

# Implied ERP in November 2013: Watch what I pay, not what I say..

- If you can observe what investors are willing to pay for stocks, you can back out an expected return from that price and an implied equity risk premium.

## Base year cash flow (last 12 mths)

Dividends (TTM): 33.22  
 + Buybacks (TTM): 49.02  
 = Cash to investors (TTM): 82.35  
 Earnings in TTM:

## Expected growth in next 5 years

Top down analyst estimate of earnings growth for S&P 500 with stable payout: 5.59%

## Beyond year 5

Expected growth rate =  
 Riskfree rate = 2.55%  
 Expected CF in year 6 =  
 108.1(1.0255)

E(Cash to investors) 86.96 91.82 96.95 102.38 108.10

S&P 500 on 11/1/13=  
 1756.54

$$1756.54 = \frac{86.96}{(1+r)} + \frac{91.82}{(1+r)^2} + \frac{96.95}{(1+r)^3} + \frac{102.38}{(1+r)^4} + \frac{108.10}{(1+r)^5} + \frac{110.86}{(r-.0255)(1+r)^5}$$

r = Implied Expected Return on Stocks = 8.04%

Minus

Risk free rate = T.Bond rate on 1/1/14=2.55%

Equals

Implied Equity Risk Premium (1/1/14) = 8.04% - 2.55% = 5.49%

# The bottom line on Equity Risk Premiums in November 2013

- Mature Markets: In November 2013, the number that we chose to use as the equity risk premium for all mature markets was 5.5%. This was set equal to the implied premium at that point in time and it was much higher than the historical risk premium of 4.20% prevailing then (1928-2012 period).

	Arithmetic Average		Geometric Average	
	Stocks - T. Bills	Stocks - T. Bonds	Stocks - T. Bills	Stocks - T. Bonds
1928-2012	7.65%	5.88%	5.74%	4.20%
	2.20%	2.33%		
1962-2012	5.93%	3.91%	4.60%	2.93%
	2.38%	2.66%		
2002-2012	7.06%	3.08%	5.38%	1.71%
	5.82%	8.11%		

- For emerging markets, we will use the melded default spread approach (where default spreads are scaled up to reflect additional equity risk) to come up with the additional risk premium that we will add to the mature market premium. Thus, markets in countries with lower sovereign ratings will have higher risk premiums that 5.5%.

$$\text{Emerging Market ERP} = 5.5\% + \text{Country Default Spread} * \left( \frac{\sigma_{\text{Equity}}}{\sigma_{\text{Country Bond}}} \right)$$

# What about equity risk premiums for other markets?

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- Historical data for markets outside the United States is available for much shorter time periods. The problem is even greater in emerging markets.
- The historical premiums that emerge from this data reflects this data problem and there is much greater error associated with the estimates of the premiums.
- You could try to compute implied equity risk premiums but getting the inputs, especially for long term growth are difficult to do.

# One solution: Bond default spreads as CRP

## – November 2013

- In November 2013, the equity risk premium for the US was 5.50% Using the default spread on the sovereign bond or based upon the sovereign rating and adding that spread to the mature market premium (4.20% for the US) gives you a total ERP for a country.

Country	Rating	Default Spread (Country Risk Premium)	US ERP	Total ERP for country
India	Baa3	2.25%	5.50%	7.75%
China	Aa3	0.80%	5.50%	6.30%
Brazil	Baa2	2.00%	5.50%	7.50%

- If you prefer CDS spreads:

<i>Country</i>	<i>Sovereign CDS Spread</i>	<i>US ERP</i>	<i>Total ERP for country</i>
India	4.20%	5.50%	9.70%
China	1.20%	5.50%	6.70%
Brazil	2.59%	5.50%	8.09%

# Beyond the default spread? Equities are riskier than bonds

- While default risk spreads and equity risk premiums are highly correlated, one would expect equity spreads to be higher than debt spreads. One approach to scaling up the premium is to look at the relative volatility of equities to bonds and to scale up the default spread to reflect this:

$$\text{Country Risk Premium} = \text{Country Default Spread} * \left( \frac{\sigma_{\text{Equity}}}{\sigma_{\text{Country Bond}}} \right)$$

- Brazil: The annualized standard deviation in the Brazilian equity index over the previous year is 21 percent, whereas the annualized standard deviation in the Brazilian C-bond is 14 percent.

$$\text{Brazil's Equity Risk Premium} = 5.50\% + 2.00\% (21\%/14\%) = 8.50\%$$

- Using the same approach for China and India:
  - China's Equity Risk Premium = 5.50% + 0.80% (18%/10%) = 6.94%
  - India's Equity Risk Premium = 5.50% + 2.25% (24%/17%) = 9.10%

# A Composite way of estimating ERP for countries

Step 1: Estimate an equity risk premium for a mature market. If your preference is for a forward looking, updated number, you can estimate an implied equity risk premium for the US (assuming that you buy into the contention that it is a mature market)

- ▣ My estimate: In November 2013, my estimate for the implied premium in the US was 5.5%. That will also be my estimate for a mature market ERP.

Step 2: Come up with a generic and measurable definition of a mature market.

- ▣ My estimate: Any AAA rated country is mature.

Step 3: Estimate the additional risk premium that you will charge for markets that are not mature. You have two choices:

- ▣ The default spread for the country, estimated based either on sovereign ratings or the CDS market.
- ▣ A scaled-up default spread, where you adjust the default spread upwards for the additional risk in equity markets.

