

Discount Rate (Risk-Free Rate and Market Risk Premium) used for 41 countries in 2017: a survey

Pablo Fernandez. Professor of Finance. IESE Business School, fernandezpa@iese.edu
Vitaly Pershin. Research Assistant. IESE. e-mail: PershinVitaly@iese.edu
Isabel F. Acin. Independent researcher. University of Navarra. ifernandez.28@alumni.unav.es

ABSTRACT

This paper contains the statistics of a survey about the Risk-Free Rate (R_F) and the Market Risk Premium (MRP) used in 2017 for **41 countries**. We got answers for 68 countries, but we only report the results for 41 countries with more than 25 answers.

The average (R_F) used in 2017 was smaller than the one used in 2015 in 12 countries (in 5 of them the difference was more than 1%). In 10 countries the average (R_F) used in 2017 was more than a 1% higher than the one used in 2015 (see table 6).

The change between 2015 and 2017 of the average Market risk premium used was higher than 1% for 11 countries (see table 6).

Most of the respondents use for Europe and UK a Risk-Free Rate (R_F) higher than the yield of the 10-year Government bonds. Due to Quantitative Easing, the Risk-Free Rate (R_F) and the Market Risk Premium (MRP) reported for Euro countries are negatively correlated (Spain -51%; Germany -28%; France -47%; Italy -30%)

1. Market Risk Premium (MRP), Risk Free Rate (R_F) and K_m [$R_F + MRP$] used in 2017 in 41 countries
 2. Changes from 2015 to 2017
 3. R_F used in 2013, 2015 and 2017 for US, Europe and UK vs. yield of the 10-year Government bonds
 4. Previous surveys
 5. Expected and Required Equity Premium: different concepts
 6. Conclusion
- Exhibit 1. Mail sent on March 2017
Exhibit 2. Some comments and webs recommended by respondents

JEL Classification: G12, G31, M21

Keywords: equity premium; required equity premium; expected equity premium; risk-free rate; heterogeneous expectations

April 17, 2017

xPpLhMaO

1. Market Risk Premium (MRP), Risk Free Rate (R_F) and K_m [R_F + MRP] used in 2015 in 41 countries

We sent a short email (see exhibit 1) on March, 2017 to more 20,000 email addresses of finance and economic professors, analysts and managers of companies obtained from previous correspondence, papers and webs of companies and universities. We asked about the Risk Free Rate and the Market Risk Premium (MRP) used *“to calculate the required return to equity in different countries”*.

By April 17, 2017, we had received 1,874 emails. 193 persons answered that they do not use MRP for different reasons (see table 1). The remaining emails had specific Risk Free Rates and MRPs used in 2017 for one or more countries.¹ We would like to sincerely thank everyone who took the time to answer us.

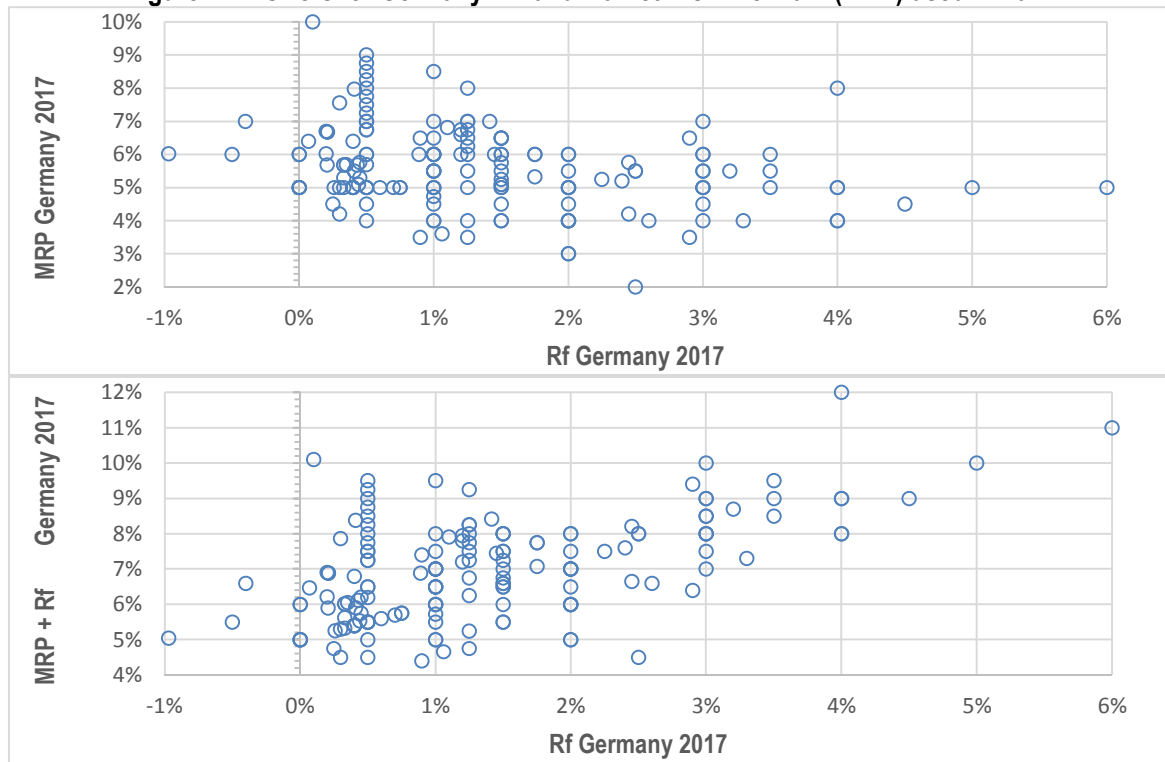
Table 1. MRP and RF used in 2017: 1,874 emails

	Total
Answers reported (MRP figures)	4,368
Outliers	37
Answers for 27 countries with less than 25 answers	243
Only MRP or RF (not both)	72
Answers that do not provide figures	193

Table 2 contains the statistics of the **MRP** used in 2017 for **41 countries**. We got answers for 68 countries, but we only report the results for 41 countries with more than 25 answers. **Table 3** contains the statistics of the Risk-Free Rate (**R_F**) used in 2017 in the 41 countries and **Table 4** contains the statistics of **K_m** (required return to equity: $K_m = \text{Risk-Free Rate} + \text{MRP}$).

