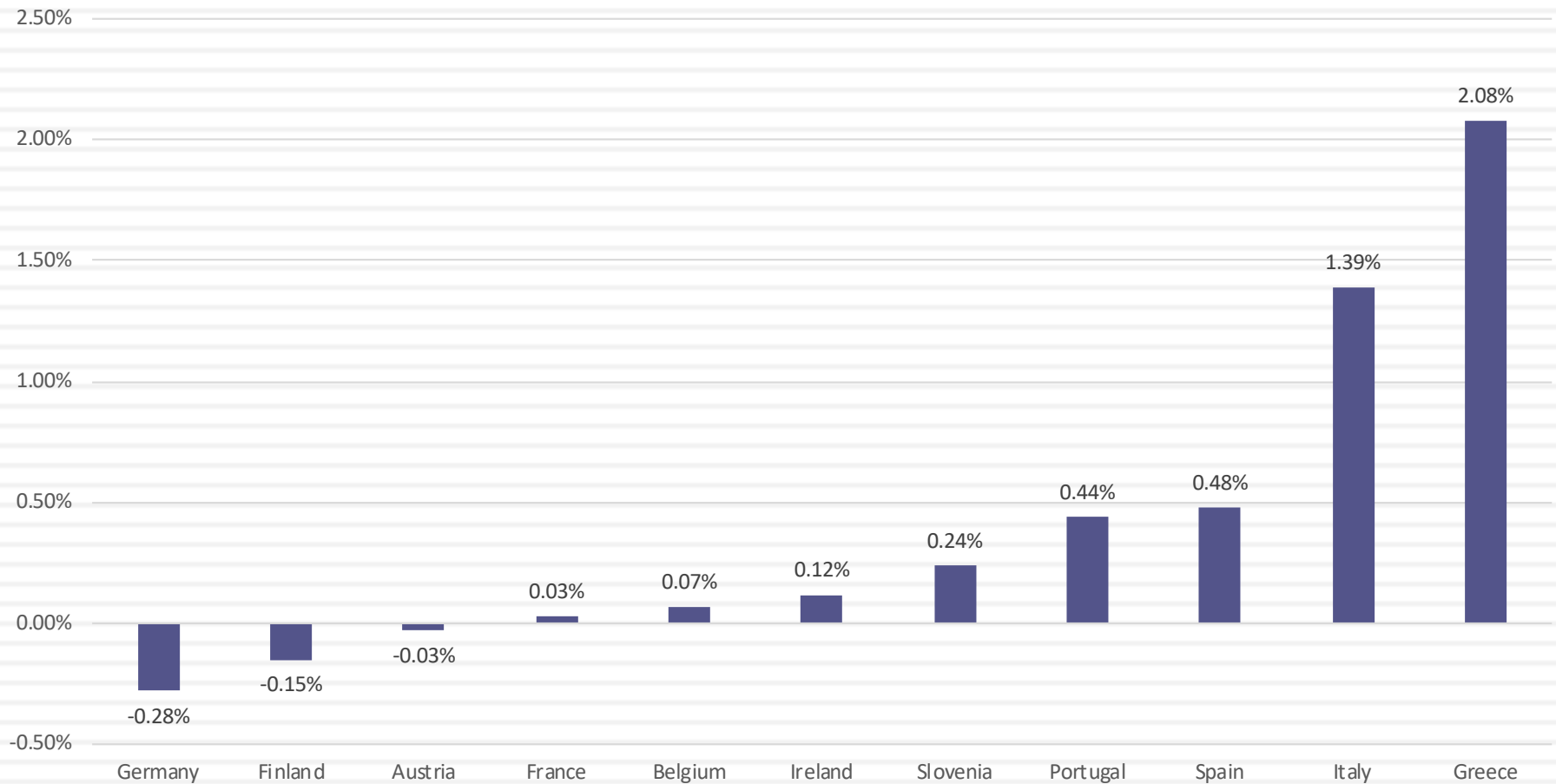# Test 2: A Riskfree Rate in Euros?

Euro 10-year Bond Rate on 1/1/20

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Test 3: A Riskfree Rate in Indian Rupees

□ The Indian government had 10-year Rupee bonds outstanding, with a yield to maturity of about 6.56% on January 1, 2020.

□ In January 2020, the Indian government had a local currency sovereign rating of Baa2. The typical default spread (over a default free rate) for Baa2 rated country bonds in early 2018 was 1.59%. The riskfree rate in Indian Rupees is

   a. The yield to maturity on the 10-year bond (6.56%)

   b. The yield to maturity on the 10-year bond + Default spread (8.15%)

   c. The yield to maturity on the 10-year bond – Default spread (4.97%)

   d. None of the above

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Sovereign Default Spread: Three paths to the same destination…

- <u>Sovereign dollar or euro denominated bonds</u>: Find sovereign bonds denominated in US dollars, issued by an emerging sovereign.
  - Default spread = Emerging Govt Bond Rate (in US $) – US Treasury Bond rate with same maturity.
- <u>CDS spreads</u>: Obtain the traded value for a sovereign Credit Default Swap (CDS) for the emerging government.
  - Default spread = Sovereign CDS spread (with perhaps an adjustment for CDS market frictions).
- <u>Sovereign-rating based spread</u>: For countries which don't issue dollar denominated bonds or have a CDS spread, you have to use the average spread for other countries with the same sovereign rating.

