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MARKET RISK PREMIUM:
REQUIRED, HISTORICAL AND EXPECTED

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Abstract

The market risk premium is one of the most important but elusive parameters in finance. It is also called equity premium, market premium and risk premium. The term "market risk premium" is difficult to understand because it is used to designate three different concepts:

1. **Required** market risk premium. It is the incremental return of a diversified portfolio (the market) over the risk-free rate (return of treasury bonds) required by an investor. It is needed for calculating the required return to equity (cost of equity).

2. **Historical** market risk premium. It is the historical differential return of the stock market over treasury bonds.

3. **Expected** market risk premium. It is the expected differential return of the stock market over treasury bonds.

Many authors and finance practitioners assume that **expected** market risk premium is equal to the **historical** market risk premium and to **the required market risk premium**. The CAPM assumes that the **required** market risk premium is equal to the **expected** market risk premium.

The three concepts are different. The **historical** market risk premium is equal for all investors, but the **required** and the **expected** market risk premium are different for different investors. We also claim that there is no **required** market risk premium for the market as a whole: different investors use different **required** market risk premiums

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The market risk premium is one of the most important but elusive parameters in finance. It is also called equity premium, market premium and risk premium.

The term "market risk premium" is difficult to understand because it is used to designate **three different concepts**:

1. The incremental return of a diversified portfolio (the market) over the risk-free rate (return of treasury bonds) required by an investor. This concept is the **required** market risk premium. It is needed for calculating the required return to equity (cost of equity).

2. The historical differential return of the stock market over treasury bonds. This is a piece of historical information that may or may not be of interest. This concept is the "**historical** market risk premium".

3. The expected differential return of the stock market over treasury bonds. This concept is the "**expected** market risk premium". Many authors and finance practitioners assume that this expectation is equal to the historical market risk premium and to the required market risk premium. The CAPM assumes that the **required** market risk premium is equal to the **expected** market risk premium.

In this paper, we show that these three concepts are different. The **historical** market risk premium is equal for all investors, but the required and the expected market risk premium are different for different investors. We also claim that there is no required market risk premium for the market as a whole: different investors use different required market risk premiums.

> The ***required*** market risk premium is one thing,
> the historical differential return of the stock market over treasury bonds (***historical*** market risk premium) is another,
> and the ***expected*** market risk premium, another.
> It is a common mistake to **confuse** them.

For an investor, the required market risk premium is the answer to the following question: What incremental return do I require to a diversified portfolio of shares (a stock index, for example) over the risk-free rate? It is a crucial parameter for any company because the answer to the above question is the key to determining the company's required return to equity (Ke) and indeed the required return to any investment project.

As we will see below, there are two difficulties in determining the required market risk premium: the first and most important is that it is not the same for all investors[1]; the second is that it is not an observable quantity. We shall see that the required market risk premium is not, as is often claimed, the historic return of the market portfolio over the risk-free rate (**historical** market risk premium).

The **expected** market risk premium is the answer to a question we would all like to be able to answer accurately, namely: What incremental return do I expect from the market portfolio over the risk-free rate over the next few years? If R_F is the risk-free rate of government securities, and $E(R_M)$ is the expected return of the market, then

$$\text{Expected market risk premium} = [E(R_M) - R_F]$$

Example. There are four investors. All four must agree on the historical market risk premium, assuming they use the same stock index, the same calculation period, the same way of calculating the mean (arithmetic or geometric) and the same risk-free rate. In the table below, 5.6% is the geometric average of the historical market risk premium of the S&P 500 versus 30-year U.S. bonds in the period 1926-2003 (see Table 5). The difference between investor A and investor B lies in their expected market risk premium. Investor A would (and investor B would not) invest in a diversified stock portfolio because its expected market risk premium is higher (lower) than his *required market risk premium*. Investor C would not invest either, because his *required* return to shares is much higher than his *expected* return. Investor D is the one we find in a lot of textbooks: his *required market risk premium* and his expected market risk premium are equal to the historical market risk premium (5.6%). Investor D is indifferent between investing in the market portfolio or not.

	Four different investors			
	A	**B**	**C**	**D**
Required market risk premium	4.0%	4.0%	8.0%	5.6%
Historical market risk premium	5.6%	5.6%	5.6%	5.6%
Expected market risk premium for the next 3 years	5.6%	2.0%	4.0%	5.6%

The expected market return is the most important parameter in finance, but it is an expectation and, therefore, a non-observable parameter. Here's an anecdote from Nobel prizewinner Merton Miller: "I still remember the teasing we financial economists, Harry Markowitz, William Sharpe, and I, had to put up with from the physicists and chemists in Stockholm when we conceded that the basic unit of our research, the expected rate of return, was not actually observable. I tried to tease back by reminding them of their neutrino –a particle with no mass whose presence was inferred only as a missing residual from the interactions of other particles. But that was eight years ago. In the meantime, the neutrino has been detected".[2]

CAPM. The capital asset pricing model (CAPM) defines the required return to equity in the following terms:

$$Ke = R_F + ß\,[E(R_M) – R_F]$$

R_F = rate of return for risk-free investments (Treasury bonds). ß = share's beta.

$E(R_M)$ = expected market return. $[E(R_M) – R_F]$ = expected market risk premium.

[1] There is a *required market risk premium* for each investor, but we cannot talk about a *required market risk premium* for the whole market. The existence of a *required market risk premium* for the whole market implies that all investors have the same *required market risk premium*.

[2] See Merton Miller (2000), p. 3.

Therefore, given certain values for the equity's beta, the risk-free rate and the expected market risk premium, it is possible to calculate the required return to equity[3]. Note that the Capital Asset Pricing Model assumes that the required market risk premium is equal to the expected market risk premium.

In addition to the beta, in order to calculate the required return to equity (as postulated by the CAPM), we need to know the value of the market risk premium. The market risk premium is the difference between the **expected** return on the market portfolio and the risk-free rate, that is, the incremental return demanded by investors on stocks, above that of risk-free investments.

The market value of the company's equity is obtained by discounting the equity cash flow at the required return to equity for the company (Ke).

The expected market risk premium is an expectation and not the market's historical return above the risk-free rate, as is often stated.

1. Methods proposed for calculating the required market risk premium

1.1. Historical differential return of the market portfolio and the risk-free rate (historical market risk premium)

It is very common to use historical data to compare the return of an investment in shares with the return of the risk-free rate. Some conclude that the difference between the historical return of the stock market (of a stock market index) and the historical return of the risk-free rate[4] is a good indicator of the market premium. In support of this statement, it is often argued that, on average, the market is right. Thus, although the equity gain above bonds in a particular year is not considered to be the market risk premium, the incremental return of stocks over bonds over a number of years is considered to be a good estimator of the required market risk premium. Another of the contradictions of this approach is that after a very good year for the stock market, the required market risk premium will have risen and, after a bad year, the market risk premium will have fallen, even if there is no reason for this. This means that, given equal expectations, the market will value a share higher after a bad year than after a good year (after a good year, the risk premium would be greater).

This method, sometimes called Ibbotson's method, assumes that the required return to equity in the past was equal to the return actually received, and that the market is all investors' efficient portfolio. As we will see further on, this method provides inconsistent results and, at present, exaggerates the required market risk premium.

However, many authors and textbooks suggest using this method to calculate the required market risk premium. Ibbotson and Chen (2003) use 1926-2000 historical equity returns and conclude that the long-term equity risk premium (relative to the long-term government bond yield) is estimated to be about 5.9% arithmetically, and 3.97% geometrically.

Brealey and Myers suggested 8.2-8.5% in the fifth edition of their book in 1996; on page 160 of their sixth edition (2000), they say:

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[3] The classic finance textbooks provide a full discussion of the concepts analyzed here. For example, Brealey & Myers (2000), and Copeland & Weston (1988).

[4] As we will see further on, the difference can be calculated as an arithmetic average or geometric average. For the historical return of the risk-free rate, long-term or short-term bonds can be used. Furthermore, there are authors who use the return of the risk-free rate (the return gained from buying bonds today and selling them in the next period), and others use the IRR of the risk-free rate at the beginning of the period. In the following sections, we will analyze which of these alternatives is the most suitable.

"Brealey and Myers have no official position on the exact market risk premium, but we believe a range of 6 to 8.5 percent is reasonable for the United States. We are most comfortable with figures toward the upper end of the range".

Further on, on page 195, they say:

"How about the *market risk premium*? From past evidence it appears to be 8 to 9 percent, although many economists and financial managers would forecast a lower figure".

Copeland, Koller and Murrin (2000, page 221) recommend 4.5-5% (in the second edition of 1995, they recommend 5-6%); Ross, Westerfield and Jaffe (1993) recommend 8.5%; Van Horne (1992) recommends 3-7%; Weston, Chung and Siu (1997) recommend 7.5%; and Damodaran (1994, pages 22-24) recommends 5.5%[5]. In the examples given in their book, Bodie and Merton (2000) use 8% for USA. Damodaran (2001, page 63) recommends:

"6.05%, which is the geometric average premium for stocks over treasury bonds from 1928 to 1999 if you use historical premiums. In using this premium, however, you are assuming that there are no trends in the risk premium and that investors today demand premiums similar to those they used to demand two, four, or six decades ago. Given the changes that have occurred in the markets and in the investor base over the last century, you should have serious concerns about using this premium, especially in the context of valuation."

I completely agree with Damodaran on that point.