Figure 1 is a graphic representation of the answers (MRP and R_F) we got for Germany.

Figure 1. Answers for Germany. R_F and Market Risk Premium (MRP) used in 2017



¹ We considered 37 of them as outliers because they provided a very small MRP (for example, -1% and 0% for the USA) or a very high MRP (for example, 27% for the USA).

Table 2. Market Risk Premium (MRP) used for 41 countries² in 2017

MRP	Number of answers	average	Median	St. Dev.	max	min
USA	1613	5,7%	5,7%	1,5%	12,0%	1,5%
Spain	472	6,6%	6,8%	1,7%	15,0%	2,7%
Germany	297	5,7%	5,9%	1,3%	10,0%	1,9%
France	134	6,5%	6,7%	1,1%	9,0%	4,0%
United Kingdom	91	5,9%	6,2%	1,2%	8,4%	2,4%
Italy	86	6,4%	6,7%	1,2%	9,0%	3,6%
Canada	106	6,0%	6,4%	1,3%	8,6%	1,6%
Portugal	68	7,6%	8,0%	1,3%	10,4%	4,0%
Switzerland	64	7,1%	7,5%	1,2%	9,9%	4,0%
Belgium	65	6,4%	6,6%	0,9%	8,5%	4,0%
Sweden	81	6,8%	7,1%	1,2%	10,0%	4,0%
Denmark	81	6,1%	6,3%	0,8%	8,1%	4,0%
Finland	78	5,9%	6,1%	0,7%	7,7%	4,0%
Japan	84	6,0%	6,1%	1,3%	8,5%	2,8%
Norway	42	6,1%	6,3%	0,8%	8,1%	4,0%
Brazil	43	9,0%	9,6%	2,3%	15,0%	3,0%
Ireland	68	6,7%	6,8%	0,7%	8,6%	5,0%
China	63	7,5%	7,8%	1,3%	10,3%	3,6%
Mexico	51	9,3%	10,1%	3,1%	21,5%	2,0%
Russia	43	7,7%	8,1%	1,5%	10,8%	4,3%
India	42	8,5%	9,0%	2,3%	13,0%	2,2%
South Africa	29	7,5%	7,8%	1,1%	10,0%	4,0%
Australia	26	7,3%	7,6%	1,2%	10,0%	5,0%
Chile	39	6,2%	6,4%	0,7%	8,1%	4,1%
Uruguay	78	8,0%	8,3%	1,1%	10,7%	5,0%
Poland	32	6,4%	6,6%	0,8%	8,5%	4,0%
Peru	41	7,6%	7,8%	0,9%	10,0%	4,8%
Czech Republic	28	6,2%	6,4%	0,7%	8,1%	4,0%
Indonesia	38	8,9%	9,1%	0,8%	11,4%	7,0%
Israel	41	6,5%	6,6%	0,7%	8,5%	5,0%
Korea (South)	39	6,6%	6,8%	0,7%	8,6%	5,0%
Netherlands	43	6,0%	6,2%	0,8%	8,0%	4,0%
New Zealand	27	5,6%	5,9%	1,5%	8,2%	1,6%
Thailand	29	8,2%	8,5%	1,0%	10,8%	6,0%
Turkey	27	8,0%	8,6%	1,7%	11,3%	3,1%
Austria	32	6,4%	6,6%	0,9%	8,5%	4,0%
Greece	31	16,2%	17,6%	3,8%	23,3%	5,0%
Colombia	29	7,6%	8,1%	1,5%	10,6%	2,7%
Hungary	27	8,4%	8,6%	0,9%	10,8%	6,0%
Venezuela	29	17,4%	18,2%	3,4%	24,3%	8,4%
Argentina	31	16,3%	17,5%	5,5%	35,0%	5,0%

² We maintain the order of the countries that we had in the paper of the 2015 survey: "Discount Rate (Risk-Free Rate and Market Risk Premium) Used for 41 Countries in 2015: A Survey" <https://ssrn.com/abstract=2598104>

Table 3. Risk Free Rate (RF) used for 41 countries in 2017

RF	Number of answers	average	Median	St. Dev.	max	min
USA	1613	2,5%	2,5%	1,0%	6,9%	0,0%
Spain	472	2,2%	2,4%	1,0%	5,0%	0,0%
Germany	297	1,4%	1,3%	1,2%	6,0%	-1,0%
France	134	1,8%	2,2%	1,2%	4,0%	0,1%
United Kingdom	91	2,2%	2,5%	1,0%	4,0%	0,4%
Italy	86	2,6%	3,0%	1,1%	5,0%	0,4%
Canada	106	3,0%	3,2%	1,7%	9,4%	0,5%
Portugal	68	3,5%	4,0%	1,0%	5,0%	1,8%
Switzerland	64	1,3%	1,4%	1,0%	4,0%	-0,2%
Belgium	65	1,7%	2,0%	1,1%	4,0%	0,2%
Sweden	81	1,7%	2,0%	1,0%	4,0%	0,2%
Denmark	81	1,6%	1,9%	1,1%	4,0%	0,1%
Finland	78	1,7%	2,3%	1,2%	4,0%	0,0%
Japan	84	0,3%	0,4%	0,3%	1,2%	-0,1%
Norway	42	2,3%	2,6%	0,8%	4,0%	0,4%
Brazil	43	9,0%	9,8%	2,1%	12,3%	4,0%
Ireland	68	1,7%	2,0%	0,7%	3,5%	0,7%
China	63	3,3%	3,6%	0,9%	4,5%	0,1%
Mexico	51	6,7%	7,0%	0,7%	8,3%	5,0%
Russia	43	8,7%	9,2%	1,1%	10,2%	5,3%
India	42	6,5%	6,7%	0,7%	7,5%	5,0%
South Africa	29	7,5%	8,3%	1,3%	9,2%	4,0%
Australia	26	3,0%	3,1%	0,6%	4,8%	2,0%
Chile	39	4,5%	4,4%	1,3%	9,4%	2,5%
Uruguay	78	4,5%	4,7%	0,6%	5,6%	3,4%
Poland	32	3,4%	3,6%	0,5%	4,0%	1,5%
Peru	41	5,5%	5,7%	0,5%	6,0%	4,0%
Czech Republic	28	2,5%	2,9%	1,3%	6,3%	0,7%
Indonesia	38	7,2%	7,4%	0,6%	8,5%	6,0%
Israel	41	1,9%	2,2%	0,7%	2,8%	0,1%
Korea (South)	39	2,4%	2,5%	0,5%	3,5%	1,4%
Netherlands	43	1,7%	2,1%	1,1%	4,0%	0,2%
New Zealand	27	2,9%	3,3%	0,9%	4,0%	1,4%
Thailand	29	3,0%	3,0%	0,6%	4,5%	2,0%
Turkey	27	10,5%	10,8%	0,8%	11,5%	8,0%
Austria	32	1,6%	2,0%	1,1%	4,0%	0,0%
Greece	31	4,8%	6,0%	2,3%	7,6%	0,2%
Colombia	29	6,6%	6,8%	1,0%	8,2%	3,8%
Hungary	27	3,6%	3,9%	0,7%	5,0%	2,5%
Venezuela	29	11,5%	12,1%	1,5%	15,0%	8,0%
Argentina	31	10,5%	12,7%	6,4%	23,0%	1,6%