Local Currency Government Bond Rates – January 2020

Currency	Govt Bond Rate 12/31/19	Currency	Govt Bond Rate 12/31/19
Australian $	1.24%	Mexican Peso	6.86%
Brazilian Reai	6.77%	Nigerian Naira	10.95%
British Pound	0.82%	Norwegian Krone	1.40%
Bulgarian Lev	0.40%	NZ $	1.52%
Canadian $	1.63%	Pakistani Rupee	11.02%
Chilean Peso	3.28%	Peruvian Sol	5.43%
Chinese Yuan	3.17%	Phillipine Peso	4.71%
Colombian Peso	5.97%	Polish Zloty	2.21%
Croatian Kuna	0.66%	Qatari Dinar	2.69%
Czech Koruna	1.62%	Romanian Lev	4.41%
Danish Krone	-0.25%	Russian Ruble	6.28%
Euro	-0.28%	Singapore $	1.73%
HK $	1.60%	South African Rand	8.25%
Hungarian Forint	2.10%	Swedish Krona	0.13%
Iceland Krona	3.51%	Swiss Franc	-0.61%
Indian Rupee	6.56%	Taiwanese $	0.66%
Indonesian Rupiah	7.07%	Thai Baht	1.41%
Israeli Shekel	0.77%	Turkish Lira	11.86%
Japanese Yen	-0.02%	US $	1.92%
Kenyan Shilling	12.20%	Vietnamese Dong	3.12%
Korean Won	1.63%	Zambian kwacha	32.50%
Malyasian Ringgit	3.28%		

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Approach 1: Default spread from Government Bonds

Country	$ Bond Rate	Riskfree Rate	Default Spread
	$ Bonds		
Peru	3.10%	1.92%	1.18%
Brazil	3.63%	1.92%	1.71%
Colombia	3.17%	1.92%	1.25%
Poland	2.83%	1.92%	0.91%
Turkey	5.82%	1.92%	3.90%
Mexico	2.65%	1.92%	0.73%
Russia	3.31%	1.92%	1.39%
	Euro Bonds		
Bulgaria	1.00%	-0.28%	1.28%

Approach 2: CDS Spreads – January 2020

Country	12/31/19	CDS Spread net of US	Country	12/31/19	CDS Spread net of US	Country	12/31/19	CDS Spread net of US
Abu Dhabi	0.69%	0.51%	Guatemala	1.99%	1.81%	Peru	0.89%	0.71%
Algeria	0.91%	0.73%	Hong Kong	0.55%	0.37%	Philippines	0.76%	0.58%
Angola	4.77%	4.59%	Hungary	1.13%	0.95%	Poland	0.90%	0.72%
Argentina	NA	NA	Iceland	0.93%	0.75%	Portugal	0.68%	0.50%
Australia	0.30%	0.12%	India	1.28%	1.10%	Qatar	0.72%	0.54%
Austria	0.21%	0.03%	Indonesia	1.35%	1.17%	Romania	1.20%	1.02%
Bahrain	2.24%	2.06%	Iraq	5.13%	4.95%	Russia	1.06%	0.88%
Belgium	0.30%	0.12%	Ireland	0.34%	0.16%	Rwanda	3.16%	2.98%
Brazil	1.74%	1.56%	Israel	0.75%	0.57%	Saudi Arabia	1.03%	0.85%
Bulgaria	0.89%	0.71%	Italy	1.68%	1.50%	Senegal	2.78%	2.60%
Cameroon	5.60%	5.42%	Japan	0.39%	0.21%	Serbia	1.28%	1.10%
Canada	0.34%	0.16%	Kazakhstan	1.04%	0.86%	Slovakia	0.65%	0.47%
Chile	0.79%	0.61%	Kenya	4.17%	3.99%	Slovenia	1.13%	0.95%
China	0.72%	0.54%	Korea	0.48%	0.30%	South Africa	2.48%	2.30%
Colombia	1.37%	1.19%	Kuwait	0.74%	0.56%	Spain	0.73%	0.55%
Costa Rica	3.71%	3.53%	Latvia	0.98%	0.80%	Sweden	0.19%	0.01%
Croatia	1.20%	1.02%	Lebanon	NA	NA	Switzerland	0.16%	-0.02%
Cyprus	1.10%	0.92%	Lithuania	0.87%	0.69%	Thailand	0.48%	0.30%
Czech Republic	0.59%	0.41%	Malaysia	0.79%	0.61%	Tunisia	4.06%	3.88%
Denmark	0.18%	0.00%	Mexico	1.40%	1.22%	Turkey	3.47%	3.29%
Dubai	1.31%	1.13%	Morocco	1.26%	1.08%	Ukraine	5.25%	5.07%
Egypt	3.59%	3.41%	Netherlands	0.22%	0.04%	United Kingdom	0.34%	0.16%
El Salvador	4.22%	4.04%	New Zealand	0.33%	0.15%	United States	0.18%	0.00%
Estonia	0.72%	0.54%	Nigeria	4.10%	3.92%	Uruguay	1.29%	1.11%
Finland	0.21%	0.03%	Norway	0.22%	0.04%	Venezuela	NA	NA
France	0.33%	0.15%	Oman	2.92%	2.74%	Vietnam	1.59%	1.41%
Germany	0.18%	0.00%	Pakistan	4.66%	4.48%	Zambia	12.20%	12.02%
Greece	1.96%	1.78%	Panama	0.85%	0.67%			