The argument used by Copeland, Koller and Murrin (2000, page 221) is surprising:

"It is unlikely that the U.S. Market index will do as well over the next century as it has in the past, so we adjust downward the historical arithmetic average market risk premium. If we substract a 1.5 to 2 percent survivorship bias from the long-term arithmetic average of 6.5 percent[6], we conclude that the market risk premium should be in the 4.5 percent to 5 percent range".

Further on, they acknowledge that, at the beginning of the year 2000, most investment banks used a risk premium between 3.5 and 5%. However, in 1995, in the second edition, they said (see page 268):

"We recommend using a 5 to 6 percent market risk premium for U.S. companies. This is based on the long-run geometric average risk premium for the return of the S&P 500 versus the return on long-term government bonds from 1926 to1992… we use a geometric average of rates of return because arithmetic averages are biased by the measurement period".

In the first edition (1990), they said (see page 196):

"Our opinion is that the best *forecast* of the risk premium is its long-run geometric average".

Obviously, in the third edition, they changed their criterion.

Mayfield (2004) performs an analytically more complex estimate of the risk premium and concludes that the required market risk premium for the period after 1940 is 5.9% over the yield on Treasury bills.

Claus and Thomas (2001) argue that the required risk premium is 3% less than the historical market risk premium, and they recommend using a U.S. market risk premium between 3 and 4%.

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[5] Damodaran (1994, Table 3.1, page 22) calculates the geometric average differential return (T-bonds) for the period 1926-1990 and finds 5.5%: this is the US market risk premium that he uses throughout his book.

[6] This is the arithmetic mean of 2-year returns from 1926 to 1998. The arithmetic mean of 1-year returns is 7.5 percent.

Harris and Marston (1999) use expectations of financial analysts to estimate a market risk premium for U.S. stocks. Using the S&P 500 as a proxy for the market portfolio, they find an average market risk premium of 7.14% above yields on long-term U.S. government bonds over the period 1982-1998. They also claim that the market risk premium appears to move inversely with government interest rates.

The advisability of adjusting for *survivorship bias* is not clear. We agree with Siegel (1999, p. 13) that,

> "Although stock returns may be lower in foreign countries than in the U.S., the real returns on foreign bonds are substantially lower. Almost all disrupted markets experienced severe inflation, in some instances wiping out the value of fixed-income assets. (One could say that the equity premium in Germany covering any period including the 1922-1923 hyperinflation is over 100%, since the real value of fixed-income assets fell to zero while equities did not.)"

The expected market risk premium (an expectation) is one parameter; the historical differential return of stocks over treasury bonds (historical market risk premium) is another. It is a common mistake to think that they are equal.

Dimson, Marsh and Staunton (2003) examine equity, bond, and bill returns in 16 different countries over the 103-year period from 1900 to 2002 (see Table 1). They conclude that the expected geometric market risk premium for the world's major markets should be 3% (5% arithmetic), substantially lower than appears in textbooks, than emerges from management surveys, or than the average found in their own study. They also argue that even this lower figure for the historical risk premium is still an overestimate of the likely future risk premium.

Table 1. Historical differential return of the stock market over fixed income in the short (30 days) and long term (10 or 30 years) in 16 countries for the period 1900-2002. Annualized returns.

	Over short term risk-free rate			**Over long term risk-free rate**		
	Geometric average	**Arithmetic average**	**Standard deviation**	**Geometric average**	**Arithmetic average**	**Standard deviation**
Australia	6.8%	8.3%	17.2%	**6.0%**	7.6%	19.0%
Germany	3.9%	9.4%	35.5%	**5.7%**	9.0%	28.8%
Japan	6.1%	9.3%	28.0%	**5.4%**	9.5%	33.3%
South Africa	5.9%	7.9%	22.2%	**5.2%**	6.8%	19.4%
Sweden	5.2%	7.5%	22.2%	**4.8%**	7.2%	22.5%
USA	5.3%	7.2%	19.8%	**4.4%**	6.4%	20.3%
Italy	6.3%	10.3%	32.5%	**4.1%**	7.6%	30.2%
Canada	4.2%	5.5%	16.8%	**4.0%**	5.5%	18.2%
Holland	4.3%	6.4%	22.6%	**3.8%**	5.9%	21.9%
UK	4.2%	5.9%	20.1%	**3.8%**	5.1%	17.0%
France	6.4%	8.9%	24.0%	**3.6%**	5.8%	22.1%
Ireland	3.6%	5.5%	20.4%	**3.2%**	4.8%	18.5%
Belgium	2.2%	4.4%	23.1%	**2.1%**	3.9%	20.2%
Spain	2.8%	4.9%	21.5%	**1.9%**	3.8%	20.3%
Denmark	2.2%	3.8%	19.6%	**1.5%**	2.7%	16.0%
Switzerland	3.2%	4.8%	18.8%	**1.4%**	2.9%	17.5%
Average	4.5%	6.9%	22.8%	**3.8%**	5.9%	21.6%
World	4.4%	5.7%	16.5%	**3.8%**	4.9%	15.0%

Source: Dimson, Marsh and Staunton (2003)

The figure for the World is the weighted average (using GDP).

1.2. Using the Gordon and Shapiro formula

Other authors propose calculating the market risk premium from the Gordon and Shapiro equation, which determines the share price by discounting the dividends when the latter grow at an annual rate g each year: $P_0 = EPS_1 / (Ke – g)$

Isolating Ke in the formula, we get: $Ke = (EPS_1/P_0) + g$

The argument put forward by advocates of this method is the following: Ke is the return required of the market (a diversified portfolio), and must match the return expected by "the market": $Ke = E(R_M) = R_F + P_M$

Consequently, $P_M = (EPS_1/P_0) + g - R_F$

Applying the latter expression to the market as a whole, (EPS_1/P_0) is the average dividend-based market return, g is the growth of dividends expected by "the market", and R_F is the risk-free rate. To calculate the market risk premium, all we have to do is estimate the dividend growth expected by "the market".

Note that for these calculations to make any sense we need to assume that the price of the shares coincides with their value, and that dividend growth is as expected by "the market".

The problem with this method is, once again, that investors' expectations are not homogenous. If they were, it would make sense to talk in terms of a market risk premium, as all investors would have the market portfolio and the same expectations regarding the portfolio[7]. However, as expectations are not homogenous, it is obvious that investors who expect higher growth will have a higher market risk premium. On the other hand, not all investors expect dividends to grow geometrically at a constant rate.

Jagannathan, McGrattan, and Shcherbina (2001) calculate the equity premium using a variation of a formula in the classic Gordon stock valuation model. The calculation includes the bond yield, the stock dividend yield, and the expected dividend growth rate, which in this formulation can change over time. They conclude that the U.S. equity premium has declined significantly over the last three decades: The premium averaged 7% during 1926-70 and only 0.7% after that.

1.3. Survey of analysts and investors

Perhaps the most direct way to calculate the market risk premium is to carry out a survey of analysts or investors.

One example of this method is Welch's study (2000). Welch performed two surveys, in 1997 and 1998, with several finance professors, asking them what they thought the market risk premium was. He obtained 226 replies and the average market risk premium (arithmetic) was 7% above long-term Treasury bonds (5.2% when measured as a geometric average).[8]

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[7] Even then, this method requires knowing the expected growth of dividends. A higher growth estimate implies a higher premium.

[8] Surprisingly, this figure is very high. The interest rate paid by long-term Treasury bonds in April 1998 was approximately 6%. The inflation rate expected by most banks and companies specializing in making forecasts was less than 2.5%. Consequently, the actual expected return of long-term Treasury bonds was 3.5%. A market risk premium of 6% implies an actual expected stock return of 9.5%. At that time, the forecasts of the real growth of the gross national product were running at about 2.5%. As the dividends paid by American companies were less than 3% of the shares' price, the forecast annual increase in the companies' equity market value would be 1.095 divided by 1.03 - 1 = 6.3%. This means that companies' real equity market value will grow much more than the gross national product. According to these forecasts, in 2048, the stock return would be equal to or greater than the US gross national product. This extrapolation is impossible; it is unfeasible that the annual stock return could ever be greater than the US gross national product.

Welch (2001) presents the results of a survey of 510 finance and economics professors performed in August 2001. The consensus forecast for the 30-year equity premium was 5.5% (arithmetic) and 4.7% (geometric). The consensus 30-year stock market average return forecast was 9.1%. These forecasts are lower than those made just 3 years earlier.

The magazine *Pensions and Investments* (12/1/1998) carried out a survey among professionals working for institutional investors and the mean market risk premium obtained was 3%. In another survey of pension fund professionals (1997, Greenwich Associates Survey), the mean market risk premium obtained was 5%.

1.4. From the inverse of the PER

The proponents of this method start with the formula that relates price (P) to book value (Ebv):

$$P/Ebv = (ROE – g)/(Ke – g).$$

If it is assumed that g=0, then Ke = ROE x Ebv/E = PAT/E = 1/PER. If we believe this assumption of g=0, then: risk premium = (1/PER) - R_F. Applying this to the U.S. market in July 2001, when the PER of the S&P 500 was 26.2 and R_F was 5.04%, this gives a negative market risk premium (-1.2%), which is absurd.

1.5. As the difference between stock and long-term bond volatilities

This method also often gives absurd results. Reilly, Wright and Chan (2000) show that, in the period 1950-1999, the annualized average bond volatility was 4.9% and the annualized average stock volatility was 14.1%. The difference is 9.2%, which is too high for the equity risk premium in the US.

As further evidence, the difference of volatilities in Spain between the IBEX 35 index and 10-year bonds oscillated between 6% and 32% over the period 1992-2003.