# ERP : Nov 2013

Andorra	7.45%	1.95%	Liechtenstein	5.50%	0.00%
Austria	5.50%	0.00%	Luxembourg	5.50%	0.00%
Belgium	6.70%	1.20%	Malta	7.45%	1.95%
Cyprus	22.00%	16.50%	Netherlands	5.50%	0.00%
Denmark	5.50%	0.00%	Norway	5.50%	0.00%
Finland	5.50%	0.00%	Portugal	10.90%	5.40%
France	5.95%	0.45%	Spain	8.88%	3.38%
Germany	5.50%	0.00%	Sweden	5.50%	0.00%
Greece	15.63%	10.13%	Switzerland	5.50%	0.00%
Iceland	8.88%	3.38%	Turkey	8.88%	3.38%
Ireland	9.63%	4.13%	United Kingdom	5.95%	0.45%
Italy	8.50%	3.00%	<b>Western Europe</b>	<b>6.72%</b>	<b>1.22%</b>

Albania	12.25%	6.75%
Armenia	10.23%	4.73%
Azerbaijan	8.88%	3.38%
Belarus	15.63%	10.13%
Bosnia	15.63%	10.13%
Bulgaria	8.50%	3.00%
Croatia	9.63%	4.13%
Czech Republic	6.93%	1.43%
Estonia	6.93%	1.43%
Georgia	10.90%	5.40%
Hungary	9.63%	4.13%
Kazakhstan	8.50%	3.00%
Latvia	8.50%	3.00%
Lithuania	8.05%	2.55%
Macedonia	10.90%	5.40%
Moldova	15.63%	10.13%
Montenegro	10.90%	5.40%
Poland	7.15%	1.65%
Romania	8.88%	3.38%
Russia	8.05%	2.55%
Serbia	10.90%	5.40%
Slovakia	7.15%	1.65%
Slovenia	9.63%	4.13%
Ukraine	15.63%	10.13%
<b>E. Europe &amp; Russia</b>	<b>8.60%</b>	<b>3.10%</b>

Bangladesh	10.90%	5.40%
Cambodia	13.75%	8.25%
China	6.94%	1.44%
Fiji	12.25%	6.75%
Hong Kong	5.95%	0.45%
India	9.10%	3.60%
Indonesia	8.88%	3.38%
Japan	6.70%	1.20%
Korea	6.70%	1.20%
Macao	6.70%	1.20%
Malaysia	7.45%	1.95%
Mauritius	8.05%	2.55%
Mongolia	12.25%	6.75%
Pakistan	17.50%	12.00%
Papua NG	12.25%	6.75%
Philippines	9.63%	4.13%
Singapore	5.50%	0.00%
Sri Lanka	12.25%	6.75%
Taiwan	6.70%	1.20%
Thailand	8.05%	2.55%
Vietnam	13.75%	8.25%
<b>Asia</b>	<b>7.27%</b>	<b>1.77%</b>

Canada	5.50%	0.00%
United States of America	5.50%	0.00%
<b>North America</b>	<b>5.50%</b>	<b>0.00%</b>

Country	TRP	CRP
Angola	10.90%	5.40%
Benin	13.75%	8.25%
Botswana	7.15%	1.65%
Burkina Faso	13.75%	8.25%
Cameroon	13.75%	8.25%
Cape Verde	12.25%	6.75%
Egypt	17.50%	12.00%
Gabon	10.90%	5.40%
Ghana	12.25%	6.75%
Kenya	12.25%	6.75%
Morocco	9.63%	4.13%
Mozambique	12.25%	6.75%
Namibia	8.88%	3.38%
Nigeria	10.90%	5.40%
Rwanda	13.75%	8.25%
Senegal	12.25%	6.75%
South Africa	8.05%	2.55%
Tunisia	10.23%	4.73%
Uganda	12.25%	6.75%
Zambia	12.25%	6.75%
<b>Africa</b>	<b>11.22%</b>	<b>5.82%</b>

Argentina	15.63%	10.13%
Belize	19.75%	14.25%
Bolivia	10.90%	5.40%
Brazil	8.50%	3.00%
Chile	6.70%	1.20%
Colombia	8.88%	3.38%
Costa Rica	8.88%	3.38%
Ecuador	17.50%	12.00%
El Salvador	10.90%	5.40%
Guatemala	9.63%	4.13%
Honduras	13.75%	8.25%
Mexico	8.05%	2.55%
Nicaragua	15.63%	10.13%
Panama	8.50%	3.00%
Paraguay	10.90%	5.40%
Peru	8.50%	3.00%
Suriname	10.90%	5.40%
Uruguay	8.88%	3.38%
Venezuela	12.25%	6.75%
<b>Latin America</b>	<b>9.44%</b>	<b>3.94%</b>

Bahrain	8.05%	2.55%
Israel	6.93%	1.43%
Jordan	12.25%	6.75%
Kuwait	6.40%	0.90%
Lebanon	12.25%	6.75%
Oman	6.93%	1.43%
Qatar	6.40%	0.90%
Saudi Arabia	6.70%	1.20%
United Arab Emirates	6.40%	0.90%
<b>Middle East</b>	<b>6.88%</b>	<b>1.38%</b>

Australia	5.50%	0.00%
Cook Islands	12.25%	6.75%
New Zealand	5.50%	0.00%
<b>Australia &amp; NZ</b>	<b>5.50%</b>	<b>0.00%</b>

Black #: Total ERP  
 Red #: Country risk premium  
 AVG: GDP weighted average

# Estimating ERP for Disney: November 2013

- Incorporation: The conventional practice on equity risk premiums is to estimate an ERP based upon where a company is incorporated. Thus, the cost of equity for Disney would be computed based on the US equity risk premium, because it is a US company, and the Brazilian ERP would be used for Vale, because it is a Brazilian company.
- Operations: The more sensible practice on equity risk premium is to estimate an ERP based upon where a company operates. For Disney in 2013:

<i>Region/ Country</i>	<i>Proportion of Disney's Revenues</i>	<i>ERP</i>
US& Canada	82.01%	5.50%
Europe	11.64%	6.72%
Asia-Pacific	6.02%	7.27%
Latin America	0.33%	9.44%
<b>Disney</b>	<b>100.00%</b>	<b>5.76%</b>



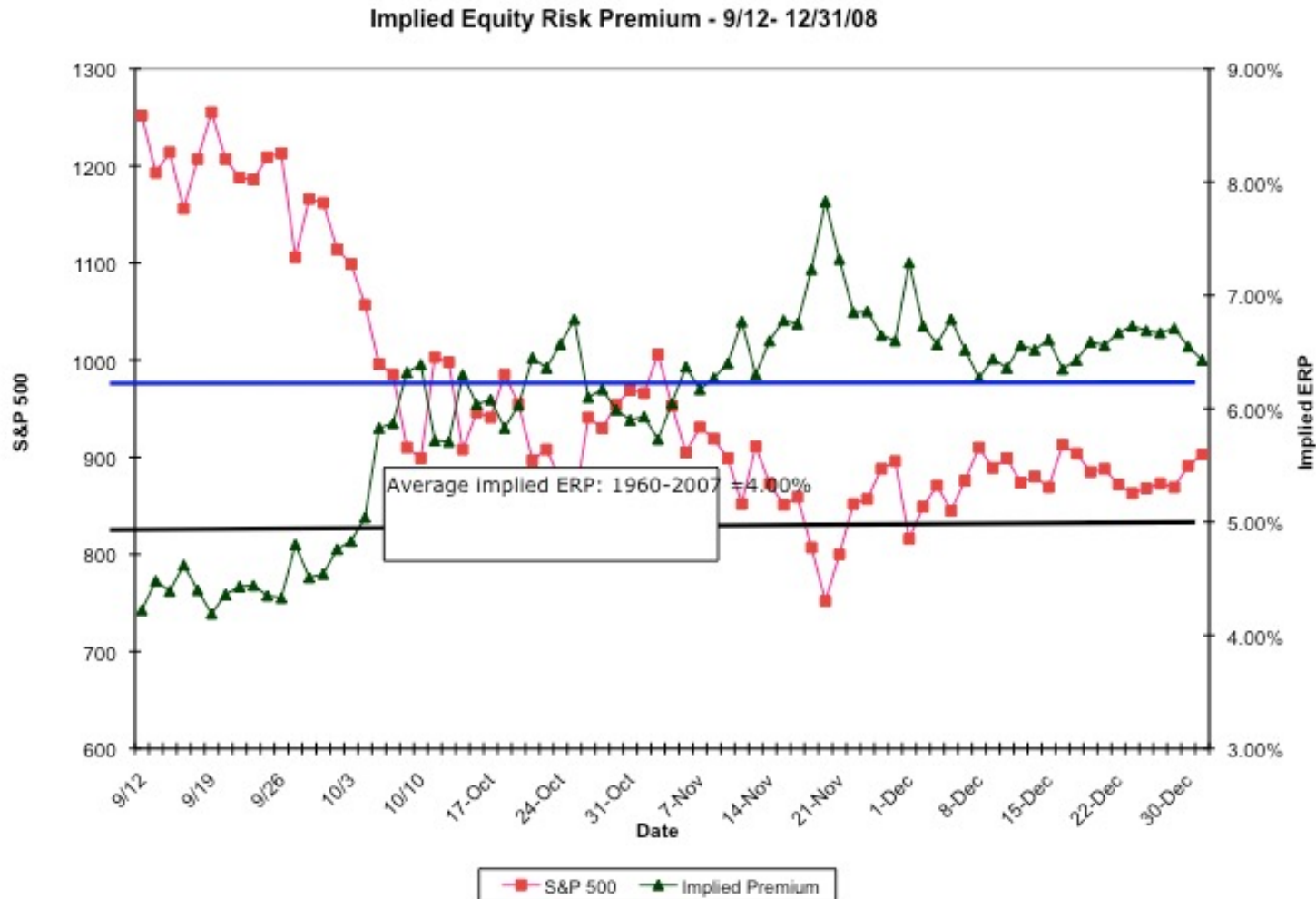
# ERP for Companies: November 2013

In November 2013,  
the mature market  
premium used was  
5.5%

<i>Company</i>	<i>Region/ Country</i>	<i>Weight</i>	<i>ERP</i>
Bookscape	United States	100%	5.50%
Vale	US & Canada	4.90%	5.50%
	Brazil	16.90%	8.50%
	Rest of Latin America	1.70%	10.09%
	China	37.00%	6.94%
	Japan	10.30%	6.70%
	Rest of Asia	8.50%	8.61%
	Europe	17.20%	6.72%
	Rest of World	3.50%	10.06%
	Company	100.00%	7.38%
Tata Motors	India	23.90%	9.10%
	China	23.60%	6.94%
	UK	11.90%	5.95%
	United States	10.00%	5.50%
	Mainland Europe	11.70%	6.85%
	Rest of World	18.90%	6.98%
	Company	100.00%	7.19%
Baidu	China	100%	6.94%
Deutsche Bank	Germany	35.93%	5.50%
	North America	24.72%	5.50%
	Rest of Europe	28.67%	7.02%
	Asia-Pacific	10.68%	7.27%
	South America	0.00%	9.44%
	Company	100.00%	6.12%