Table 4. Km [Required return to equity (market): RF + MRP] used for 41 countries in 2017

Km	Number of answers	average	Median	St. Dev.	max	min
USA	1613	8,2%	8,4%	1,8%	15,0%	3,5%
Spain	472	8,8%	8,7%	1,6%	15,2%	4,1%
Germany	297	7,2%	7,0%	1,4%	12,0%	4,4%
France	134	8,3%	7,9%	1,1%	10,6%	5,7%
United Kingdom	91	8,1%	7,7%	1,1%	10,3%	5,8%
Italy	86	9,0%	8,5%	1,1%	11,3%	6,5%
Canada	106	9,0%	8,4%	1,4%	11,8%	5,5%
Portugal	68	11,1%	10,6%	1,3%	13,5%	8,0%
Switzerland	64	8,4%	8,3%	1,5%	12,9%	4,9%
Belgium	65	8,1%	7,7%	0,9%	10,0%	6,3%
Sweden	81	8,5%	8,2%	1,2%	12,0%	5,8%
Denmark	81	7,6%	7,3%	0,9%	9,5%	5,9%
Finland	78	7,6%	7,6%	1,0%	9,5%	6,0%
Japan	84	6,3%	6,5%	1,2%	8,7%	3,7%
Norway	42	8,4%	7,9%	0,8%	10,0%	7,0%
Brazil	43	18,0%	17,0%	2,6%	26,8%	9,5%
Ireland	68	8,4%	8,1%	0,7%	9,7%	6,5%
China	63	10,8%	10,6%	1,3%	13,0%	6,4%
Mexico	51	16,0%	16,6%	3,0%	28,0%	8,0%
Russia	43	16,5%	16,0%	1,4%	19,5%	13,6%
India	42	15,0%	15,4%	2,1%	19,2%	8,6%
South Africa	29	15,0%	14,4%	1,5%	17,5%	8,0%
Australia	26	10,3%	10,4%	1,1%	13,0%	8,0%
Chile	39	10,8%	10,6%	1,1%	13,5%	9,0%
Uruguay	78	12,5%	12,5%	1,1%	15,1%	9,0%
Poland	32	9,8%	9,6%	0,8%	11,7%	7,5%
Peru	41	13,0%	13,0%	1,0%	15,9%	9,8%
Czech Republic	28	8,7%	8,6%	1,1%	11,3%	6,7%
Indonesia	38	16,1%	15,8%	1,0%	19,1%	13,0%
Israel	41	8,4%	8,0%	0,9%	10,8%	5,4%
Korea (South)	39	9,0%	8,8%	0,7%	10,6%	7,5%
Netherlands	43	7,7%	7,3%	0,9%	9,6%	5,7%
New Zealand	27	8,5%	8,3%	1,3%	10,8%	5,3%
Thailand	29	11,2%	11,0%	0,9%	13,5%	9,0%
Turkey	27	18,5%	18,6%	1,8%	22,7%	12,0%
Austria	32	8,0%	7,6%	1,0%	9,9%	5,9%
Greece	31	20,9%	20,6%	3,7%	26,9%	8,5%
Colombia	29	14,1%	13,9%	1,5%	16,9%	6,5%
Hungary	27	12,0%	11,6%	0,9%	14,0%	9,5%
Venezuela	29	28,9%	29,1%	3,0%	35,7%	22,4%
Argentina	31	26,7%	22,5%	7,2%	58,0%	13,0%

Table 5. Market Risk Premium (MRP), Risk Free Rate (Rf) and Km
 (Required return to equity: $Km = Rf + MRP$) used for 41 countries in 2017