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Approach 3: Typical Default Spreads: January 2019

S&P Sovereign Rating	Moody's Sovereign Rating	Default Spread
AAA	Aaa	0.00%
AA+	Aa1	0.33%
AA	Aa2	0.41%
AA-	Aa3	0.51%
A+	A1	0.59%
A	A2	0.71%
A-	A3	1.00%
BBB+	Baa1	1.34%
BBB	Baa2	1.59%
BBB-	Baa3	1.84%
BB+	Ba1	2.09%
BB	Ba2	2.51%
BB	Ba3	3.01%
B+	B1	3.76%
B	B2	4.60%
B-	B3	5.44%
CCC+	Caa1	6.27%
CCC	Caa2	7.53%
CCC-	Caa3	8.36%
CC+	Ca1	10.03%
CC	Ca2	13.25%
CC-	Ca3	15.00%
C+	C1	18.00%
C	C2	21.00%
C-	C3	24.00%

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Getting to a risk free rate in a currency: Example

- The Brazilian government bond rate in nominal reais on January 1, 2020 was 6.77%. To get to a riskfree rate in nominal reais, we can use one of three approaches.
  - Approach 1: Government Bond spread
    - The 2028 Brazil bond, denominated in US dollars, has a spread of 1.71% over the US treasury bond rate.
    - Riskfree rate in $R = 6.77% - 1.71% = 5.06%
  - Approach 2: The CDS Spread
    - The CDS spread for Brazil, adjusted for the US CDS spread was 1.56%.
    - Riskfree rate in $R = 6.77% - 1.56% = 5.21%
  - Approach 3: The Rating based spread
    - Brazil has a Ba2 local currency rating from Moody's. The default spread for that rating is 2.51%
    - Riskfree rate in $R = 6.77% - 2.51% = 4.26%

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Test 4: A Real Riskfree Rate

- In some cases, you may want a riskfree rate in real terms (in real terms) rather than nominal terms.

- To get a real riskfree rate, you would like a security with no default risk and a guaranteed real return. Treasury indexed securities offer this combination.

- In January 2020, the yield on a 10-year indexed treasury bond was 0.60%. Which of the following statements would you subscribe to?

    a. This (0.60%) is the real riskfree rate to use, if you are valuing US companies in real terms.

    b. This (0.60%) is the real riskfree rate to use, anywhere in the world

    Explain.