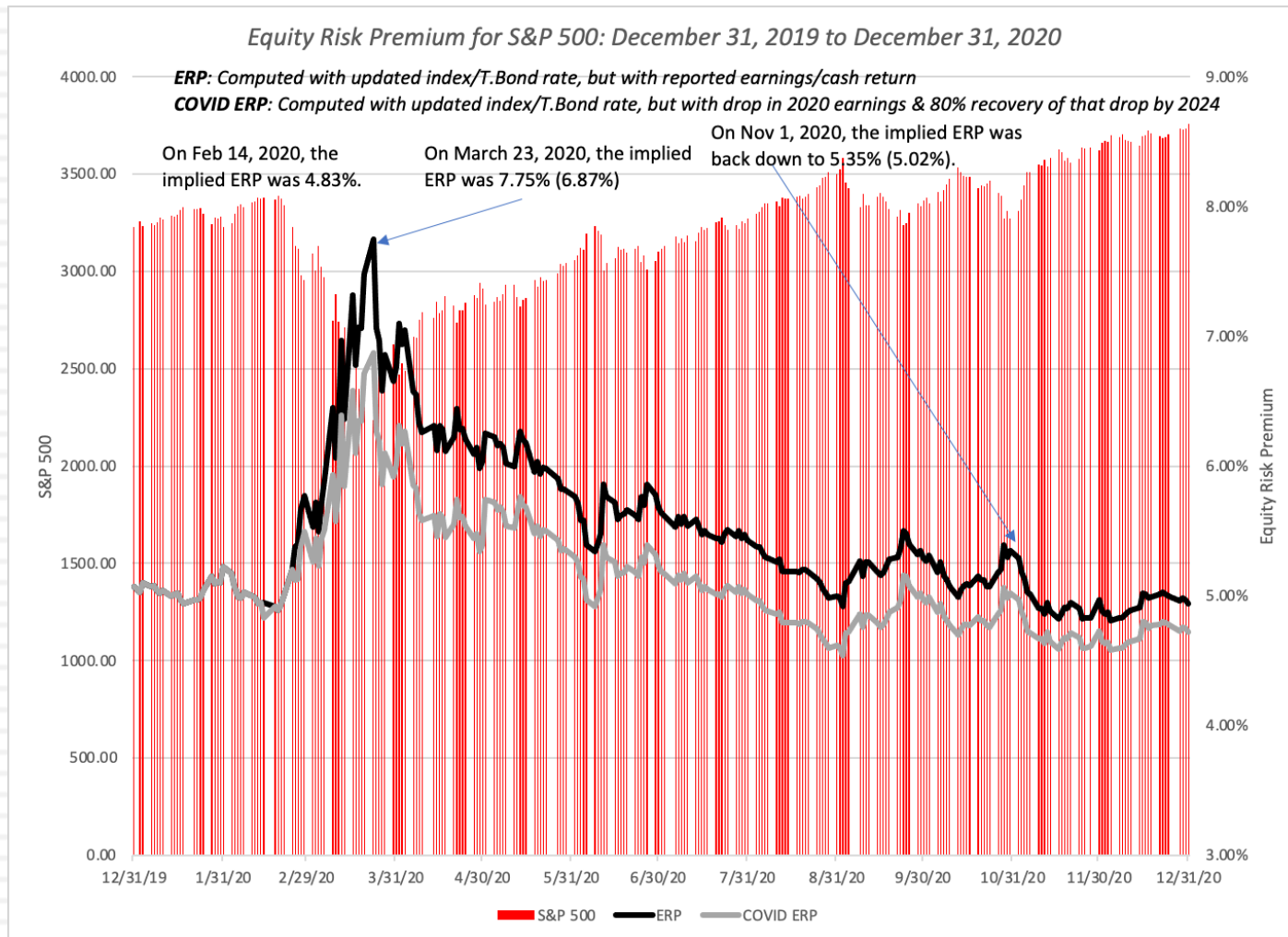
# The Anatomy of a Crisis: Implied ERP from September 12, 2008 to January 1, 2009