	n	average			st dev			Median		
		Km	Rf	MRP	Km	Rf	MRP	Km	Rf	MRP
USA	1613	8,2%	2,5%	5,7%	1,8%	1,0%	1,5%	8,4%	2,5%	5,7%
Spain	472	8,8%	2,2%	6,6%	1,6%	1,0%	1,7%	8,7%	2,4%	6,8%
Germany	297	7,2%	1,4%	5,7%	1,4%	1,2%	1,3%	7,0%	1,3%	5,9%
France	134	8,3%	1,8%	6,5%	1,1%	1,2%	1,1%	7,9%	2,2%	6,7%
United Kingdom	91	8,1%	2,2%	5,9%	1,1%	1,0%	1,2%	7,7%	2,5%	6,2%
Italy	86	9,0%	2,6%	6,4%	1,1%	1,1%	1,2%	8,5%	3,0%	6,7%
Canada	106	9,0%	3,0%	6,0%	1,4%	1,7%	1,3%	8,4%	3,2%	6,4%
Portugal	68	11,1%	3,5%	7,6%	1,3%	1,0%	1,3%	10,6%	4,0%	8,0%
Switzerland	64	8,4%	1,3%	7,1%	1,5%	1,0%	1,2%	8,3%	1,4%	7,5%
Belgium	65	8,1%	1,7%	6,4%	0,9%	1,1%	0,9%	7,7%	2,0%	6,6%
Sweden	81	8,5%	1,7%	6,8%	1,2%	1,0%	1,2%	8,2%	2,0%	7,1%
Denmark	81	7,6%	1,6%	6,1%	0,9%	1,1%	0,8%	7,3%	1,9%	6,3%
Finland	78	7,6%	1,7%	5,9%	1,0%	1,2%	0,7%	7,6%	2,3%	6,1%
Japan	84	6,3%	0,3%	6,0%	1,2%	0,3%	1,3%	6,5%	0,4%	6,1%
Norway	42	8,4%	2,3%	6,1%	0,8%	0,8%	0,8%	7,9%	2,6%	6,3%
Brazil	43	18,0%	9,0%	9,0%	2,6%	2,1%	2,3%	17,0%	9,8%	9,6%
Ireland	68	8,4%	1,7%	6,7%	0,7%	0,7%	0,7%	8,1%	2,0%	6,8%
China	63	10,8%	3,3%	7,5%	1,3%	0,9%	1,3%	10,6%	3,6%	7,8%
Mexico	51	16,0%	6,7%	9,3%	3,0%	0,7%	3,1%	16,6%	7,0%	10,1%
Russia	43	16,5%	8,7%	7,7%	1,4%	1,1%	1,5%	16,0%	9,2%	8,1%
India	42	15,0%	6,5%	8,5%	2,1%	0,7%	2,3%	15,4%	6,7%	9,0%
South Africa	29	15,0%	7,5%	7,5%	1,5%	1,3%	1,1%	14,4%	8,3%	7,8%
Australia	26	10,3%	3,0%	7,3%	1,1%	0,6%	1,2%	10,4%	3,1%	7,6%
Chile	39	10,8%	4,5%	6,2%	1,1%	1,3%	0,7%	10,6%	4,4%	6,4%
Uruguay	78	12,5%	4,5%	8,0%	1,1%	0,6%	1,1%	12,5%	4,7%	8,3%
Poland	32	9,8%	3,4%	6,4%	0,8%	0,5%	0,8%	9,6%	3,6%	6,6%
Peru	41	13,0%	5,5%	7,6%	1,0%	0,5%	0,9%	13,0%	5,7%	7,8%
Czech Republic	28	8,7%	2,5%	6,2%	1,1%	1,3%	0,7%	8,6%	2,9%	6,4%
Indonesia	38	16,1%	7,2%	8,9%	1,0%	0,6%	0,8%	15,8%	7,4%	9,1%
Israel	41	8,4%	1,9%	6,5%	0,9%	0,7%	0,7%	8,0%	2,2%	6,6%
Korea (South)	39	9,0%	2,4%	6,6%	0,7%	0,5%	0,7%	8,8%	2,5%	6,8%
Netherlands	43	7,7%	1,7%	6,0%	0,9%	1,1%	0,8%	7,3%	2,1%	6,2%
New Zealand	27	8,5%	2,9%	5,6%	1,3%	0,9%	1,5%	8,3%	3,3%	5,9%
Thailand	29	11,2%	3,0%	8,2%	0,9%	0,6%	1,0%	11,0%	3,0%	8,5%
Turkey	27	18,5%	10,5%	8,0%	1,8%	0,8%	1,7%	18,6%	10,8%	8,6%
Austria	32	8,0%	1,6%	6,4%	1,0%	1,1%	0,9%	7,6%	2,0%	6,6%
Greece	31	20,9%	4,8%	16,2%	3,7%	2,3%	3,8%	20,6%	6,0%	17,6%
Colombia	29	14,1%	6,6%	7,6%	1,5%	1,0%	1,5%	13,9%	6,8%	8,1%
Hungary	27	12,0%	3,6%	8,4%	0,9%	0,7%	0,9%	11,6%	3,9%	8,6%
Venezuela	29	28,9%	11,5%	17,4%	3,0%	1,5%	3,4%	29,1%	12,1%	18,2%
Argentina	31	26,7%	10,5%	16,3%	7,2%	6,4%	5,5%	22,5%	12,7%	17,5%

2. Changes from 2015 to 2017

In this section, we compare the results of 2017 with the results of a similar survey collected in 2015 (see <https://ssrn.com/abstract=2598104>).

**Table 6. Market Risk Premium (MRP), Risk Free Rate (RF) and Km
 Difference of the averages of the surveys of 2017 and 2015**

	Average 2017			Average 2017 - Average 2015		
	Km	RF	MRP	Km	RF	MRP
USA	8,2%	2,5%	5,7%	0,3%	0,1%	0,2%
Spain	8,8%	2,2%	6,6%	0,7%	0,0%	0,7%
Germany	7,2%	1,4%	5,7%	0,6%	0,1%	0,4%
France	8,3%	1,8%	6,5%	1,1%	0,3%	0,9%
United Kingdom	8,1%	2,2%	5,9%	0,9%	0,1%	0,7%
Italy	9,0%	2,6%	6,4%	2,0%	1,1%	1,0%
Canada	9,0%	3,0%	6,0%	0,7%	0,7%	0,1%
Portugal	11,1%	3,5%	7,6%	3,8%	1,9%	1,9%
Switzerland	8,4%	1,3%	7,1%	1,9%	0,2%	1,7%
Belgium	8,1%	1,7%	6,4%	1,4%	0,4%	0,9%
Sweden	8,5%	1,7%	6,8%	2,0%	0,6%	1,4%
Denmark	7,6%	1,6%	6,1%	0,8%	0,3%	0,6%
Finland	7,6%	1,7%	5,9%	0,7%	0,5%	0,2%
Japan	6,3%	0,3%	6,0%	-0,3%	-0,4%	0,2%
Norway	8,4%	2,3%	6,1%	1,6%	0,9%	0,6%
Brazil	18,0%	9,0%	9,0%	1,5%	0,0%	1,5%
Ireland	8,4%	1,7%	6,7%	1,7%	0,4%	1,2%
China	10,8%	3,3%	7,5%	-1,8%	-1,2%	-0,6%
Mexico	16,0%	6,7%	9,3%	3,8%	2,4%	1,3%
Russia	16,5%	8,7%	7,7%	-0,6%	1,3%	-2,0%
India	15,0%	6,5%	8,5%	-0,8%	-0,9%	0,1%
South Africa	15,0%	7,5%	7,5%	-0,9%	-0,7%	-0,2%
Australia	10,3%	3,0%	7,3%	1,1%	-0,1%	1,3%
Chile	10,8%	4,5%	6,2%	0,4%	0,6%	-0,3%
Uruguay	12,5%	4,5%	8,0%	1,9%	0,9%	0,9%
Poland	9,8%	3,4%	6,4%	1,9%	0,7%	1,2%
Peru	13,0%	5,5%	7,6%	1,8%	1,5%	0,4%
Czech Republic	8,7%	2,5%	6,2%	1,3%	0,7%	0,6%
Indonesia	16,1%	7,2%	8,9%	-0,3%	-0,3%	0,0%
Israel	8,4%	1,9%	6,5%	2,3%	1,0%	1,3%
Korea (South)	9,0%	2,4%	6,6%	0,5%	0,1%	0,4%
Netherlands	7,7%	1,7%	6,0%	0,1%	-0,1%	0,1%
New Zealand	8,5%	2,9%	5,6%	-1,0%	0,0%	-1,0%
Thailand	11,2%	3,0%	8,2%	-4,8%	-5,7%	0,9%
Turkey	18,5%	10,5%	8,0%	1,3%	2,7%	-1,3%
Austria	8,0%	1,6%	6,4%	-0,4%	-1,2%	0,7%
Greece	20,9%	4,8%	16,2%	-8,4%	-10,2%	1,9%
Colombia	14,1%	6,6%	7,6%	2,0%	2,8%	-0,7%
Hungary	12,0%	3,6%	8,4%	2,5%	3,0%	-0,4%
Venezuela	28,9%	11,5%	17,4%	5,8%	8,0%	-2,2%
Argentina	26,7%	10,5%	16,3%	-8,8%	-2,1%	-6,6%