1.6. More recent studies

Pastor and Stambaugh (2001) find that

> “the estimated equity premium since 1834 fluctuates between 4 and 6 percent. It rises through much of the 1800s, reaches its peak in the 1930s, and declines fairly steadily thereafter, except for a brief upward spike in the early 1970s. The sharpest decline in the premium occurs in the 1990s. The later inference is influenced by the prior belief that the premium and the price tend to change in opposite directions. When that aspect of the model is omitted, the estimated premium instead increases during the last decade.”

Fama and French (2002) estimate the market risk premium for the period 1951-2000 as being between 2.55% and 4.32%. They say that these figures are far below the stock return over the risk-free rate (7.43%) because the reduction in the market risk premium has caused an unexpected increase in share prices. In the period 1872-1950, they estimate a market risk premium between 4.17% and 4.4%. They claim that the high average return for 1951-2000 is due to a decline in discount rates that produces large unexpected capital gains. They conclude that the stock return of the last half-century was a lot higher than expected.

Arnott and Ryan (2001) claim that the expected market risk premium is negative. They base this conclusion on the low dividend yield and their low expectation of dividend growth. Arnott and Bernstein (2002) also conclude that the expected market risk premium is negative or zero.

Li and Xu (2002) show that "survival bias"[9] fails to explain the "equity premium puzzle"[10].

Although they have no scientific value, we can also see what market premium has been used in finance classes by MBA students in the United States and Europe: in 2000, most professors were using figures between 5% and 7%, although it is true to say that this was to resolve cases covering the previous 20 years. However, if professors were asked what they thought was the market premium, the responses at the end of 1999 ranged from 2% to 5%. One example: Robert Merton, Nobel laureate in economics in 1997 and professor of finance at Harvard, replied to the author of this note that the market premium in the U.S. was in the region of 2% in 1999. In Spain, over the period 1999-2004, investment analysts used required market risk premiums ranging from 3% to 4.5%, whereas in previous years they had used slightly higher premiums.

Authors	**Conclusion about market risk premium**
Ibbotson and Chen (2003)	5.9% arithmetically, 3.97% geometrically
Brealey and Myers (1996)	8.2 - 8.5%
Brealey and Myers (2000)	6 - 8.5%
Copeland, Koller and Murrin (1995)	5 - 6%
Copeland, Koller and Murrin (2000)	4.5 - 5%
Ross, Westerfield and Jaffe (1993)	8.5%
Van Horne (1992)	3 - 7%
Weston, Chung and Siu (1997)	7.5%
Bodie and Merton (2000)	8%
Damodaran (1994)	5.5%
Damodaran (2001)	4%
Mayfield (2004)	5.9%
Claus and Thomas (2001)	3 -4%
Harris and Marston (1999)	7.14%
Dimson, Marsh and Staunton (2003)	5% arithmetically, 3% geometrically
Jagannathan, McGrattan and Shcherbina (2001)	7% during 1926-70. 0.7% after that.
Welch (2000)	7% arithmetically, 5.2% geometrically
Welch (2001)	5.5% arithmetically, 4.7% geometrically
Pensions and Investments (1998)	3%
Greenwich Associates Survey (1997)	5%
Fama and French (2002)	2.55 - 4.32% in 1951-2000. 4.17 - 4.4% in 1951-2000

2. Evolution of the stock market and inflation in Spain

Figure 1 compares the evolution since 1940 of two indexes of the Spanish Stock Exchange –the ITBM (which includes dividends) and the IGBM (which does not include dividends) – with the evolution of cumulative inflation. The ITBM provides the total return of a diversified stock portfolio (the IGBM does not take into account any dividends received by shareholders). An investment of 100 euros in shares in 1940 had by 2003 (disregarding

[9] "Survival bias" refers to the fact that databases contain data on companies listed today (they tend not to have data on companies that went bankrupt or filed for bankruptcy protection in the past), and so any calculations of historical returns based on these data yield returns slightly higher than would be the case if the companies that disappeared were taken into account.

[10] The "equity premium puzzle" refers to the much bigger historical returns of equities compared to those of fixed income securities, which still are not well explained by economic models.

taxes) turned into 157,474 euros. The inflation path indicates that, on the average, a good that cost 100 euros in 1940 cost 12,905 euros in 2003. The average annual return between 1940 and 2003 was 12.4% and average inflation was 8.0%.

Figure 1. Spain. Evolution of the ITBM, IGBM, and inflation in Spain from 1940 to 2003

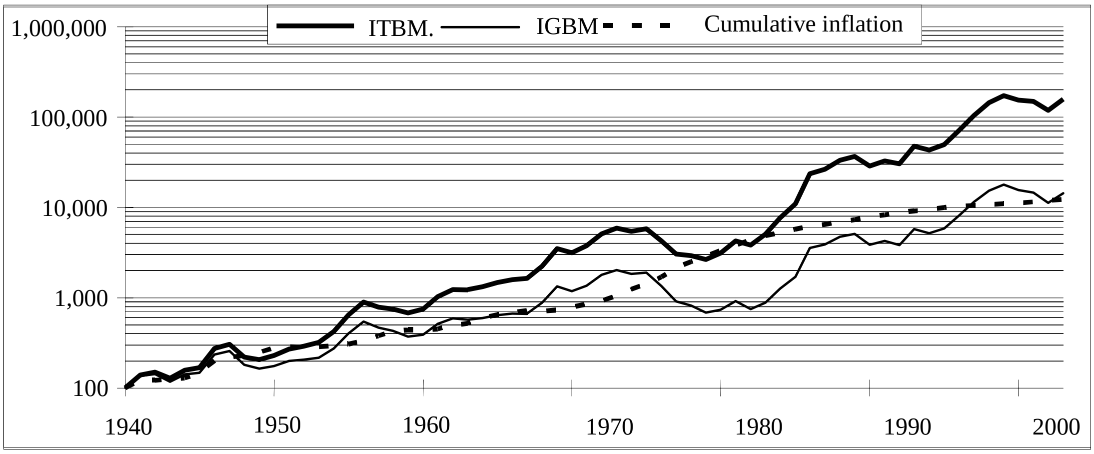
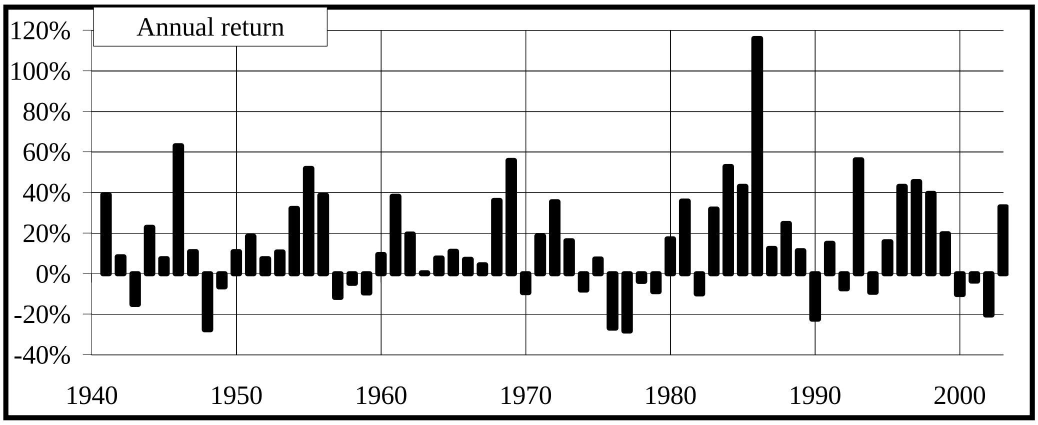


Figure 2 shows the annual return of the ITBM from 1940. The best year was 1986: the return on shares was above 100%. The return in recent years was: 19.7% in 1999, -10.4% in 2000, -3.6% in 2001, -20.5% in 2002 and 33% in 2003. The worst years were 1948 (-28%), 1977 (-28%), 1976 (-26%) and 1990 (-23%). The average arithmetic return of these 63 years was 15%. The average geometric[11] return[12] was 12.4%. The annual return was negative in 19 of the 63 years.

Figure 2. Spain. Annual return of ITBM from 1940 to 2003



[11] The geometric average is lower than the arithmetic average. Consider the case where the stock market yields 100% one year and -50% the next. The arithmetic average would say that the average annual market return in those two years was 25%. But an investor who began with $100 would have had $200 at the end of year 1 and $100 at the end of year 2. The geometric average would tell us that the average annual market return in those two years was 0%, which is a more accurate reflection of reality

[12] The average geometric return is calculated as follows: $12.4\% = (157{,}474 / 100)^{1/63} - 1$.

3. Historical market risk premium in Spain

Figure 3 shows the average (10 and 20-year) historical market risk premium of equities over government bonds (calculated as the geometric average of the difference between the annual return of equities and the return of government bonds). Note that this quantity is highly unstable over time, and that for extended periods it was actually negative. A negative required market risk premium makes no economic sense.