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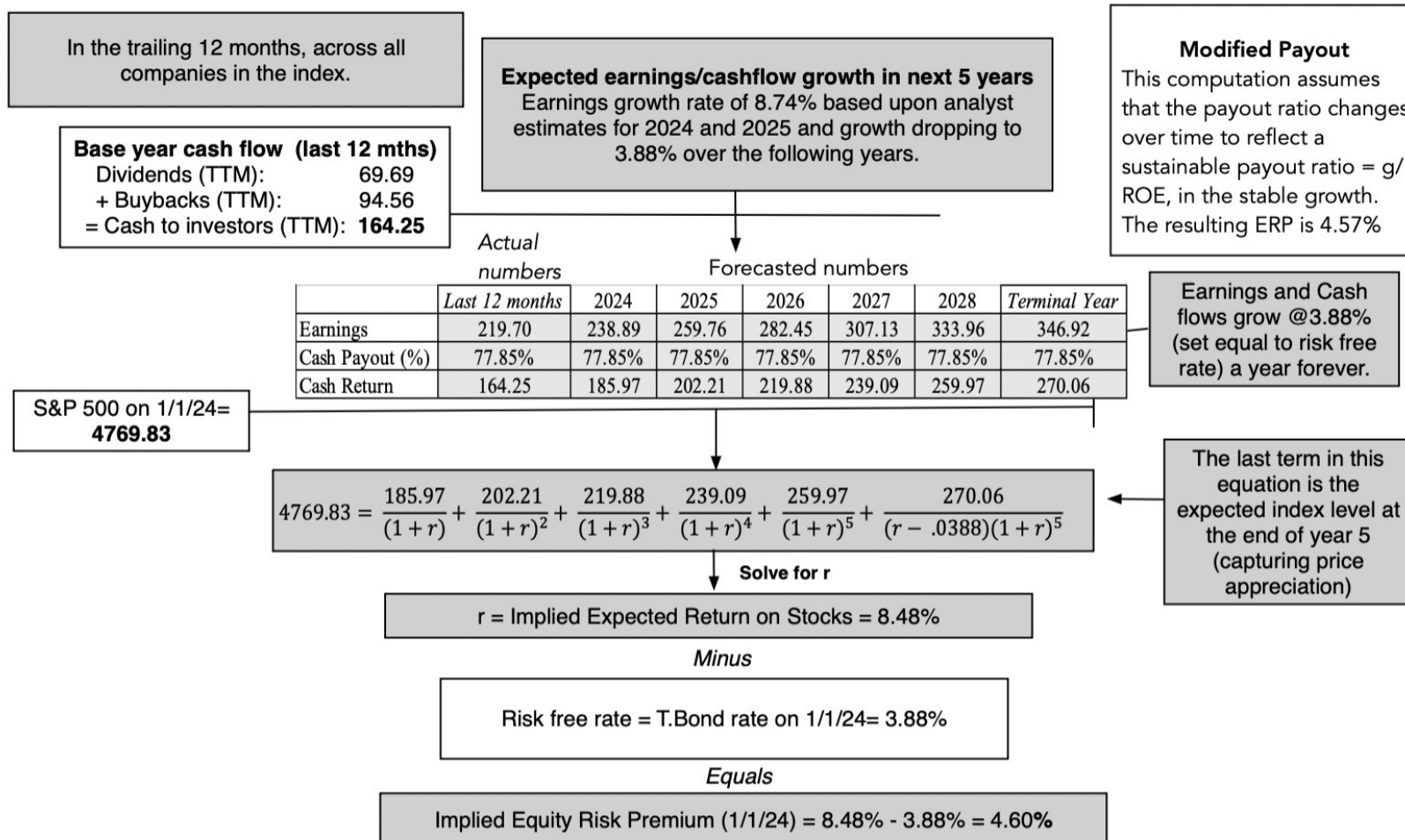


# And in 2020.. COVID effects

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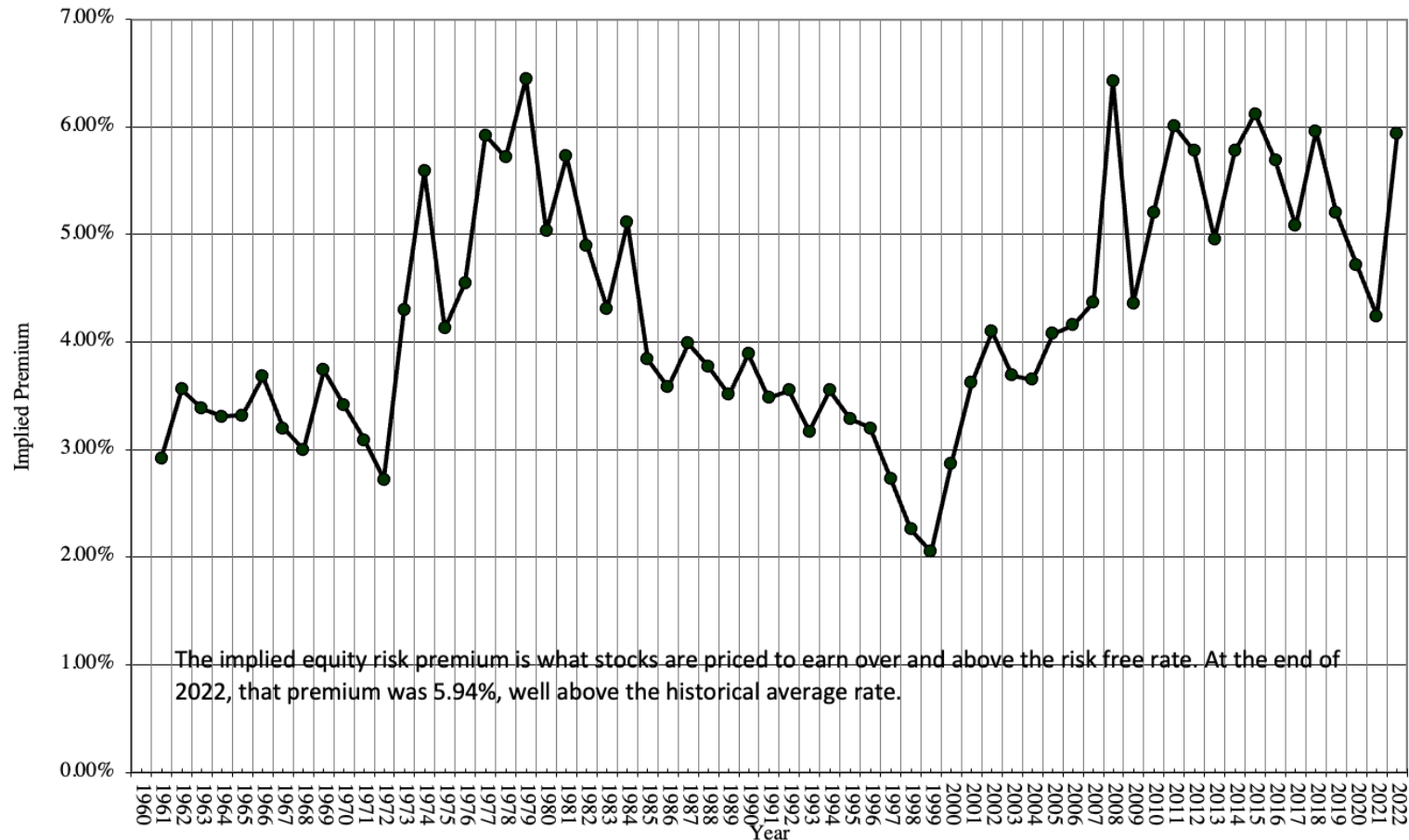