**Table 7. Market Risk Premium (MRP), Risk Free Rate (RF) and Km
 Difference of the averages and of the St. Dev. of the surveys of 2017 and 2015**

	Average 2017 -Average 2015			average Km 2017	St. Dev. 2017 -St. Dev. 2015		
	Km	RF	MRP		Km	RF	MRP
Venezuela	5,8%	8,0%	-2,2%	28,9%	-1,7%	-0,1%	-0,3%
Mexico	3,8%	2,4%	1,3%	16,0%	1,4%	-0,3%	1,6%
Portugal	3,8%	1,9%	1,9%	11,1%	-0,6%	0,1%	-0,2%
Hungary	2,5%	3,0%	-0,4%	12,0%	-0,5%	-0,3%	0,1%
Israel	2,3%	1,0%	1,3%	8,4%	-1,0%	-0,3%	-0,4%
Italy	2,0%	1,1%	1,0%	9,0%	-1,0%	0,0%	-0,3%
Colombia	2,0%	2,8%	-0,7%	14,1%	-0,1%	-0,2%	0,1%
Sweden	2,0%	0,6%	1,4%	8,5%	-0,5%	0,2%	-0,1%
Switzerland	1,9%	0,2%	1,7%	8,4%	-0,1%	0,3%	0,0%
Uruguay	1,9%	0,9%	0,9%	12,5%	-0,1%	0,2%	0,2%
Poland	1,9%	0,7%	1,2%	9,8%	-0,6%	0,0%	-0,2%
Peru	1,8%	1,5%	0,4%	13,0%	-0,6%	-0,4%	-0,3%
Ireland	1,7%	0,4%	1,2%	8,4%	-1,1%	-0,2%	-0,6%
Norway	1,6%	0,9%	0,6%	8,4%	-1,1%	-0,3%	-0,4%
Brazil	1,5%	0,0%	1,5%	18,0%	-1,2%	-0,7%	0,2%
Belgium	1,4%	0,4%	0,9%	8,1%	-0,9%	0,2%	-0,4%
Turkey	1,3%	2,7%	-1,3%	18,5%	-0,5%	0,1%	-0,8%
Czech Republic	1,3%	0,7%	0,6%	8,7%	-0,3%	0,2%	0,0%
Australia	1,1%	-0,1%	1,3%	10,3%	-3,2%	-0,5%	-2,8%
France	1,1%	0,3%	0,9%	8,3%	-0,5%	0,2%	-0,3%
United Kingdom	0,9%	0,1%	0,7%	8,1%	-0,8%	0,2%	-0,5%
Denmark	0,8%	0,3%	0,6%	7,6%	-0,9%	0,1%	-0,4%
Finland	0,7%	0,5%	0,2%	7,6%	-0,6%	0,3%	-0,4%
Canada	0,7%	0,7%	0,1%	9,0%	0,0%	0,7%	0,0%
Spain	0,7%	0,0%	0,7%	8,8%	-0,4%	-0,2%	0,1%
Germany	0,6%	0,1%	0,4%	7,2%	-0,3%	0,4%	-0,2%
Korea (South)	0,5%	0,1%	0,4%	9,0%	-1,3%	-0,1%	-0,8%
Chile	0,4%	0,6%	-0,3%	10,8%	-0,2%	0,2%	-0,2%
USA	0,3%	0,1%	0,2%	8,2%	0,1%	-0,1%	0,1%
Netherlands	0,1%	-0,1%	0,1%	7,7%	0,0%	0,5%	0,2%
Japan	-0,3%	-0,4%	0,2%	6,3%	-1,2%	-0,7%	-0,7%
Indonesia	-0,3%	-0,3%	0,0%	16,1%	-0,4%	0,2%	-0,4%
Austria	-0,4%	-1,2%	0,7%	8,0%	-0,4%	-0,1%	0,6%
Russia	-0,6%	1,3%	-2,0%	16,5%	-2,9%	-1,6%	-1,4%
India	-0,8%	-0,9%	0,1%	15,0%	-0,9%	-0,4%	-0,2%
South Africa	-0,9%	-0,7%	-0,2%	15,0%	-1,4%	0,4%	-1,2%
New Zealand	-1,0%	0,0%	-1,0%	8,5%	0,5%	0,0%	0,2%
China	-1,8%	-1,2%	-0,6%	10,8%	-4,4%	-1,2%	-4,3%
Thailand	-4,8%	-5,7%	0,9%	11,2%	-1,5%	-1,5%	0,1%
Greece	-8,4%	-10,2%	1,9%	20,9%	-5,0%	-3,2%	-2,0%
Argentina	-8,8%	-2,1%	-6,6%	26,7%	-7,5%	1,9%	-6,8%