Figure 3. Spain. Historical market risk premium
(Geometric average of the difference between the annual return of the ITBM (includes dividends) and the annual return of government bonds**)**

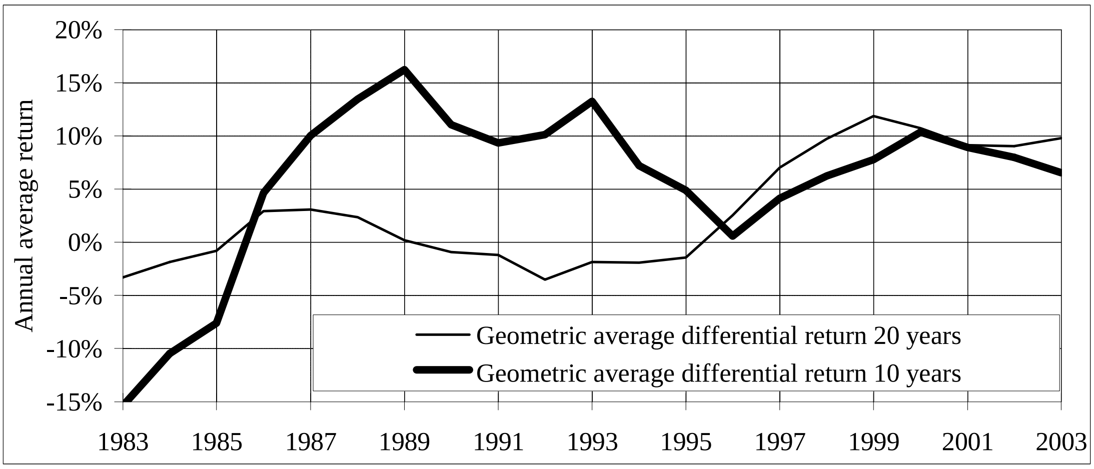


Table 2 shows average annual returns of the stock market and of government bonds, and the historical market risk premium in different periods[13]. For each parameter, the arithmetic average and the geometric average have been calculated[14].

Table 2. Spain. Average annual returns of the stock market and of government bonds, and historical market risk premium

	Return on equities		**Return on gov. bonds**		**Historical market risk premium over gov. bonds**	
	Arithmetic average	**Geometric average**	**Arithmetic average**	**Geometric average**	**Arithmetic average**	**Geometric average**
1963-2003	15.7%	12.6%	9.8%	9.7%	5.9%	2.9%
1963-1970	14.1%	12.6%	6.8%	6.8%	7.4%	5.8%
1971-1980	1.8%	-0.1%	11.4%	11.4%	**-9.6%**	**-11.5%**
1981-1990	29.5%	24.8%	13.8%	13.8%	15.7%	11.0%
1991-2003	16.6%	14.0%	7.3%	7.2%	9.3%	6.8%
1981-2003	22.2%	18.6%	10.1%	10.0%	12.1%	8.6%
1971-2003	16.0%	12.6%	10.5%	10.4%	5.5%	2.2%

[13] In an article published in the June 1997 issue of the Madrid Stock Exchange newsletter, it was said that "a coherent value for the risk premium of equities over bonds in Spain would be 6.3% between 1980 and 1997". That 6.3% was the arithmetic average of the difference between the annual return of the ITBM and the annual return of government bonds

[14] On the question of whether it is better to use the arithmetic average or the geometric average, Indro and Lee (1997) provide a good summary. These authors affirm that the arithmetic average overestimates the differential return, while the geometric average underestimates it.

Differences between the arithmetic average and the geometric average

There are four properties that differentiate the arithmetic average from the geometric average:

1. The geometric average is always equal to or smaller than the arithmetic average.
2. The more variable (volatile) the returns, the greater the difference between the arithmetic average and the geometric average.
3. The geometric average depends only on the price level at the beginning and end of the period studied. The arithmetic average, however, tends to rise as the period used shortens. For example, the arithmetic average calculated using monthly returns is usually greater than the arithmetic average obtained using annual returns.
4. The difference between the geometric averages of two series is not equal to the geometric average of the difference. However, the arithmetic average of the difference between two series is equal to the difference between the arithmetic averages of the two series.

Table 3 shows the volatility of the stock market (the return of the ITBM), government bonds and inflation in the same periods.

Table 3. Spain. Annual volatility of the ITBM (stocks), government bonds and inflation

	Stocks	**Bonds**	**Inflation**
1963-2003	28.0%	3.8%	5.7%
1963-1970	21.2%	1.5%	3.5%
1971-1980	20.7%	2.3%	5.2%
1981-1990	38.2%	2.5%	3.5%
1991-2003	24.8%	3.1%	1.3%

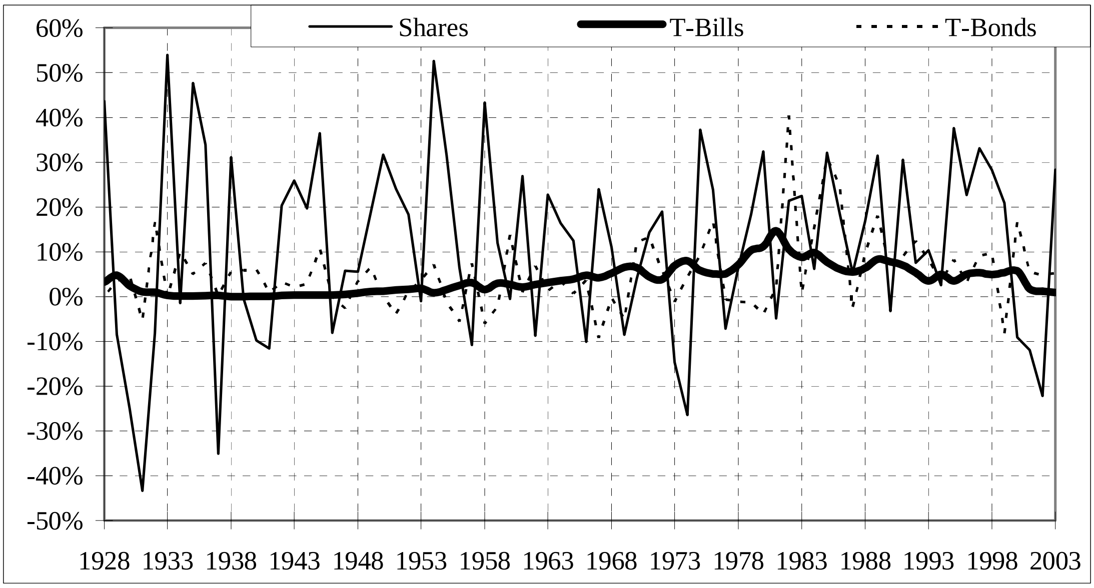
4. Historical differential return of the market portfolio and the risk-free rate in the U.S.

In this section, we will analyze the behavior of the equity and bond markets in the USA.

4.1. Return

Figure 4 shows the annual returns of the market (stocks), the 3-month risk-free rate (*T-bills*) and the 30-year risk-free rate (*T-bonds*) after 1926.

Figure 4. Annual return of the U.S. stock market (shares), 3-month Government bonds (*T-bills*) and 30-year Government bonds (*T-bonds*)



4.2. Volatility

Figure 5 shows the annual volatility, calculated using data from the previous 10 years, of stocks, inflation, long-term bonds, and short-term Treasury bills. The volatility of long-term bonds (*T-Bonds*) has been significant, particularly at the end of the '80s, when it was greater than that of stocks. The volatility of short-term bonds (*T-Bills*) has been markedly less and remained until 1981 below the volatility of inflation.

Figure 5. Annual volatility of the S&P 500 (stocks), 3-month U.S. treasury bills (*T-bills*), 30-year U.S. treasury bonds (*T-bonds*), and inflation. Volatility calculated using yearly data for the previous 10 years

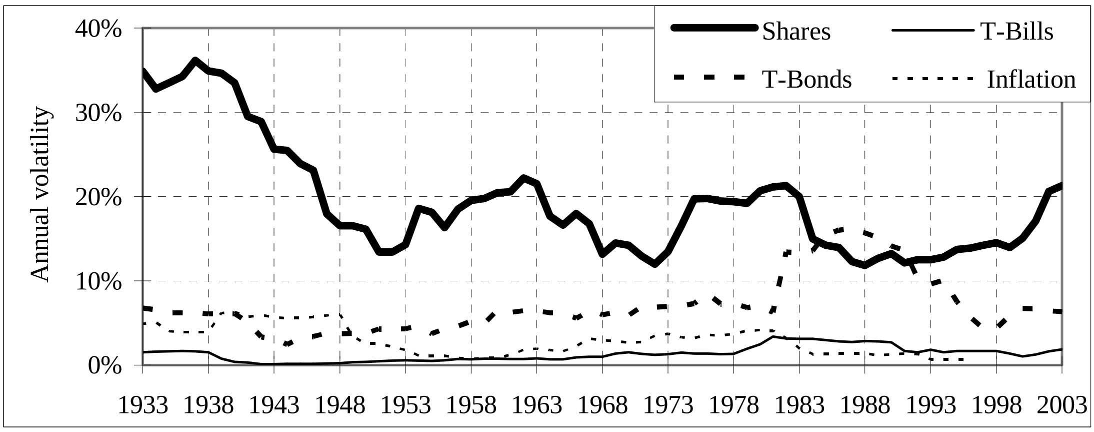
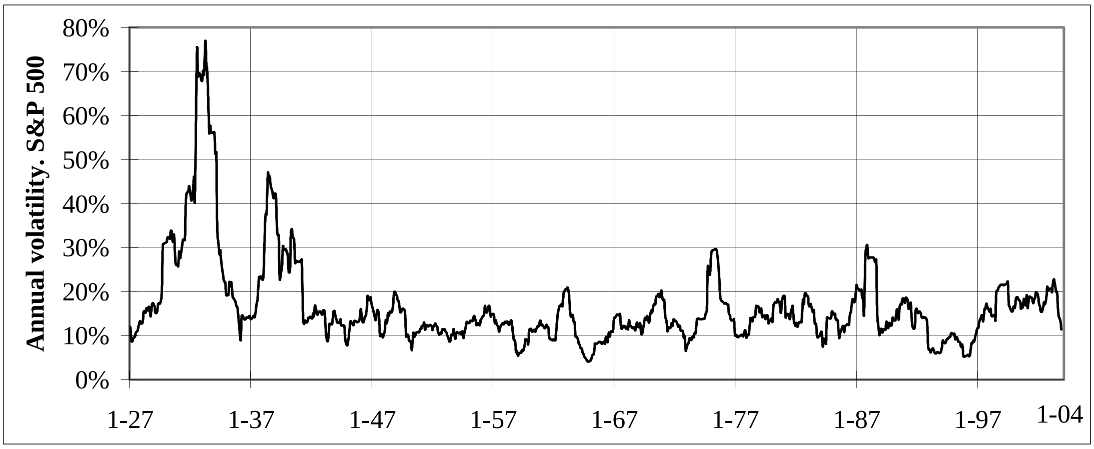


Figure 6 shows the volatility of the S&P 500 Index using monthly data. We can see that the volatility of the S&P 500 in the later years has not been greater, on the average, than the volatility of previous periods.