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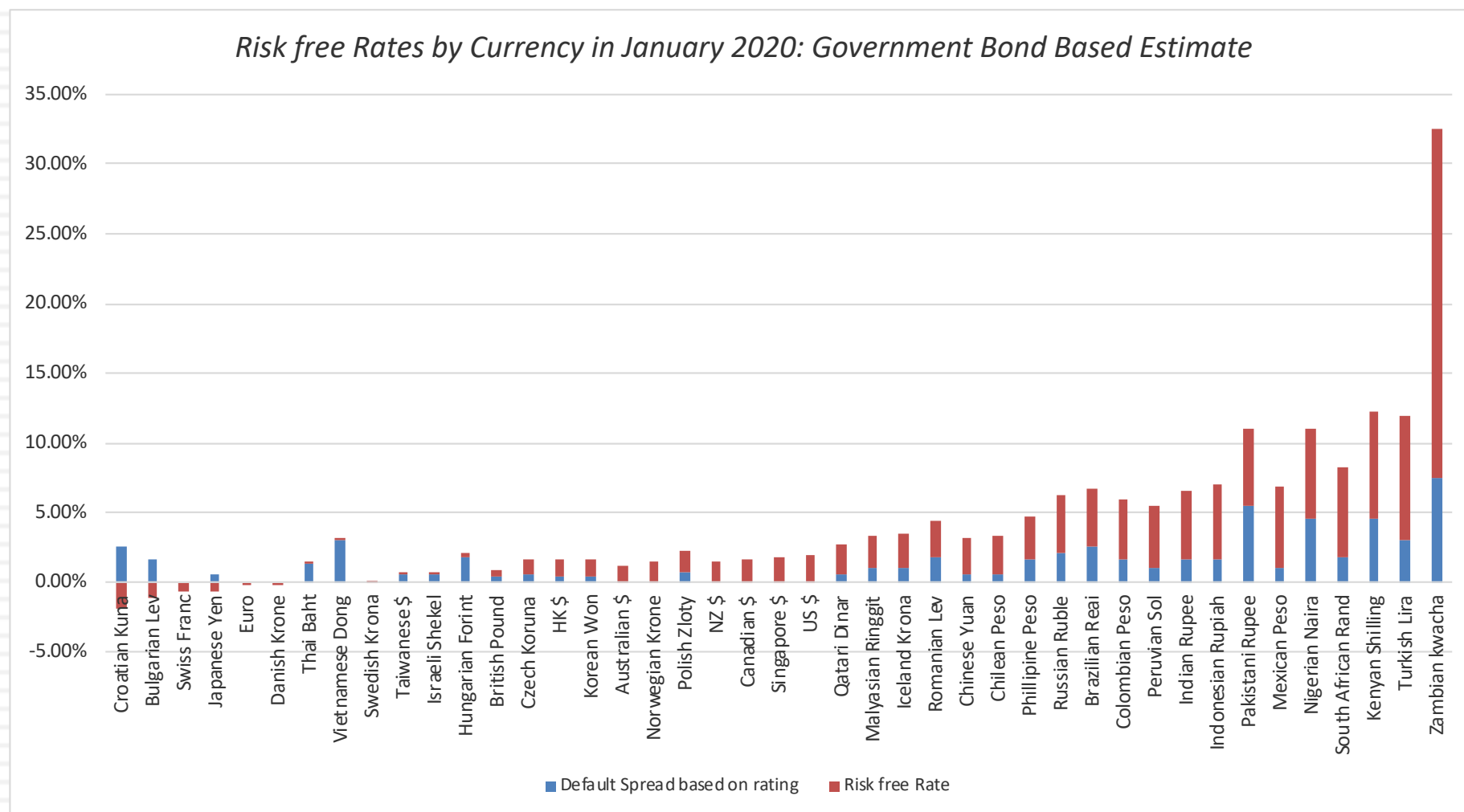# No default free entity: Choices with riskfree rates….

- ☐ Estimate a range for the riskfree rate in local terms:
  - ❑ Approach 1: Subtract default spread from local government bond rate: Government bond rate in local currency terms - Default spread for Government in local currency
  - ❑ Approach 2: Use forward rates and the riskless rate in an index currency (say Euros or dollars) to estimate the riskless rate in the local currency.
- ☐ Do the analysis in real terms (rather than nominal terms) using a real riskfree rate, which can be obtained in one of two ways –
  - ❑ from an inflation-indexed government bond, if one exists
  - ❑ set equal, approximately, to the long term real growth rate of the economy in which the valuation is being done.
- ☐ Do the analysis in a currency where you can get a riskfree rate, say US dollars or Euros.

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Why do risk free rates vary across currencies? January 2020 Risk free rates

Risk free Rates by Currency in January 2020: Government Bond Based Estimate

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Risk free Rate: Don't have or trust the government bond rate?

1. <u>Build up approach</u>: The risk free rate in any currency can be written as the sum of two variables:

   Risk free rate = Expected Inflation in currency + Expected real interest rate

   Thus, if the expected inflation rate in a country is expected to be 15% and the TIPs rate is 1%, the risk free rate is 16%.

2. <u>US $ rate & Differential Inflation</u>: Alternatively, you can scale up the US $ risk free rate by the differential inflation between the US $ and the currency in question:

   Risk free rate$_{Currency}$= $(1 + Riskfree\ rate_{US\ \$})\dfrac{\left(1 + Expected\ Inflation_{Foreign\ Currency}\right)}{\left(1 + Expected\ Inflation_{US\ \$}\right)} - 1$

   Thus, if the US $ risk free rate is 2.00%, the inflation rate in the foreign currency is 15% and the inflation rate in US $ is 1.5%, the foreign currency risk free rate is as follows:

   Risk free rate = $(1.02)\dfrac{(1.15)}{(1.015)} - 1$ = 15.57%

One more test on riskfree rates...

☐ On January 1, 2020, the 10-year treasury bond rate in the United States was 1.92%, low by historic standards. Assume that you were valuing a company in US dollars then, but were wary about the risk free rate being too low. Which of the following should you do?

   a. Replace the current 10-year bond rate with a more reasonable normalized riskfree rate (the average 10-year bond rate over the last 30 years has been about 5-6%)

   b. Use the current 10-year bond rate as your riskfree rate but make sure that your other assumptions (about growth and inflation) are consistent with the riskfree rate.

   c. Something else...