# An Updated Implied ERP



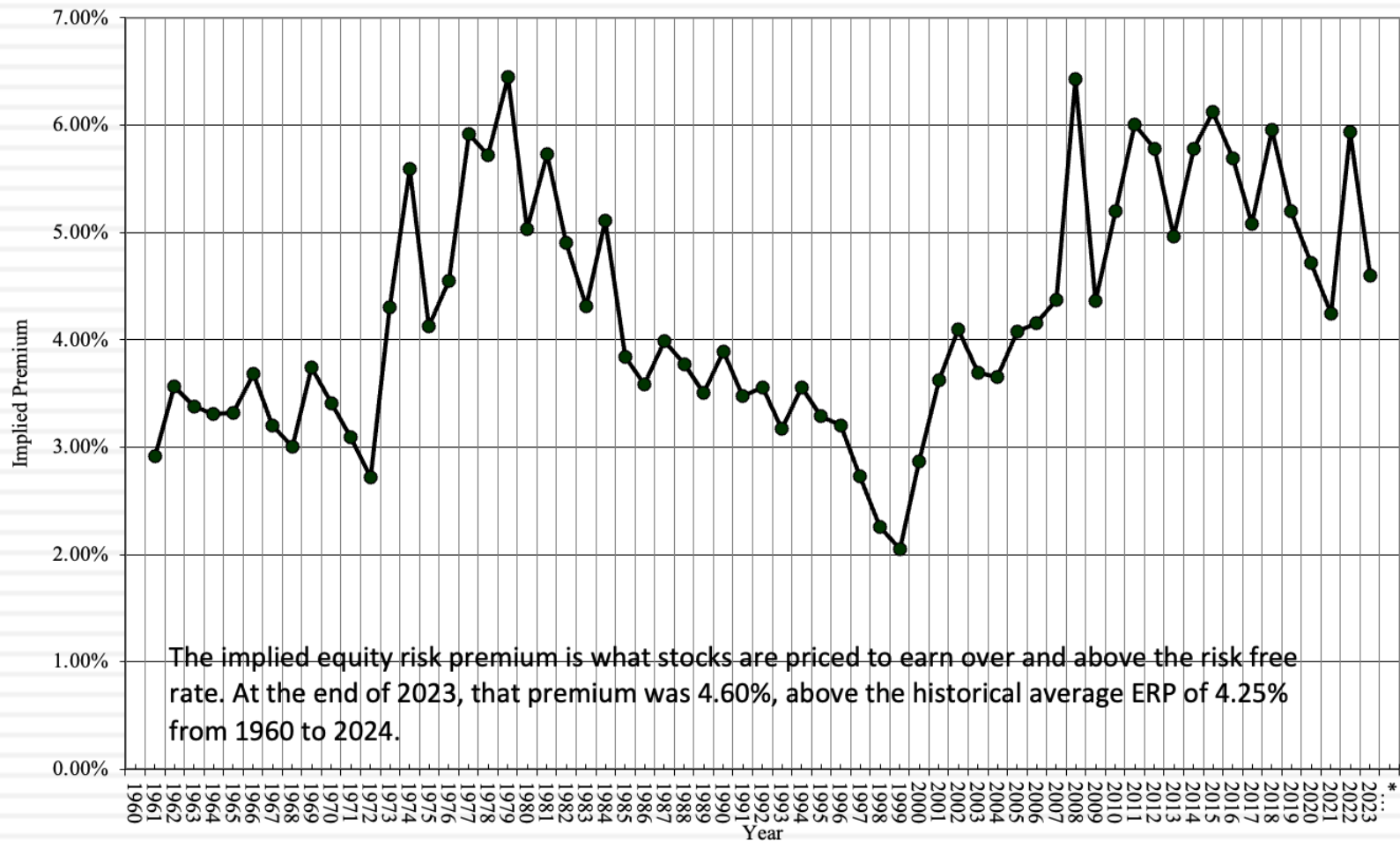
# Implied Premiums in the US: 1960-2022

*Implied Equity Risk Premium for US Equity Market: 1960-2022*



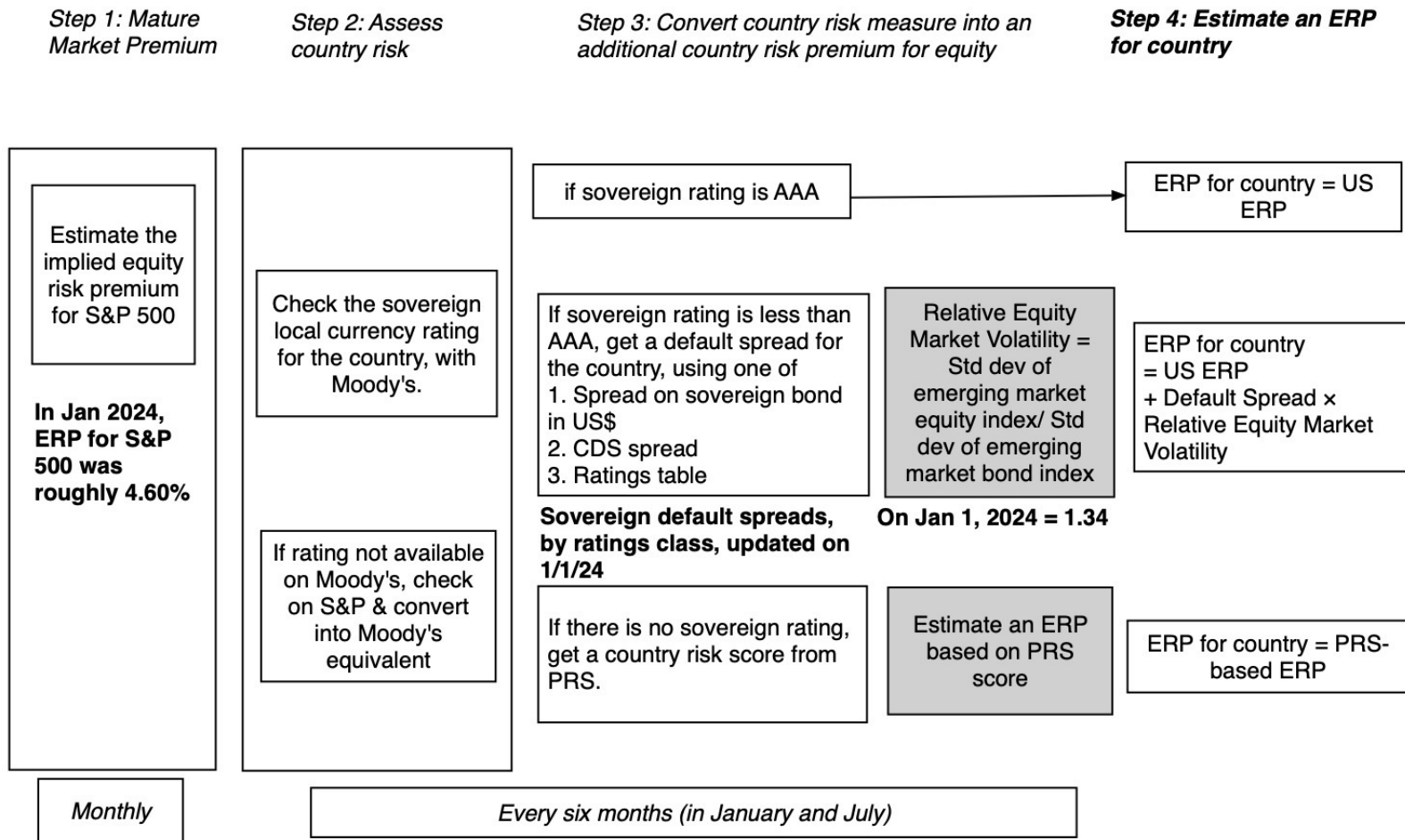
# Implied Premiums in the US: 1960-2023

*Implied Equity Risk Premium for US Equity Market: 1960-2023*



# A Composite way of estimating ERP for countries

## ERP Estimation Procedure



Andorra	Baa2	2.78%	7.38%	Italy	Baa3	3.21%	7.81%
Austria	Aa1	0.58%	5.18%	Jersey (States of)	Aa3	0.88%	5.48%
Belgium	Aa3	0.88%	5.48%	Liechtenstein	Aaa	0.00%	4.60%
Cyprus	Baa2	2.78%	7.38%	Luxembourg	Aaa	0.00%	4.60%
Denmark	Aaa	0.00%	4.60%	Malta	A2	1.24%	5.84%
Finland	Aa1	0.58%	5.18%	Netherlands	Aaa	0.00%	4.60%
France	Aa2	0.72%	5.32%	Norway	Aaa	0.00%	4.60%
Germany	Aaa	0.00%	4.60%	Portugal	A3	1.75%	6.35%
Greece	Ba1	3.66%	8.26%	Spain	Baa1	2.34%	6.94%
Guernsey (States of)	A1	1.03%	5.63%	Sweden	Aaa	0.00%	4.60%