Data from previous years and centuries can be found in Ineiche (2000).

Figure 6. Annual volatility of the U.S. stock market (S&P 500 stocks). Volatility calculated using monthly data corresponding to one year



5. Return of stocks over bonds in USA

5.1. The period 1926-1999

Figure 7 shows the geometric average for the previous 20 years of the annual difference between the annual return of the market and the 3-month risk-free rate (*T-Bills*) and the 30-year risk-free rate (*T-Bonds*) between 1948 and 2003.

Figure 7. Historical differential return (geometric average) between the market and T-bills and T-bonds, over the previous 20-year period

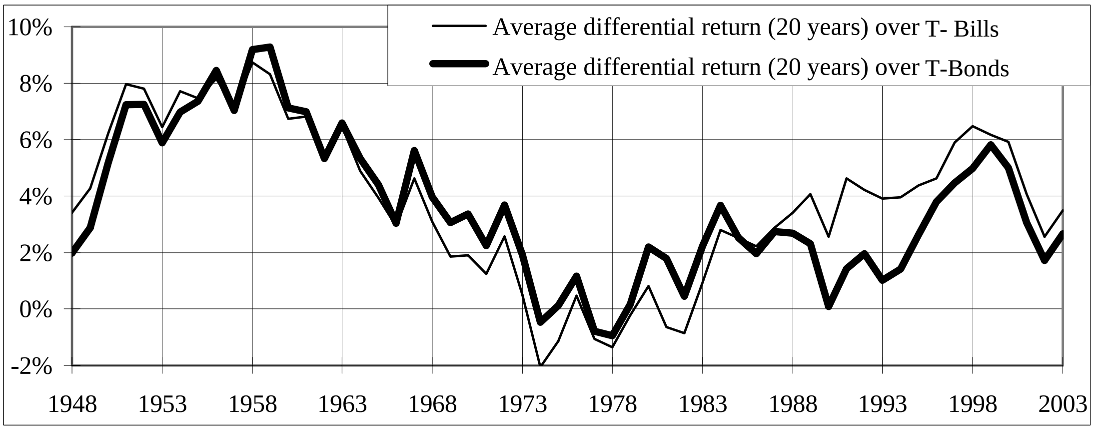


Figure 8 shows the arithmetic average for the previous 10 years of the annual difference between the annual return of the market and the 3-month risk-free rate between 1938 and 2003 and compares it with the short-term interest rate in each year. Note that the premium was greatest in the years with the lowest interest rates. It can also be seen that when rates rise, the premium falls, and vice-versa. This is logical: in general, share prices rise when interest rates fall.

Figure 8. Historical differential return over the previous 10 years, and annual return of the 3-month risk-free rate (*T-bills*)

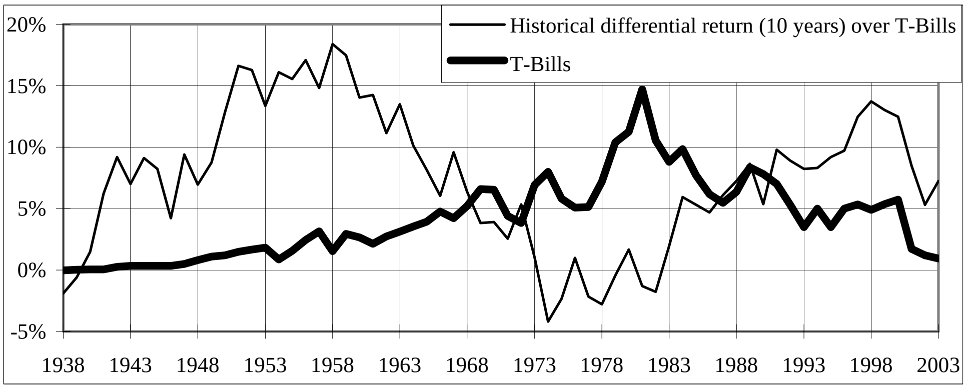


Table 4 shows the average market return, the average short-term risk-free rate, and the average long-term risk-free rate in different periods. Both the arithmetic and the geometric average have been calculated for all parameters.

Table 4. U.S. stock market. Average (arithmetic and geometric) in different periods of the annual return of the market, the 3-month risk-free rate (*T-bills*) and the 30-year risk-free rate (*T-bonds*)

	Average return Shares		**Average return T-Bills**		**Average return T-Bonds**	
	Arithmetic	**Geometric**	**Arithmetic**	**Geometric**	**Arithmetic**	**Geometric**
1926-2003	12.4%	10.6%	3.8%	3.8%	5.2%	5.0%
1951-2003	13.1%	11.7%	5.1%	5.1%	5.7%	5.3%
1961-2003	12.1%	10.8%	5.8%	5.8%	6.7%	6.3%
1971-2003	13.0%	11.5%	6.3%	6.3%	8.3%	7.9%
1981-2003	14.1%	12.9%	6.1%	6.1%	10.1%	9.6%
1991-2003	13.8%	12.1%	4.2%	4.2%	6.7%	6.5%

Table 5. U.S. stock market. Average (average and geometric) in different periods of the market premium over the 3-month risk-free rate (*T- Bills*) and the 30-year risk-free rate (*T- Bonds*)

	Historical market risk premium over T-Bills		**Historical market risk premium over T-Bonds**	
	Arithmetic	**Geometric**	**Arithmetic**	**Geometric**
1926-2003	8.6%	6.8%	7.2%	**5.6%**
1951-2003	8.0%	6.7%	7.4%	**6.4%**
1961-2003	6.2%	4.9%	5.4%	**4.5%**
1971-2003	6.7%	5.3%	4.7%	**3.7%**
1981-2003	8.0%	6.9%	4.0%	**3.3%**
1991-2003	9.6%	8.0%	7.1%	**5.6%**
1991-1999	*16.5%*	*16.0%*	*15.4%*	***15.0%***

Table 5 shows the average differential return between the market and the short-term risk-free rate (T-Bills), and the average differential return between the market and the long-term risk-free rate (T-Bonds) in different time periods. Arithmetic averages and geometric averages have been calculated for all parameters.

Figure 9 shows the geometric average annual difference between the annual market return and 3-month government securities (T-Bills), and the annual difference between the market return and the return of long-term government securities (T-Bonds) for all the years to 2003. Figure 10 shows the same information, but calculating the historical market risk premium from 1926 to the chosen year.

Figure 9. U.S. stock market. Annual (geometric) average of the historical market risk premium of stocks versus 3-month government securities (*T-Bills*), 30-year government securities (*T-Bonds*) and inflation, <u>from the chosen year to 2003</u>

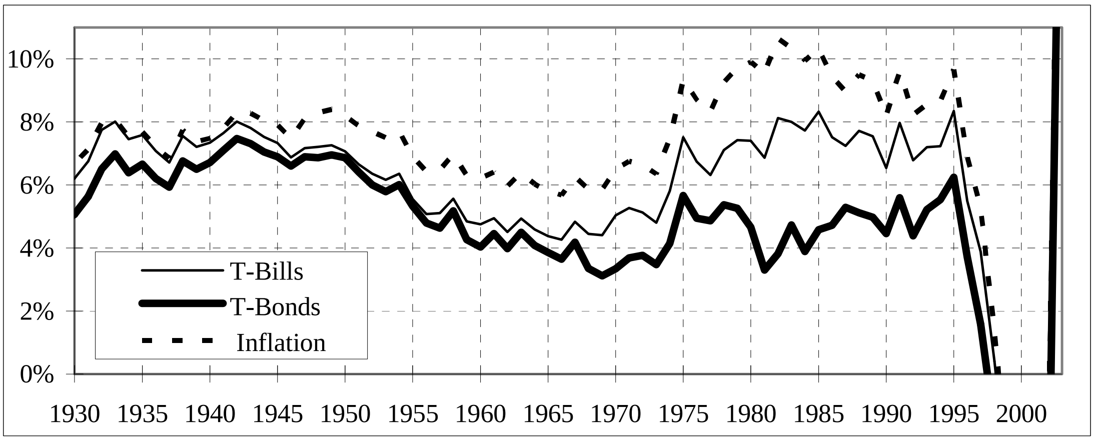
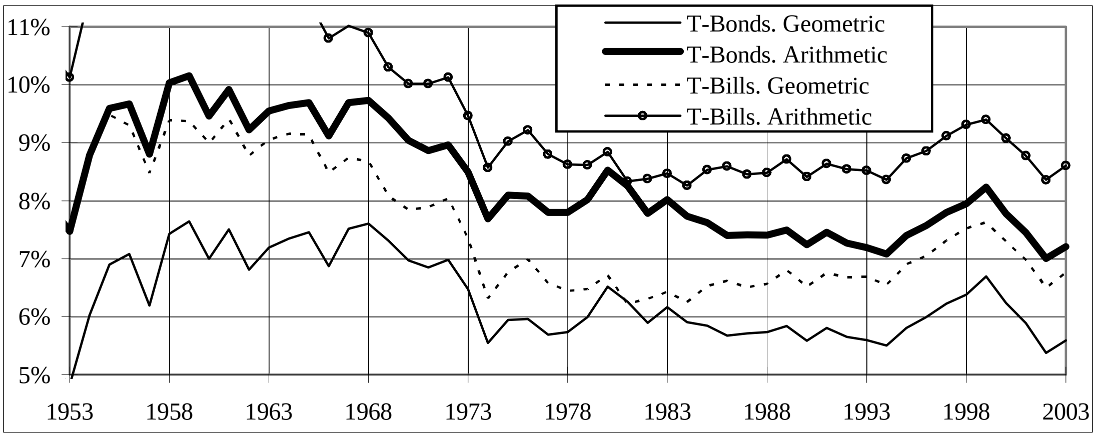