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Some perspective on risk free rates

US Ten-Year T.Bond versus Intrinsic Riskfree Rate
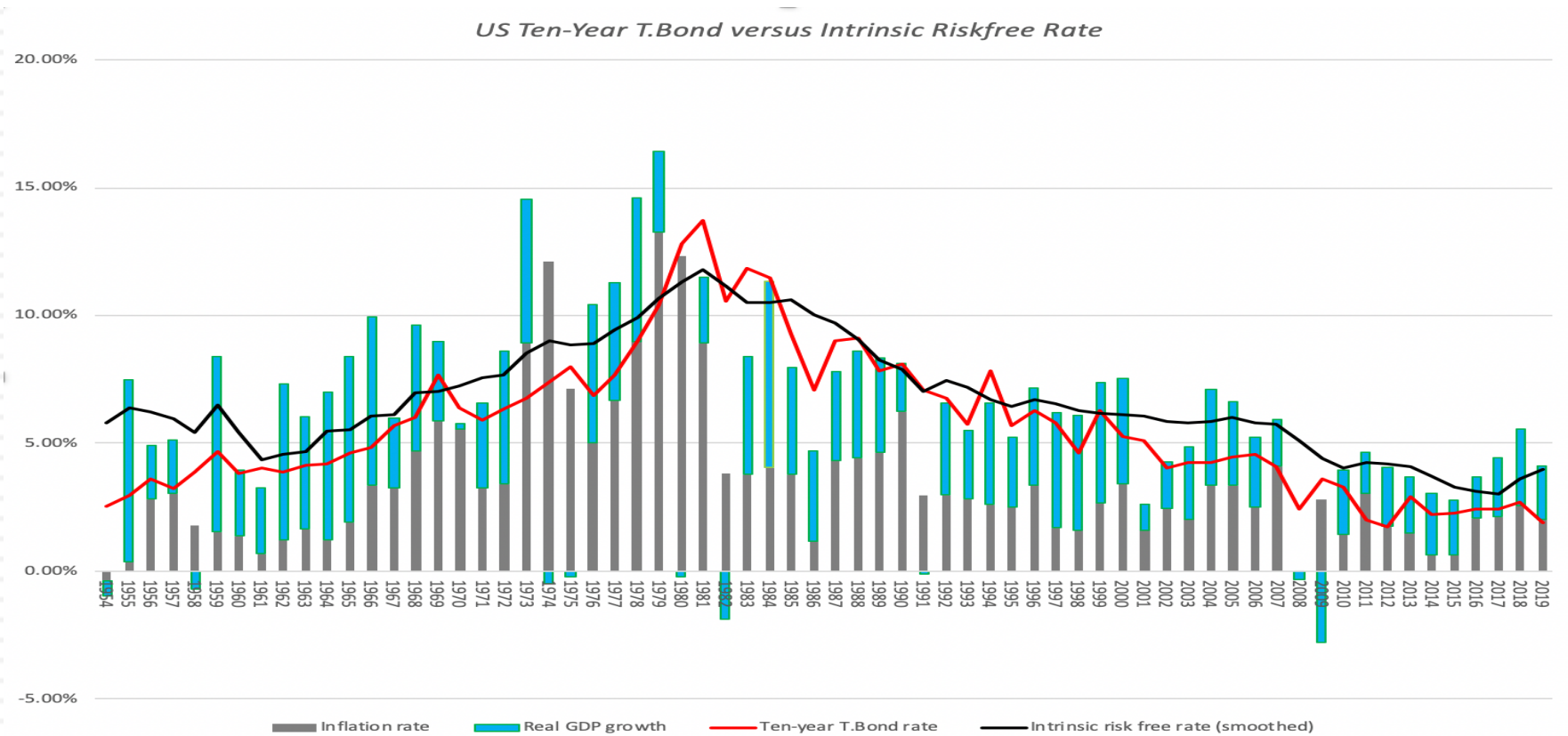
Period	T.Bond Rate	Inflation rae	Real GDP Growqth	Intrinsic Risk free rate	Difference
1954-2019	5.72%	3.53%	3.01%	6.54%	-0.82%
1954-1980	5.83%	4.49%	3.50%	7.98%	-2.15%
1981-2008	6.88%	3.26%	3.04%	6.30%	0.58%
2010-2019	2.38%	1.86%	1.72%	3.58%	-1.03%

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Negative Interest Rates?

☐ In 2020, there were at least three currencies (Swiss Franc, Japanese Yen, Euro) with negative interest rates and perhaps two more (Croatian Kuna, Bulgarian Lev). Using the fundamentals (inflation and real growth) approach, how would you explain negative interest rates?

    ❑ How negative can rates get? (Is there a bound?)