Iceland	A2	1.24%	5.84%	Switzerland	Aaa	0.00%	4.60%
Ireland	Aa3	0.88%	5.48%	Turkey	B3	9.51%	14.11%
Isle of Man	Aa3	0.88%	5.48%	United Kingdom	Aa3	0.88%	5.48%
				<b>EU &amp; Environs</b>		<b>1.29%</b>	<b>5.89%</b>

Albania	B1	6.58%	11.18%
Armenia	Ba3	5.26%	9.86%
Azerbaijan	Ba1	3.66%	8.26%
Belarus	C	23.49%	28.09%
Bosnia and Herzego	B3	9.51%	14.11%
Bulgaria	Baa1	2.34%	6.94%
Croatia	Baa2	2.78%	7.38%
Czech Republic	Aa3	0.88%	5.48%
Estonia	A1	1.03%	5.63%
Georgia	Ba2	4.40%	9.00%
Hungary	Baa2	2.78%	7.38%
Kazakhstan	Baa2	2.78%	7.38%
Kyrgyzstan	B3	9.51%	14.11%
Latvia	A3	1.75%	6.35%
Lithuania	A2	1.24%	5.84%
Macedonia	Ba3	5.26%	9.86%
Moldova	B3	9.51%	14.11%
Montenegro	B1	6.58%	11.18%
Poland	A2	1.24%	5.84%
Romania	Baa3	3.21%	7.81%
Russia	NA	6.58%	11.18%
Serbia	Ba2	4.40%	9.00%
Slovakia	A2	1.24%	5.84%
Slovenia	A3	1.75%	6.35%
Tajikistan	B3	9.51%	14.11%
Ukraine	Ca	17.55%	22.15%
Uzbekistan	Ba3	5.26%	9.86%
<b>E. Europe &amp; Russia</b>		<b>5.06%</b>	<b>9.66%</b>