3. R_F used in 2013, 2015 and 2017 for US, Europe and UK vs. yield of the 10-year Government bonds

Figure 5. Yield on 10-year Gov. Bonds. 4 Countries

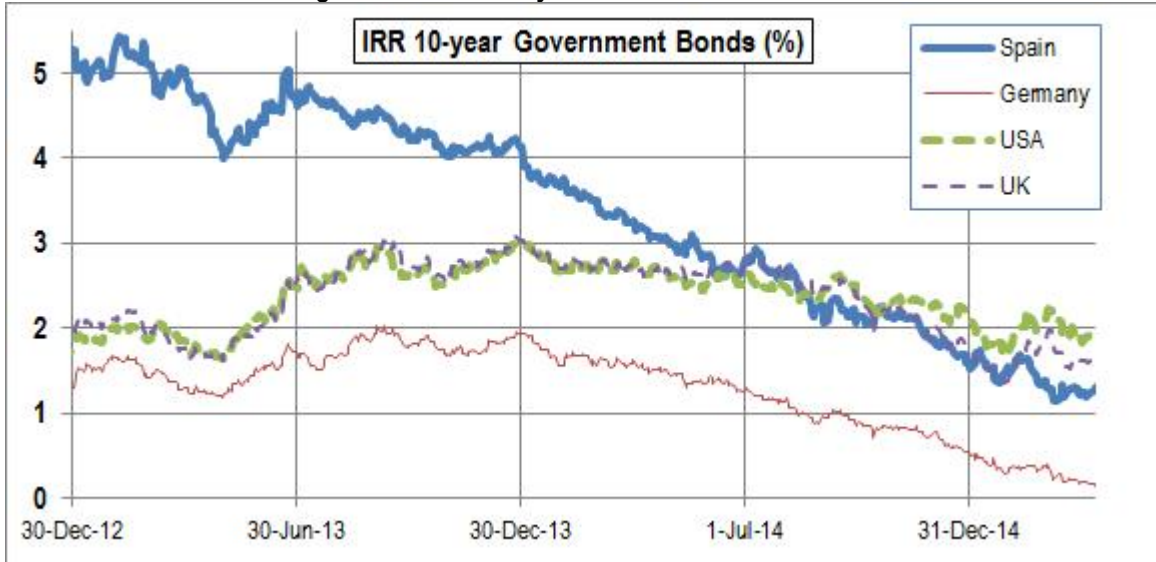


Table 8 shows that most of the respondents use Europe and UK a Risk-Free Rate (R_F) higher than the yield of the 10-year Government bonds.

Table 8. Yield on 10-year Gov. Bonds and R_F used in 2013, 2015 and 2017
 4 Countries: USA, Germany, Spain and UK

		USA	Germany	Spain	UK
Average 10-year Government Bonds	May 2013	1,9%	1,4%	4,2%	1,9%
	March-april 2015	2,0%	0,2%	1,3%	1,7%
	March 2017	2,3%	0,2%	1,6%	1,1%
R _F used in May 2013	average	2,4%	1,9%	4,4%	2,4%
	St. Dev.	1,0%	0,6%	0,9%	1,0%
	max	6,0%	6,5%	6,0%	7,0%
	min	0,1%	0,1%	0,5%	0,2%
R _F used in March-April 2015	average	2,4%	1,3%	2,2%	2,1%
	St. Dev.	1,1%	0,8%	1,2%	0,8%
	max	8,0%	5,1%	7,0%	6,0%
	min	0,0%	-0,2%	0,0%	0,4%
R _F used in March-April 2017	average	2,5%	1,4%	2,2%	2,2%
	St. Dev.	1,0%	1,2%	1,0%	1,0%
	max	6,9%	6,0%	5,0%	4,0%
	min	0,0%	-1,0%	0,0%	0,4%

4. Previous surveys

Previous surveys. Market risk premium used

2008	http://ssrn.com/abstract=1344209
2010	http://ssrn.com/abstract=1606563 ; http://ssrn.com/abstract=1609563
2011	http://ssrn.com/abstract=1822182 ; http://ssrn.com/abstract=1805852
2012	http://ssrn.com/abstract=2084213
2013	http://ssrn.com/abstract=914160
2014	http://ssrn.com/abstract=1609563
2015	https://ssrn.com/abstract=2598104
2016	https://ssrn.com/abstract=2776636

Welch (2000) performed two surveys with finance professors in 1997 and 1998, asking them what they thought the Expected MRP would be over the next 30 years. He obtained 226 replies, ranging from 1% to 15%, with an average arithmetic EEP of 7% above T-Bonds.³ Welch (2001) presented the results of a survey of 510 finance and economics professors performed in August 2001 and the consensus for the 30-year arithmetic EEP was 5.5%, much lower than just 3 years earlier. In an update published in 2008 Welch reports that the MRP “used in class” in December 2007 by about 400 finance professors was on average 5.89%, and 90% of the professors used equity premiums between 4% and 8.5%.

Johnson et al (2007) report the results of a survey of 116 finance professors in North America done in March 2007: 90% of the professors believed the Expected MRP during the next 30 years to range from 3% to 7%.

Graham and Harvey (2007) indicate that U.S. CFOs reduced their average EEP from 4.65% in September 2000 to 2.93% by September 2006 (st. dev. of the 465 responses = 2.47%). In the 2008 survey, they report an average EEP of 3.80%, ranging from 3.1% to 11.5% at the tenth percentile at each end of the spectrum. They show that average EEP changes through time. Goldman Sachs (O'Neill, Wilson and Masih 2002) conducted a survey of its global clients in July 2002 and the average long-run EEP was 3.9%, with most responses between 3.5% and 4.5%.

Ilmanen (2003) argues that surveys tend to be optimistic: “*survey-based expected returns may tell us more about hoped-for returns than about required returns*”. Damodaran (2008) points out that “*the risk premiums in academic surveys indicate how far removed most academics are from the real world of valuation and corporate finance and how much of their own thinking is framed by the historical risk premiums... The risk premiums that are presented in classroom settings are not only much higher than the risk premiums in practice but also contradict other academic research*”.

Table 4 of Fernandez et al (2011a) shows the evolution of the Market Risk Premium used for the USA in 2011, 2010, 2009 and 2008 according to previous surveys (Fernandez et al, 2009, 2010a and 2010b).