    ❑ Would you use these negative interest rates as risk free rates?

        ■ If no, why not and what would you do instead?

        ■ If yes, what else would you have to do in your valuation to be internally consistent?

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Discount Rates: II

The Equity Risk Premium

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II. The Equity Risk Premium
The ubiquitous historical risk premium

- □ The historical premium is the premium that stocks have historically earned over riskless securities.

- □ While the users of historical risk premiums act as if it is a fact (rather than an estimate), it is sensitive to
  - ◘ How far back you go in history...
  - ◘ Whether you use T.bill rates or T.Bond rates
  - ◘ Whether you use geometric or arithmetic averages.

- □ For instance, looking at the US:

	Arithmetic Average		Geometric Average	
	Stocks - T. Bills	Stocks - T. Bonds	Stocks - T. Bills	Stocks - T. Bonds
1928-2019	8.18%	6.43%	6.35%	4.83%
Std Error	2.08%	2.20%		
1970-2019	7.26%	4.50%	5.93%	3.52%
Std Error	2.38%	2.73%		
2010-2019	13.51%	9.67%	12.93%	9.31%
Std Error	3.85%	4.87%		

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The perils of trusting the past…….

- <u>Noisy estimates</u>: Even with long time periods of history, the risk premium that you derive will have substantial standard error. For instance, if you go back to 1928 (about 90 years of history) and you assume a standard deviation of 20% in annual stock returns, you arrive at a standard error of greater than 2%:

  Standard Error in Premium = $20\%/\sqrt{90}$ = 2.1%

- <u>Survivorship Bias</u>: Using historical data from the U.S. equity markets over the twentieth century does create a sampling bias. After all, the US economy and equity markets were among the most successful of the global economies that you could have invested in early in the century.

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Risk Premium for a Mature Market? Broadening the sample to 1900-2017

Country	Geometric Mean	Standard Error
Australia	5.00%	1.70%
Austria	2.90%	14.10%
Belgium	2.20%	1.90%
Canada	3.50%	1.70%
Denmark	2.20%	1.70%
Finland	5.20%	2.70%
France	3.10%	2.10%
Germany	5.10%	2.60%
Ireland	2.70%	1.80%
Italy	3.20%	2.70%
Japan	5.10%	3.00%
Netherlands	3.30%	2.00%
New Zealand	4.00%	1.60%
Norway	2.40%	2.50%
Portugal	5.30%	2.90%
South Africa	5.30%	1.80%
Spain	1.80%	1.90%
Sweden	3.10%	2.00%
Switzerland	2.20%	1.60%
U.K.	3.70%	1.60%
U.S.	4.40%	1.90%
Europe	3.00%	1.40%
World-ex U.S.	2.80%	1.30%
World	3.20%	1.40%

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The simplest way of estimating an additional country risk premium: The country default spread

- □ <u>Default spread for country</u>: In this approach, the country equity risk premium is set equal to the default spread for the country, estimated in one of three ways:
  - ❑ The default spread on a dollar denominated bond issued by the country. (In January 2020, that spread was % for the Brazilian $ bond) was 1.71%.
  - ❑ The sovereign CDS spread for the country. In January 2020, the ten-year CDS spread for Brazil, adjusted for the US CDS, was 1.56%.
  - ❑ The default spread based on the local currency rating for the country. Brazil's sovereign local currency rating is Ba2 and the default spread for a Ba2 rated sovereign was about 2.51% in January 2020.
- □ Add the default spread to a "mature" market premium: This default spread is added on to the mature market premium to arrive at the total equity risk premium for Brazil, assuming a mature market premium of 5.20%.
  - ❑ Country Risk Premium for Brazil = 2.51%
  - ❑ Total ERP for Brazil = 5.20% + 2.51% = 7.71%

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An equity volatility based approach to estimating the country total ERP

□ This approach draws on the standard deviation of two equity markets, the emerging market in question and a base market (usually the US). The total equity risk premium for the emerging market is then written as:

◻ Total equity risk premium = Risk Premium$_{US}$* $\sigma_{Country\ Equity}$ / $\sigma_{US\ Equity}$

□ The country equity risk premium is based upon the volatility of the market in question relative to U.S market.

◻ Assume that the equity risk premium for the US is 5.20%.

◻ Assume that the standard deviation in the Bovespa (Brazilian equity) is 30% and that the standard deviation for the S&P 500 (US equity) is 18%.

◻ Total Equity Risk Premium for Brazil = 5.20% (30%/18%) = 8.67%

◻ Country equity risk premium for Brazil = 8.67% - 5.20% = 3.47%

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A melded approach to estimating the additional country risk premium

- ☐ Country ratings measure default risk. While default risk premiums and equity risk premiums are highly correlated, one would expect equity spreads to be higher than debt spreads.