Figure 10. U.S. stock market. Annual average historical market risk premium of stocks versus 3-month government securities (*T-Bills*), 30-year government securities (*T-Bonds*) and inflation, <u>from 1926 to the chosen year</u>



5.2. Period 1802-1925

Schwert (1990) and Siegel (1998) studied the relationship between U.S. equity and bonds before 1926. The data on which they base their studies are less reliable than recent data, but the results are interesting, nevertheless. Table 6 shows their conclusions. It can be seen that the *historical risk premium* in the period 1802-1925 was substantially less than the *historical risk premium* in subsequent years. Likewise, it can be seen that inflation was substantially less before 1926. However, the real return of bonds was significantly higher in the years before 1926.

One conclusion that can be drawn after studying all these periods is that the *risk premium* has varied so much in the past that it is almost impossible to say what its average has been and, of course, much more complicated to predict the future from historical data.

Table 6. US stock market. Average (arithmetic) return in different periods of the equity premium versus 3-month bills (*premium bills*) and 30-year bonds (*premium bonds*)

	Average arithmetic return				Historical market risk premium (arithmetic)	
	Shares	T-Bills	T-Bonds	Inflation	T-Bills	T-Bonds
1802-1870	**8.1%**	**5.1%**	**4.9%**	**0.1%**	**3.0%**	**3.2%**
1871-1925	**8.4%**	**3.2%**	**4.4%**	**0.6%**	**5.2%**	**4.0%**
1926-2003	12.4%	3.8%	5.2%	3.2%	8.6%	7.2%
1802-2003	9.9%	4.1%	4.9%	1.4%	5.8%	5.0%

A more detailed look at the data given here raises the following points:

1. The historical equity premium varies so much that it is impossible to use historical data to asses the magnitude of the *required market risk premium*.

2. The *required risk premium* has varied over time.

3. In the period 1926-2003, the North American financial markets suffered from financial crises, but the North American economy was not exposed to other types of vicissitude that affected other countries, such as a war fought on its own territory.

4. Inflation changed considerably in the years that followed the gold standard. With the abandonment of the gold standard, unexpected inflation became a much more important risk.

6. Comparison of the Spanish and U.S. stock markets

6.1. Evolution of stock market indices

Figure 11. Evolution of the ITBM, the S&P 500 (U.S. stocks) and long-term U.S. bonds (*T-Bonds*)

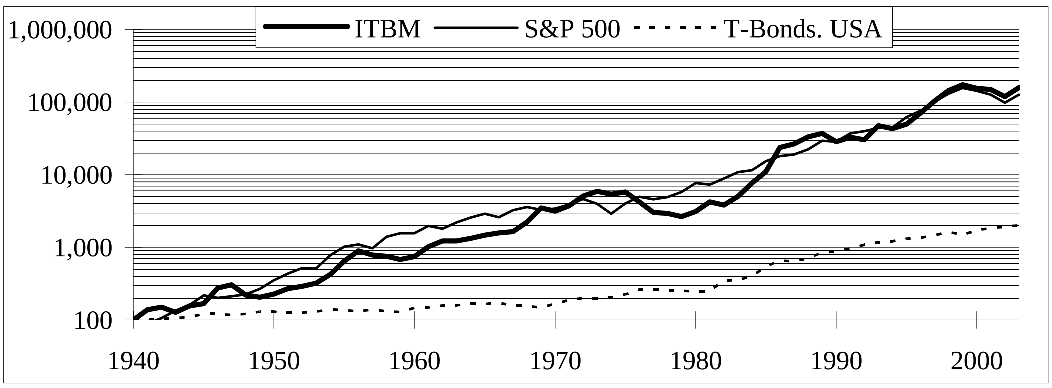


Figure 11 compares the evolution of the ITBM from 1940 with that of the U.S. stock market[15]. The correlation between the annual returns of the Spanish stock market and of the U.S. stock market between 1941 and 2003 was only 18.7%[16].

Figure 12 shows the annual return of the U.S. market and the Spanish market since 1940.

Figure 12. Annual return of the Spanish market (ITBM) and the U.S. market (S&P 500)

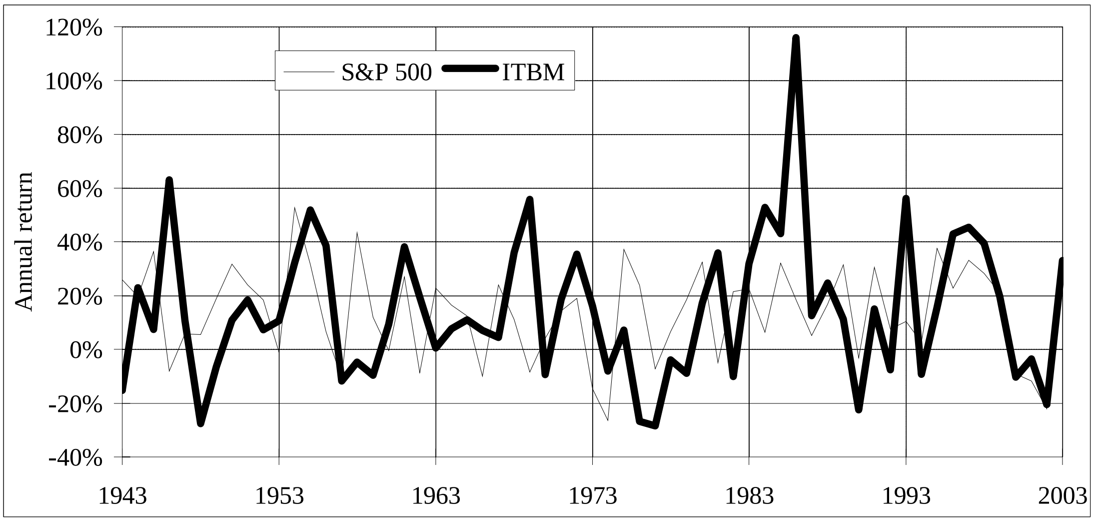
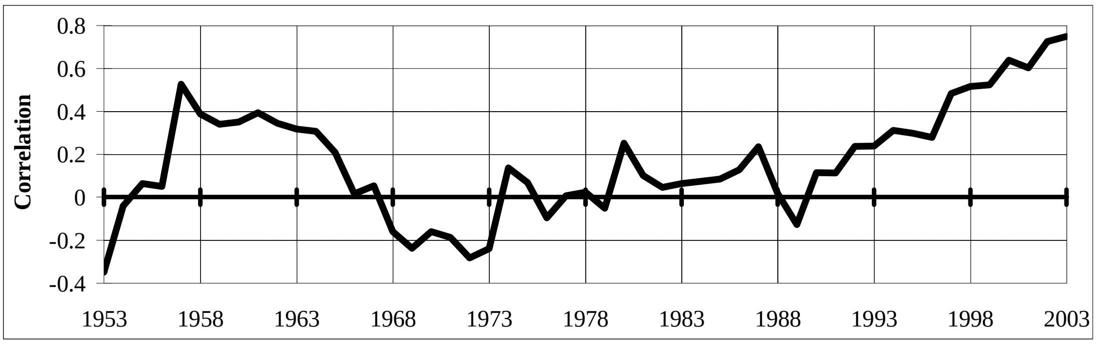


Figure 13. Correlation between the Spanish and U.S. stock markets
Correlation of the annual returns of the previous 10 years



[15] An investment of 100 euros in Spanish shares in 1940 became (excluding taxes) 157,474 euros in 2000. An investment of 100 dollars in U.S. stocks in 1940 became (excluding taxes) 125,655 dollars in 2003. An investment of 100 dollars in U.S. T-Bonds in 1940 became (excluding taxes) 2,017 dollars in 2003.

[16] The correlation has increased significantly over the years:

Correlation of the annual returns of the Spanish and U.S. markets				
1940-2003	1940-1960	1961-1980	1981-2003	1991-2003
18.7%	-6.0%	4.7%	43.2%	70.6%

6.2. Correlation between the two countries' stock markets

Figure 13 shows how the correlation between the returns of the Spanish and U.S. markets has gradually increased. From a negative correlation in the 1950s and through much of the 1960s and 1970s, recent years have seen a very high correlation.