Table 9. Comparison of previous surveys

	Surveys of Ivo Welch					Fernandez et al (2009, 2010)			
	Oct 97– Feb 98*	Jan-May 99+	Sep 2001**	Dec. 2007#	January 2009**	US 2008	Europe 2008	US 2009	Europe 2009
Number of answers	226	112	510	360	143	487	224	462	194
Average	7.2	6.8	4.7	5.96	6.2	6.3	5.3	6.0	5.3
Std. Deviation	2.0	2.0	2.2	1.7	1.7	2.2	1.5	1.7	1.7
Max	15	15	20	20		19.0	10.0	12.0	12.0
Q3	8.4	8	6	7.0	7	7.2	6.0	7.0	6.0
Median	7	7	4.5	6.0	6	6.0	5.0	6.0	5.0
Q1	6	5	3	5.0	5	5.0	4.1	5.0	5.3
Min	1.5	1.5	0	2		0.8	1.0	2.0	2.0

* 30-Year Forecast. Welch (2000) First survey + 30-Year Forecast. Welch (2000) Second survey

** 30 year Equity Premium Forecast (Geometric). “The Equity Premium Consensus Forecast Revisited” (2001)

³ At that time, the most recent Ibbotson Associates Yearbook reported an arithmetic HEP versus T-bills of 8.9% (1926–1997).

30-Year Geo Eq Prem Used in class. Welch, I. (2008), "The Consensus Estimate for the Equity Premium by Academic Financial Economists in December 2007". <http://ssrn.com/abstract=1084918>

++ In your classes, what is the main number you are recommending for long-term CAPM purposes? "Short Academic Equity Premium Survey for January 2009". <http://welch.econ.brown.edu/academics/equpdate-results2009.html>

Table 10. Estimates of the EEP (Expected Equity Premium) according to other surveys

Authors	Conclusion about EEP	Respondents
<i>Pensions and Investments</i> (1998)	3%	Institutional investors
Graham and Harvey (2007)	Sep. 2000. Mean: 4.65%. Std. Dev. = 2.7%	CFOs
Graham and Harvey (2007)	Sep. 2006. Mean: 2.93%. Std. Dev. = 2.47%	CFOs
Welch update	December 2007. Mean: 5.69%. Range 2% to 12%	Finance professors
O'Neill, Wilson and Masih (2002)	3.9%	Global clients Goldman

The magazine *Pensions and Investments* (12/1/1998) carried out a survey among professionals working for institutional investors: the average EEP was 3%. Shiller⁴ publishes and updates an index of investor sentiment since the crash of 1987. While neither survey provides a direct measure of the equity risk premium, they yield a broad measure of where investors or professors expect stock prices to go in the near future. The 2004 survey of the Securities Industry Association (SIA) found that the median EEP of 1500 U.S. investors was about 8.3%. Merrill Lynch surveys more than 300 institutional investors globally in July 2008: the average EEP was 3.5%.

A main difference of this survey with previous ones is that this survey asks about the **Required** MRP, while most surveys are interested in the **Expected** MRP.

5. Expected and Required Equity Premium: different concepts

Fernandez and F. Acín (2015) claim and show that Expected Return and Required Return are two very different concepts. Fernandez (2007, 2009b) claims that the term "equity premium" is used to designate four different concepts:

1. **Historical** equity premium (HEP): historical differential return of the stock market over treasuries.
2. **Expected** equity premium (EEP): expected differential return of the stock market over treasuries.
3. **Required** equity premium (REP): incremental return of a diversified portfolio (the market) over the risk-free rate required by an investor. It is used for calculating the required return to equity.
4. **Implied** equity premium (IEP): the required equity premium that arises from assuming that the market price is correct.

The four concepts (HEP, REP, EEP and IEP) designate different realities. The **HEP** is easy to calculate and is equal for all investors, provided they use the same time frame, the same market index, the same risk-free instrument and the same average (arithmetic or geometric). But the **EEP**, the **REP** and the **IEP** may be different for different investors and are not observable.

The **HEP** is the historical average differential return of the market portfolio over the risk-free debt. The most widely cited sources are Ibbotson Associates and Dimson *et al.* (2007).

Numerous papers and books assert or imply that there is a "market" EEP. However, it is obvious that investors and professors do not share "homogeneous expectations" and have different assessments of the **EEP**. As Brealey *et al.* (2005, page 154) affirm, "Do not trust anyone who claims to know what returns investors expect".

The **REP** is the answer to the following question: What incremental return do I require for investing in a diversified portfolio of shares over the risk-free rate? It is a crucial parameter because the REP is the key to determining the company's required return to equity and the WACC. Different companies may use, and in fact do use, different **REPs**.

The **IEP** is the implicit REP used in the valuation of a stock (or market index) that matches the current market price. The most widely used model to calculate the IEP is the dividend discount model: the

⁴ See <http://icf.som.yale.edu/Confidence.Index>

current price per share (P_0) is the present value of expected dividends discounted at the required rate of return (K_e). If d_1 is the dividend per share expected to be received in year 1, and g the expected long term growth rate in dividends per share,

$$P_0 = d_1 / (K_e - g), \text{ which implies: } IEP = d_1/P_0 + g - R_F \quad (1)$$

The estimates of the IEP depend on the particular assumption made for the expected growth (g). Even if market prices are correct for all investors, there is not an IEP common for all investors: there are many pairs (IEP, g) that accomplish equation (1). Even if equation (1) holds for every investor, there are many *required* returns (as many as expected growths, g) in the market. Many papers in the financial literature report different estimates of the IEP with great dispersion, as for example, Claus and Thomas (2001, IEP = 3%), Harris and Marston (2001, IEP = 7.14%) and Ritter and Warr (2002, IEP = 12% in 1980 and -2% in 1999). There is no a common **IEP** for all investors.

For a particular investor, the **EEP** is not necessary equal to the REP (unless he considers that the market price is equal to the value of the shares). Obviously, an investor will hold a diversified portfolio of shares if his EEP is higher (or equal) than his REP and will not hold it otherwise.

We can find out the REP and the EEP of an investor by asking him, although for many investors the REP is not an explicit parameter but, rather, it is implicit in the price they are prepared to pay for the shares. However, it is not possible to determine the REP for the market as a whole, because it does not exist: even if we knew the REPs of all the investors in the market, it would be meaningless to talk of a REP for the market as a whole. There is a distribution of REPs and we can only say that some percentage of investors have REPs contained in a range. The average of that distribution cannot be interpreted as the REP of the market nor as the REP of a representative investor.

Much confusion arises from not distinguishing among the four concepts that the phrase *equity premium* designates: Historical equity premium, Expected equity premium, Required equity premium and Implied equity premium. 129 of the books reviewed by Fernandez (2009b) identify Expected and Required equity premium and 82 books identify Expected and Historical equity premium.