Country	PRS	CRP	ERP
Algeria	67.75	6.58%	11.18%
Brunei	81.5	0.88%	5.48%
Gambia	66.75	6.58%	11.18%
Guinea	60	13.17%	17.77%
Guinea-Bissau	65.25	8.04%	12.64%
Guyana	75.25	2.34%	6.94%
Haiti	56.5	14.63%	19.23%
Iran	63	9.51%	14.11%
Korea, D.P.R.	49.25	23.49%	28.09%
Liberia	55	17.55%	22.15%
Libya	73.75	2.78%	7.38%
Madagascar	62.75	9.51%	14.11%
Malawi	52.75	17.55%	22.15%
Myanmar	57	14.63%	19.23%
Russia	66.75	6.58%	11.18%
Sierra Leone	56.25	14.63%	19.23%
Somalia	51.75	17.55%	22.15%
Sudan	44.75	23.49%	28.09%
Syria	45	23.49%	28.09%
Yemen, Republic	55.75	14.63%	19.23%
Zimbabwe	57.5	13.17%	17.77%

Canada	Aaa	0.00%	4.60%
United States	Aaa	0.00%	4.60%
<b>North America</b>		<b>0.00%</b>	<b>4.60%</b>

Country	Rating	CRP	ERP
Angola	B3	9.51%	14.11%
Benin	B1	6.58%	11.18%
Botswana	A3	1.75%	6.35%
Burkina Faso	Caa1	10.97%	15.57%
Cameroon	Caa1	10.97%	15.57%
Cape Verde	B3	9.51%	14.11%
Congo (DR)	B3	9.51%	14.11%
Congo (Rep of)	Caa2	13.17%	17.77%
Côte d'Ivoire	Ba3	5.26%	9.86%
Egypt	Caa1	10.97%	15.57%
Ethiopia	Caa2	13.17%	17.77%
Gabon	Caa1	10.97%	15.57%
Ghana	Caa3	14.63%	19.23%
Kenya	B3	9.51%	14.11%
Mali	Caa2	13.17%	17.77%
Mauritius	Baa3	3.21%	7.81%
Morocco	Ba1	3.66%	8.26%
Mozambique	Caa2	13.17%	17.77%
Namibia	B1	6.58%	11.18%
Niger	Caa2	13.17%	17.77%
Nigeria	Caa1	10.97%	15.57%
Rwanda	B2	8.04%	12.64%
Senegal	Ba3	5.26%	9.86%
South Africa	Ba2	4.40%	9.00%
Swaziland	B3	9.51%	14.11%
Tanzania	B2	8.04%	12.64%
Togo	B3	9.51%	14.11%
Tunisia	Caa2	13.17%	17.77%
Uganda	B2	8.04%	12.64%
Zambia	Caa3	14.63%	19.23%
<b>Africa</b>		<b>9.16%</b>	<b>13.76%</b>

Abu Dhabi	Aa2	0.72%	5.32%
Bahrain	B2	8.04%	12.64%
Iraq	Caa1	10.97%	15.57%
Israel	A1	1.03%	5.63%
Jordan	B1	6.58%	11.18%
Kuwait	A1	1.03%	5.63%
Lebanon	C	23.49%	28.09%
Oman	Ba1	3.66%	8.26%
Qatar	Aa3	0.88%	5.48%
Ras Al Khaimah	A3	1.75%	6.35%
Saudi Arabia	A1	1.03%	5.63%
Sharjah	Ba1	3.66%	8.26%
United Arab Emirates	Aa2	0.72%	5.32%
<b>Middle East</b>		<b>2.16%</b>	<b>6.76%</b>

Bangladesh	B1	6.58%	11.18%
Cambodia	B2	8.04%	12.64%
China	A1	1.03%	5.63%
Fiji	B1	6.58%	11.18%
Hong Kong	Aa3	0.88%	5.48%
India	Baa3	3.21%	7.81%
Indonesia	Baa2	2.78%	7.38%
Japan	A1	1.03%	5.63%
Korea	Aa2	0.72%	5.32%
Laos	Caa3	14.63%	19.23%
Macao	Aa3	0.88%	5.48%
Malaysia	A3	1.75%	6.35%
Maldives	Caa1	10.97%	15.57%
Mongolia	B3	9.51%	14.11%
Pakistan	Caa3	14.63%	19.23%
Papua New Guinea	B2	8.04%	12.64%
Philippines	Baa2	2.78%	7.38%
Singapore	Aaa	0.00%	4.60%
Solomon Islands	Caa1	10.97%	15.57%
Sri Lanka	Ca	17.55%	22.15%
Taiwan	Aa3	0.88%	5.48%
Thailand	Baa1	2.34%	6.94%
Vietnam	Ba2	4.40%	9.00%
<b>Asia</b>		<b>1.68%</b>	<b>6.28%</b>

Australia	Aaa	0.00%	4.60%
Cook Islands	B1	6.58%	11.18%
New Zealand	Aaa	0.00%	4.60%
<b>Australia &amp; NZ</b>		<b>0.00%</b>	<b>4.60%</b>

Aswath Damodaran

Blue: Moody's Rating  
Red: Added Country Risk  
Green #: Total ERP



# Application Test: Estimating an Equity Risk Premium for your company!

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- For your company, get the geographical breakdown of revenues in the most recent year. Based upon this revenue breakdown and the most recent country risk premiums, estimate the equity risk premium that you would use for your company.
  
- This computation was based entirely on revenues. With your company, what concerns would you have about your estimate being too high or too low?