be used.

**Estimating $E[r_m - r_f]$:**

◊ Judgement calls/adjustments may be needed to pick $E[r_m - r_f]_J$.

◊ Following the idea of CR from bond markets, a *country equity risk premium* (*CER*) can be easily derived for Country J:

$$CER_J = E[r_m - r_f]_J - E[r_m - r_f]_{US}.$$

◊ We construct a market risk premium for Country J based on USD rates.

To change from USD to the local currency premium, we follow the logic of linearized IFE combined with relative PPP to estimate $E[e_f]$:

$$E[e_f] \approx E[I_d - I_f]. \qquad \text{(Linearized Relative PPP)}$$

Then, we get:

$$E[r_m - r_f]_J \text{ (in local currency)} \approx E[r_m - r_f]_J + (I_J - I_{US}).$$

**Example**: GE adjusts $E[r_m - r_f]_{J=Brazil}$, using U.S. as a benchmark.

Data:

$E[r_m - r_f]_{US}$ = **0.0382**

$r_{f,US}$ = **4.50%**

$r_{f,Brazil}$ = **7.40%**

$\sigma_{US}$ = **15.01%**

$\sigma_{Brazil}$ = 37.3% (based on past 15 years)

$\sigma_{Brazil,bond}$ = 23.1% (based on past 15 years)

$CR_{Brazil}$ = **2.80%**

◇ *Relative Equity Market Approach*:

$E[r_m - r_f]_{Brazil}$ = **0.0382** * .373/.1501 = **0.093741**

◇ *Mixed Approach*:

$E[r_m - r_f]_{Brazil}$ = **0.0382** + **.028** *.373/.231 = **0.08341**

Remark: Again, both approaches produced a $E[r_m - r_f]_{Brazil}$ in **USD**.

**Example (continuation)**: Suppose GE decides to use the Relative Equity Market Approach. Now, GE wants to translate the cost of capital in USD to BRL, using linearized PPP.

Data for average inflation rates:

$E[I_{Brazil}]$ = 8%

$E[I_{US}]$ = 3% $\Rightarrow$ $E[e_f] = E[I_{Brazil}] - E[I_{US}]$ = **0.05**

◇ *Relative Equity Market Approach*:

$E[r_m - r_f]_{Brazil}$ (in USD) = **0.0382** * .373/.1501 = **0.093741**

$E[r_m - r_f]_{Brazil}$ (in BRL) ≈ $E[r_m - r_f]_{Brazil}$ (in USD) + $E[e_f]$

= **0.093741** + **0.05** = **0.143741**

$k_{e,Brazil}$(USD) = $r_f + \beta\, E[r_m - r_f]_{Brazil}$ = **0.0740%** + 1.1 * **0.143741**

= **0.2321**. ¶

**• Target Debt-Equity Ratio in Practice**

Suppose GE's target debt-equity ratio is 70% – 30%.

It is unlikely that GE will raise funds with 70-30 debt-equity split for every project. For example, for Brazilian project, GE used a 60–40 split.

The target (D/V)* reflects an *average*; it is not a hard target for each project. That is, for other projects GE will use D/E to compensate and be close to the (D/V)*.

**Determinants of Cost of Capital for MNCs**

Intuition: Factors that make CFs more stable reduce the $k_c$.

1) *Size of Firm* (larger firms get better rates)

2) *Access to international markets* (better chances of finding lower rates)

3) *Diversification* (more diversification, lower rates)

4) *Fixed costs* (the higher the proportion of fixed costs, the higher the β)

5) *Type of firm* (cyclical companies have higher βs)

6) *FX exposure* (more FX exposure, worse rates)

7) *Exposure to CR* (more exposure to CR, worse rates).

**Example:** Cost of Capital (**Nov 2014**)**:**
General Electric (GE): Huge, internationally diversified company
Disney (DIS): Large, moderate degree of international diversification
The GAP (GPS): Medium cap, low international diversification.

US Treasuries ($r_f$): 1.63% (5-year T-bill rate, from Bloomberg)
S&P 500 return (E[$r_m$]): 8.43% (30 years: 1984-2014, from Yahoo)
tax rate ($t$): 27.9% (effective US tax rate, per World Bank)

Recall: $$k_c = \frac{D}{D+E} * k_d * (1-t) + \frac{E}{D+E} * k_e$$

| | E | D | Rating | Spread | β | $k_d$ | $k_e$ | WACC |
|---|---|---|---|---|---|---|---|---|
| GE | 135B | 313B | AA- | 27 | 1.24 | 1.90 | 10.07 | **3.99** |
| DIS | 45.5B | 16.1B | A+ | 30 | 0.96 | 1.93 | 8.16 | **6.39** |
| GPS | 3B | 1.4B | BBB- | 168 | 1.65 | 3.31 | 12.86 | **9.53** |