Finance textbooks should clarify the MRP by incorporating distinguishing definitions of the four different concepts and conveying a clearer message about their sensible magnitudes.

6. Conclusion

Most previous surveys have been interested in the Expected MRP, but this survey asks about the Required MRP.

This paper contains the statistics of a survey about the Risk-Free Rate (R_F) and of the Market Risk Premium (MRP) used in 2015 for **41 countries**. We got answers for 68 countries, but we only report the results for 41 countries with more than 25 answers.

The average (R_F) used in 2017 was smaller than the one used in 2015 in 12 countries (in 5 of them the difference was more than 1%). In 10 countries the average (R_F) used in 2017 was more than a 1% higher than the one used in 2015 (see table 6).

The change between 2015 and 2017 of the average Market risk premium used was higher than 1% for 11 countries (see table 6).

Most of the respondents use for Europe and UK a Risk-Free Rate (R_F) higher than the yield of the 10-year Government bonds.

This survey links with the *Equity Premium Puzzle*: Fernandez et al (2009), argue that the equity premium puzzle may be explained by the fact that many market participants (equity investors, investment banks, analysts, companies...) do not use standard theory (such as a standard representative consumer asset pricing model...) for determining their Required Equity Premium, but rather, they use historical data and advice from textbooks and finance professors. Consequently, ex-ante equity premia have been high, market prices have been consistently undervalued, and the ex-post risk premia has been also high. Many investors use historical data and textbook prescriptions to estimate the required and the expected equity premium, the undervaluation and the high ex-post risk premium are self fulfilling prophecies.

EXHIBIT 1. Mail sent on March 2017

Survey Market Risk Premium and Risk-Free Rate 2017

We are doing a **survey** about the **Market Risk Premium** (MRP or Equity Premium) and **Risk Free Rate** that companies, analysts, regulators and professors use to calculate the **required return on equity (Ke)** in different countries.

I would be grateful if you would kindly answer the following 2 questions. No companies, individuals or universities will be identified, and only aggregate data will be made public. I will send you the results in a month.

Best regards and thanks,
Pablo Fernandez. Professor of Finance. IESE Business School. Spain.

2 questions:

1. The Market Risk Premium that I am using in 2017

for USA is: _____ %

for _____ is: _____ %

for _____ is: _____ %

for _____ is: _____ %

2. The Risk Free rate that I am using in 2017

for USA is: _____ %

for _____ is: _____ %

for _____ is: _____ %

for _____ is: _____ %

EXHIBIT 2. Some comments and webs recommended by respondents

Equity premium: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html

<http://www.market-risk-premia.com/market-risk-premia.html>

<http://www.marktrisikoprämie.de/marktrisikopraemien.html>

US risk free rate: <http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2015>

risk free rate: <http://www.basiszinssatz.de/basiszinssatz-gemaess-idw.html>

<http://www.econ.yale.edu/~shiller/>

<http://www.cfosurvey.org/pastresults.htm>

<http://alephblog.com/>

In my DCF valuation I use a global perspective of the marginal investor hence a global MRP.

I match rf with currency/inflation of cash flows being discounted and do not rely too much on current interest rates due to imperfections in the market. The MRP is made consistent with the level of interest rate I use in my model (E(Rm)-Rf) end end up with 6%

For equities we use a 10% as a cost of opportunity independently of the level of interest.

Rf: average last 5-year 10 year Treasury

I would like to help you with these two questions, but the problem is that in no any literature sources or analytical reports I met the calculation of Market Risk Premium and Risk Free rate for Uzbekistan.

The risk free rate that I use depends upon the timing of the future cash flows. I refer to the interest rate swap market and the US treasury market for starters. These days, one has to bear in mind currency volatility as that has a bigger effect on PV than market cost-of-capital.

We use the same Market Risk Premium for any country: 5,75% (source: Damodaran). Only Rf changes.

I am happy that you are asking the second question, because it accounts for what I consider to be a historical anomaly in the reply to the first question. I've concluded that the ERP was recently 3-4 percent. But I think US monetary policy

(the various "QE" programs) have in the past couple of years distorted the traditional relationship between expected total market returns and the risk free rate. QE has been driving the US Treasury rate down, while the expected total market return has held steady, leading to a larger than usual market risk premium. This higher market risk premium is not a sign of higher market equity risk, but of the perverse impact of aggressive monetary policy.

For the US in 2015: MRP: 14% (as US equities are even more highly priced than last year).

Interest rates are artificially well below historic levels. Thus, bonds and equities values are artificially inflated.

I do not use "canned" rates applicable for a whole year. The rates I use are time-specific and case-specific, depending on conditions prevailing as of the valuation date.

I must confess I am still surprised with the rates suggested that are at the upper bound of respondent answers.

One hint: It might make sense to ask more precisely about the premium before/after personal income tax. For Germany the premium would differ and I am not sure how people would interpret the question.

The Risk-Free Rate we use is based on rates published by the Federal Reserve. We use the 20 year rate, currently 2.73%. The Equity Risk Premium we use is based on Duff & Phelps Annual Valuation Handbook.

For foreign countries, I generally look at it in dollar terms and assume that purchasing power parity held; hence, I'd use US rates. If I had to do it in a foreign currency, I would use the local 10-year treasury for the risk-free rate. I would use the US equity risk premium, adjust for inflation to real terms, and then adjust for foreign inflation to put it in local nominal terms.

USA. MRP 6.4% - essentially bloomberg/ibbotson number. RF 10 year U.S. treasury yield.

Exijo un mínimo de un 15% de retorno neto de impuestos a cualquier acción, independientemente de su nacionalidad.

No creo que exista un activo libre de riesgo en absoluto. Y menos en estos distorsionados entornos debido a la intervención de los bancos centrales. En mi modesta opinión, creo que nunca sido tan riesgosa la renta fija como lo es ahora.

No creo especialmente en el modelo de CAPM y prefiero usar una cifra basada en el sentido común.

En Uruguay la práctica más aceptada es descontar flujos convertidos a USD dada la debilidad de la moneda local y dolarización de la economía.

Exigimos una rentabilidad de fondos propios del 8% (que puede variar según la posibilidad percibida de adjudicación o las ganas de ser competitivos). Pero cuál el tipo libre de riesgo que los financieros consideran, no lo sé.

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