UBS (2004) also points out that the correlations between the stocks and bonds of different countries have increased considerably, particularly since March 2000. It also points out that the correlations (between March 2000 and December 2003) between the S&P 500 and the DAX, and between the S&P 500 and the FTSE, were 0.97. The correlation between the S&P 500 and Topix was 0.94. The correlations between the yields of 10-year government bonds also were high: 0.93 between USA and Germany; 0.85 between USA and Japan; and 0.91 between USA and UK.

6.3. The effect of inflation in the U.S. and Spain

To be able to compare the evolution of the Spanish and U.S. markets, Figures 11 and 12 are not enough; we also need to take into account the effect of inflation in both countries. Figure 14 shows the evolution of annual inflation in both countries. In practically every year inflation was higher in Spain than in the U.S. Figure 15 shows the inflation path, that is, how much goods that cost 100 (dollars or euros, depending on the country) in 1940 cost in each subsequent year. It can be seen that, in Spain, goods that cost 100 in 1940 cost 12,095 in 2003 (77.6 euros), whereas in the United States, goods that cost 100 in 1940 cost 1,320 in 2003. Average inflation was 8% in Spain and 4.2% in the U.S.

Figure 14. Annual inflation in USA and Spain

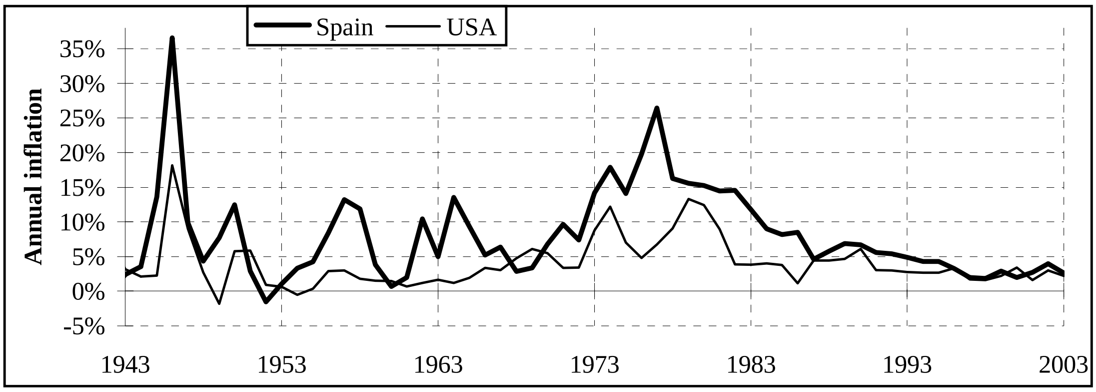


Figure 15. Inflation path in Spain and USA

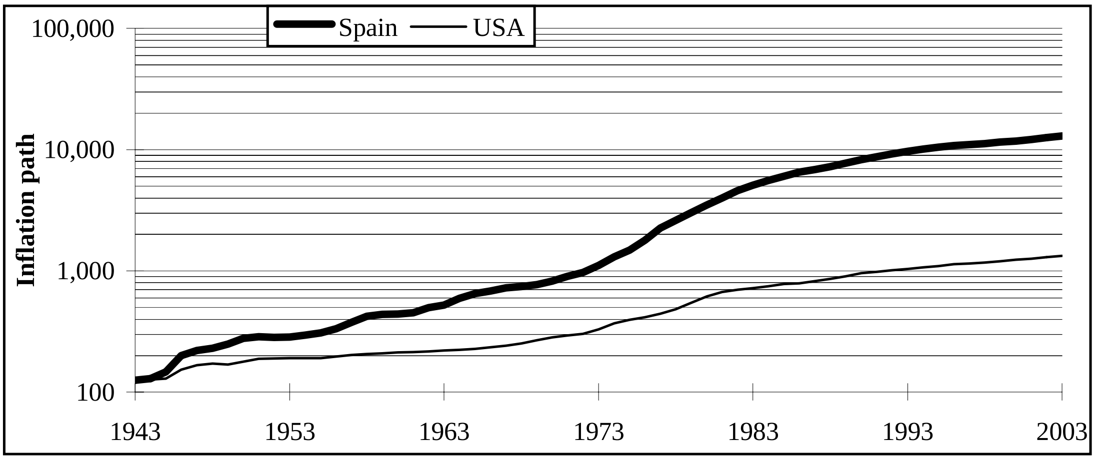


Figure 16. Evolution of the inflation-adjusted ITBM and the inflation-adjusted S&P 500 (U.S. stocks) and long-term U.S. government bonds

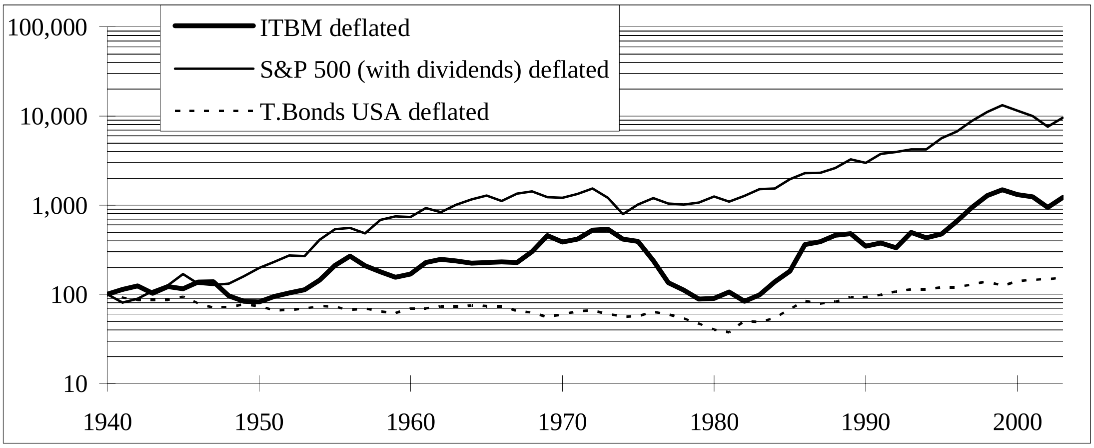
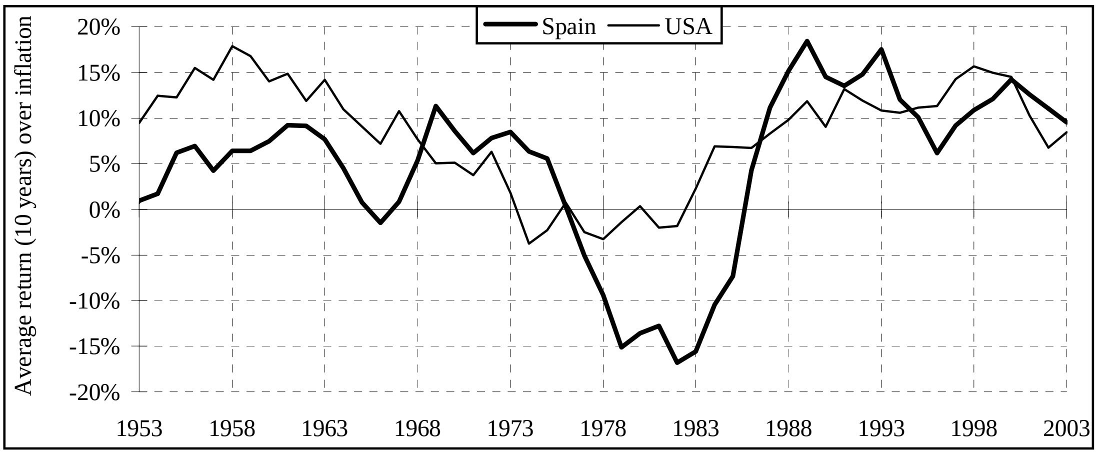


Figure 16 incorporates inflation in the evolution of the U.S. and Spanish indices. Thus, the deflated index of the U.S. market goes from 100 in 1940 to 9,519 in 2003, while the deflated index of the Spanish market goes from 100 to 1,220 in 2003. The Figure also shows that the index of long-term U.S. government bonds was below 100 for many years and rose above 100 from 1992.

Figure 17 shows the average change in value of the U.S. and Spanish stock markets above inflation over the past 10 years. The Spanish stock market has had periods when it has risen below inflation; in the early 1950s, around 1960, and in the period between 1974 and 1983. However, it has also had periods when it has risen much faster than inflation, such as the mid-1950s, the early ’70s, the late ’80s and the period starting 1993.