- ☐ Another is to multiply the bond default spread by the relative volatility of stock and bond prices in that market. Using this approach for Brazil in January 2020, you would get:

  - ❑ Country Equity risk premium = Default spread on country bond* $\sigma_{Country\ Equity}$ / $\sigma_{Country\ Bond}$
    - ■ Standard Deviation in Bovespa (Equity) = 30%
    - ■ Standard Deviation in Brazil government bond = 20%
    - ■ Default spread for Brazil= 2.51%
  - ❑ Brazil Country Risk Premium = 2.51% (30%/20%) = 3.77%
  - ❑ Brazil Total ERP = Mature Market Premium + CRP = 5.20% + 3.77% = 8.97%

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A Template for Estimating the ERP

ERP Estimation Procedure - January 1, 2020

Step 1: Mature Market Premium

Step 2: Assess country risk

Step 3: Convert country risk measure into an additional country risk premium for equity

Step 4: Estimate an ERP for country

Estimate the implied equity risk premium for S&P 500

On January 1, 2020, ERP for S&P 500 was roughly 5.20%

Check the sovereign local currency rating for the country, with Moody's.

If rating not available on Moody's, check on S&P & convert into Moody's equivalent

if sovereign rating is AAA → ERP for country = US ERP

If sovereign rating is less than AAA, get a default spread for the country, using one of
1. Spread on sovereign bond in US$
2. CDS spread
3. Ratings table

Relative Equity Market Volatility = Std dev of emerging market equity index/ Std dev of emerging market bond index

In january 2020 = 1.18

ERP for country = US ERP + Default Spread * Relative Equity Market Volatility

If there is no sovereign rating, get a country risk score from PRS.

Estimate an ERP based on PRS score

ERP for country = PRS-based ERP

Monthly

Every six months (in January and July)

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Country	ERP	CRP	Country	ERP	CRP
Andorra (Principality of)	7.08%	1.88%	Italy	7.37%	2.17%
Austria	5.59%	0.39%	Jersey (States of)	5.89%	0.69%
Belgium	5.80%	0.60%	Liechtenstein	5.20%	0.00%
Cyprus	8.16%	2.96%	Luxembourg	5.20%	0.00%
Denmark	5.20%	0.00%	Malta	6.04%	0.84%
Finland	5.59%	0.39%	Netherlands	5.20%	0.00%
France	5.69%	0.49%	Norway	5.20%	0.00%
Germany	5.20%	0.00%	Portugal	7.37%	2.17%
Greece	9.64%	4.44%	Spain	6.77%	1.57%
Guernsey (States of)	6.77%	1.57%	Sweden	5.20%	0.00%
Iceland	6.04%	0.84%	Switzerland	5.20%	0.00%
Ireland	6.04%	0.84%	Turkey	9.64%	4.44%
Isle of Man	5.69%	0.49%	United Kingdom	5.69%	0.49%
			Western Europe	**6.01%**	**0.81%**

Country	PRS Composite Risk Score	ERP	CRP
Algeria	63	11.62%	6.42%
Brunei	82.75	5.59%	0.39%
Gambia	63.75	11.62%	6.42%
Guinea	57	15.06%	9.86%
Guinea-Bissau	63.25	11.62%	6.42%
Guyana	63.75	11.62%	6.42%
Haiti	57.5	14.08%	8.88%
Iran	62.5	11.62%	6.42%
Korea, D.P.R.	50.5	17.03%	11.83%
Liberia	49.5	21.71%	16.51%
Libya	69.5	8.16%	2.96%
Madagascar	65.5	10.63%	5.43%
Malawi	63.5	11.62%	6.42%
Myanmar	64	11.62%	6.42%
Sierra Leone	57	15.06%	9.86%
Somalia	53	17.03%	11.83%
Sudan	39.75	21.71%	16.51%
Syria	53	17.03%	11.83%
Yemen, Republic	54.5	17.03%	11.83%
Zimbabwe	50.5	17.03%	11.83%

Country	ERP	CRP
Albania	9.64%	4.44%
Armenia	8.75%	3.55%
Azerbaijan	8.16%	2.96%
Belarus	11.62%	6.42%
Bosnia and Herzegovina	11.62%	6.42%
Bulgaria	7.08%	1.88%
Croatia	8.16%	2.96%
Czech Republic	5.80%	0.60%
Estonia	5.89%	0.69%
Georgia	8.16%	2.96%
Hungary	7.37%	2.17%
Kazakhstan	7.37%	2.17%
Kyrgyzstan	10.63%	5.43%
Latvia	6.38%	1.18%
Lithuania	6.38%	1.18%
Macedonia	8.75%	3.55%
Moldova	11.62%	6.42%
Montenegro	9.64%	4.44%
Poland	6.04%	0.84%
Romania	7.37%	2.17%
Russia	7.37%	2.17%
Serbia	8.75%	3.55%
Slovakia	6.04%	0.84%
Slovenia	6.77%	1.57%
Tajikistan	11.62%	6.42%
Ukraine	12.59%	7.39%
Uzbekistan	7.08%	1.88%
Eastern Europe & Russia	**7.34%**	**2.14%**

	ERP	CRP
Canada	5.20%	0.00%
United States	5.20%	0.00%
North America	**5.20%**	**0.00%**

Caribbean	**10.62%**	**5.42%**

	ERP	CRP
Argentina	14.08%	8.88%
Belize	11.62%	6.42%
Bolivia	8.75%	3.55%
Brazil	8.16%	2.96%
Chile	5.89%	0.69%
Colombia	7.08%	1.88%
Costa Rica	9.64%	4.44%
Ecuador	11.62%	6.42%
El Salvador	14.08%	8.88%
Guatemala	7.66%	2.46%
Honduras	9.64%	4.44%
Mexico	6.38%	1.18%
Nicaragua	10.63%	5.43%
Panama	6.77%	1.57%
Paraguay	7.66%	2.46%
Peru	6.38%	1.18%
Suriname	10.63%	5.43%
Uruguay	9.64%	4.44%
Venezuela	22.89%	17.69%
Central and South America	**8.48%**	**3.28%**

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Country	ERP	CRP
Angola	11.62%	6.42%
Benin	10.63%	5.43%
Botswana	6.04%	0.84%
Burkina Faso	10.63%	5.43%
Cameroon	10.63%	5.43%
Cape Verde	10.63%	5.43%
Congo (Democratic Republic of)	12.59%	7.39%
Congo (Republic of)	14.08%	8.88%
Côte d'Ivoire	8.75%	3.55%
Egypt	10.63%	5.43%
Ethiopia	9.64%	4.44%
Gabon	12.59%	7.39%
Ghana	11.62%	6.42%
Kenya	10.63%	5.43%
Mali	11.62%	6.42%
Morocco	7.66%	2.46%
Mozambique	14.08%	8.88%
Namibia	8.16%	2.96%
Niger	11.62%	6.42%
Nigeria	10.63%	5.43%
Rwanda	10.63%	5.43%
Senegal	8.75%	3.55%
South Africa	7.37%	2.17%
Swaziland	10.63%	5.43%
Tanzania	9.64%	4.44%
Togo	11.62%	6.42%
Tunisia	10.63%	5.43%
Uganda	10.63%	5.43%
Zambia	14.08%	8.88%
Africa	**9.89%**	**4.69%**

	ERP	CRP
Abu Dhabi	5.69%	0.49%
Bahrain	10.63%	5.43%
Iraq	12.59%	7.39%
Israel	5.89%	0.69%
Jordan	9.64%	4.44%
Kuwait	5.69%	0.49%
Lebanon	14.08%	8.88%
Oman	7.66%	2.46%
Qatar	5.80%	0.60%
Ras Al Khaimah	12.59%	7.39%
Saudi Arabia	5.89%	0.69%
Sharjah	6.38%	1.18%
United Arab Emirates	5.69%	0.49%
Middle East	**6.77%**	**1.57%**

	ERP	CRP
Bangladesh	8.75%	3.55%
Cambodia	10.63%	5.43%
China	5.89%	0.69%
Fiji	8.75%	3.55%
Hong Kong	5.69%	0.49%
India	7.08%	1.88%
Indonesia	7.08%	1.88%
Japan	5.89%	0.69%
Korea	5.69%	0.49%
Macao	5.80%	0.60%
Malaysia	6.38%	1.18%
Maldives	10.63%	5.43%
Mauritius	6.77%	1.57%
Mongolia	11.62%	6.42%
Pakistan	11.62%	6.42%
Papua New Guinea	10.63%	5.43%
Philippines	7.08%	1.88%
Singapore	5.20%	0.00%
Solomon Islands	11.62%	6.42%
Sri Lanka	10.63%	5.43%
Taiwan	5.80%	0.60%
Thailand	6.77%	1.57%
Vietnam	8.75%	3.55%
Asia	**6.21%**	**1.01%**

Australia	5.20%	
Cook Islands	9.64%	
New Zealand	5.20%	
Australia & New Zealand	**5.20%**	

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

From Country Equity Risk Premiums to Corporate Equity Risk premiums

- Approach 1: Assume that every company in the country is equally exposed to country risk. In this case,

  - E(Return) = Riskfree Rate + CRP + Beta (Mature ERP)

- Approach 2: Assume that a company's exposure to country risk is similar to its exposure to other market risk.

  - E(Return) = Riskfree Rate + Beta (Mature ERP+ CRP)

- Approach 3: Treat country risk as a separate risk factor and allow firms to have different exposures to country risk (perhaps based upon the proportion of their revenues come from non-domestic sales)

  - E(Return)=Riskfree Rate+ (Mature ERP) + λ (CRP)

  Mature ERP = Mature market Equity Risk Premium

  CRP = Additional country risk premium

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