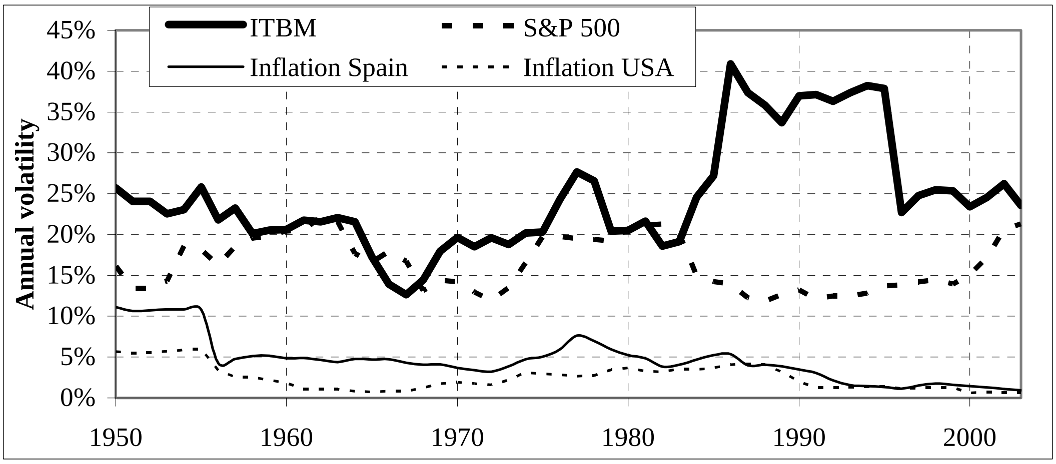
Figure 17. Historical market risk premium of the Spanish and U.S. stock markets versus inflation (average of the previous 10 years)



6.4. Volatility

Figure 18 shows the volatility of the Spanish stock market, the U.S. stock market, and inflation in Spain and the U.S. All the volatilities have been calculated using 10 years of annual data. It can be seen that the volatility of the Spanish stock market has generally been higher than that of the U.S. stock market. The volatility of inflation in Spain has also been higher than the volatility of inflation in the U.S., although they have become more equal in recent years.

Figure 18. Volatility of the stock market and inflation in Spain and USA
(Volatility calculated using annual data of the previous 10 years)



7. Historical market risk premium in different countries

Table 7 shows the difference between the geometric average of the return of stocks and the geometric average of the return of long-term bonds[17] in different countries from 1970-1996. Note that in Germany and Italy, the difference was negative during that period, which is further proof that it is meaningless to call the difference between the historical market return and the risk-free rate the "*risk premium*".

It can also be seen that the difference is greater in countries where the equity market performed better during the period.

Table 7. Annual geometric average differential return of the stock market versus long-term government bonds in several countries

		Average annual return		
Country	**Period**	**Stocks**	**Government bonds**	**Difference**
Australia	1970-1996	8.47%	6.99%	**1.48%**
Canada	1970-1996	8.98%	8.30%	**0.68%**
France	1970-1996	11.51%	9.17%	**2.34%**
Germany	1970-1996	11.30%	12.10%	**-0.80%**
Hong Kong	1970-1996	20.39%	12.66%	**7.73%**
Italy	1970-1996	5.49%	7.84%	**-2.35%**
Japan	1970-1996	15.73%	12.69%	**3.04%**
Holland	1970-1996	15.48%	10.83%	**4.65%**
Switzerland	1970-1996	13.49%	10.11%	**3.38%**
UK	1970-1996	12.42%	7.81%	**4.61%**
US	1970-1996	12.34%	8.62%	**3.72%**
Spain	1970-1996	8.22%	7.91%	**0.31%**

Source: *Ibbotson*. http://www.ibbotson.com

[17] Very often, this difference is called the risk premium (meaning required market risk premium), although, as we have already said, the required market risk premium has nothing to do with the historical differential return.

Table 7 serves a purely informative purpose: it cannot be used to determine each market's *risk premium*. It makes no sense to say that the *risk premium* (understood as the incremental return above the risk-free rate required to equity) in Spain during the period 1970-1996 was 0.31%, while in Holland it was 4.65% and 3.72% in the United States.

8. Premium of the North American stock market from the Gordon and Shapiro equation

One can also attempt to calculate the implicit market premium from the Gordon and Shapiro equation. The Gordon and Shapiro equation simply says that the price of shares is the current value of the expected dividends discounted at the required return to equity (Ke):

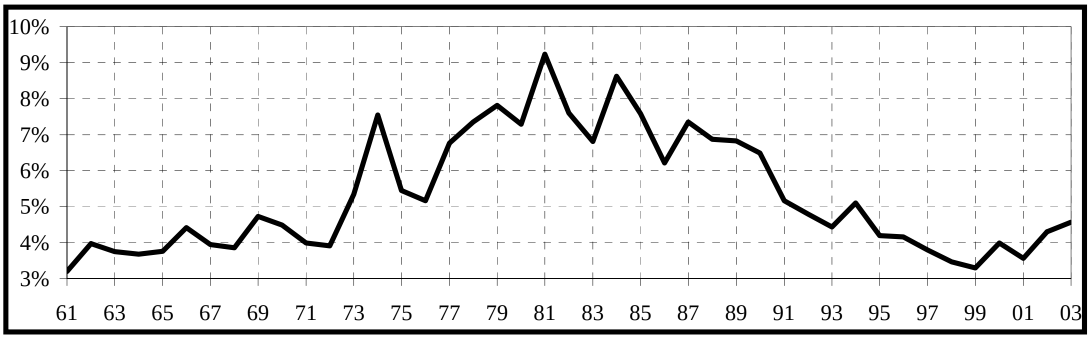
$$P = \text{present value [Dividends ; Ke]}$$

However, in turn, Ke is equal to the risk-free rate plus the market risk premium.

$$Ke = R_F + \text{Required market risk premium}$$

To calculate the market risk premium, when stock prices are known, all that we need to know are the expected dividends. Damodaran (2001) performs this exercise using the expected dividends, obtained from analysts' forecasts. For the next 5 years after the year in which the calculation is performed, he uses analysts' estimates. There are data obtained from analysts' estimates only after 1985. Before that date, he takes the dividends that were actually paid. After year 6, he assumes that dividends will grow at the same rate as long-term Treasury bonds.

Figure 19. Implied required market risk premium of the S&P 500 using the two-stage growth model.
Expected growth based on forecasted inflation, past growth and the T-bond rate



Sources: Damodaran (2001, page 65) and own data.

Damodaran (2001, page 67) concludes,

> "The average implied equity-risk premium between 1970 and 2000 is approximately 4%. By using this premium, you are assuming that while markets might have been overvalued in some of these years and undervalued in others, it has been, on average, correct over this period."

Throughout his book, Damodaran (2001) uses a market risk premium of 4% for the U.S.

Figure 19 shows a growth in the market risk premium during the 1972 oil shock and a subsequent fall in the rate, until it reached about 1.5% in 1998. The important point about this figure is not so much the specific parameter as that the market risk premium decreases from the '80s onwards[18].

Glassman and Hassett (2000) calculated in their book *Dow 36,000* that the required market risk premium in the U.S. in 1999 was 3%[19]. Claus and Thomas (1999) reached the same conclusion. Jeremy Siegel, a professor at Wharton and author of the book *Stocks for the Long Run,* affirmed:

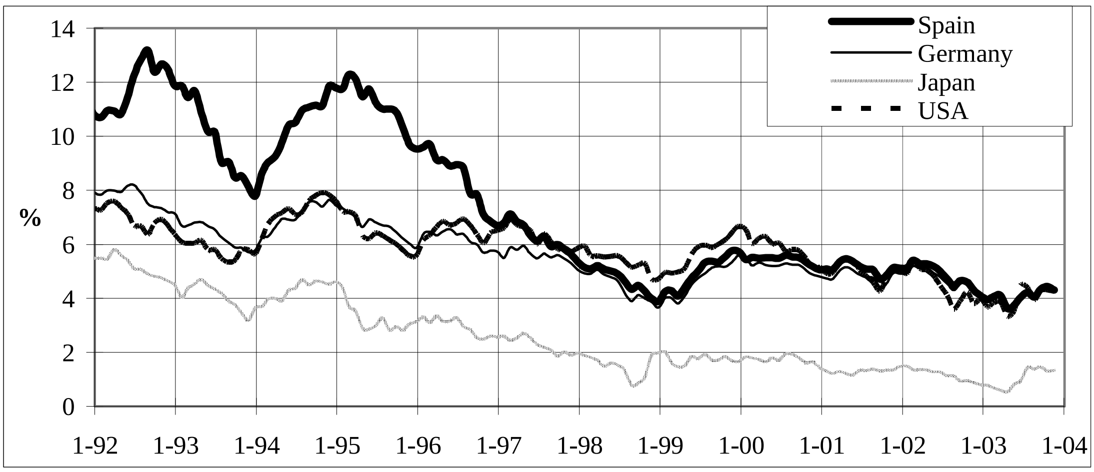
> "Although it may seem that stocks are riskier than long-term government bonds, that is not true. The safest investment in the long run (from the point of view of preserving the investor's purchasing power) has been stocks, not Treasury bonds".

This fact is the fundamental reason why analysts and investors use a market risk premium lower than the historical market return on bonds. The decline of the market premium also explains, at least in part, why the stock markets were so profitable during the 1990s.

9. Recent comparison of stock market trends in Spain, Germany, Japan and USA

Figure 20 compares long-term interest rates (interest rate paid on 10-year bonds) in Spain, Germany, Japan and USA. It can be seen that, until 1996, the interest rate paid on bonds in Spain was substantially higher than in the other countries. After that date, however, long-term interest rates in Spain, USA and Germany converge until they reach the present level of about 5.5%. Although Japan has followed the same trend as the other countries (interest rates fell from December 1991 onwards), it has always had lower interest rates than Spain, Germany and USA.

Figure 20. Long-term interest rates in Spain, Germany, Japan and United States



[18] A number of factors suggested as *possible* causes of the decline in the market risk premium are: computer and Internet access to the stock market, the decrease in transaction costs, more favorable tax treatment, financial deregulation, the development of mutual and pension funds, the entry of the baby boom generation into the saving phase, and the observation by investors that, in the long run, stocks have almost always given a higher return than bonds.

[19] Not to be outdone, Kadlec and Acampora (1999) gave their book the title, *Dow 100,000: Fact or Fiction?*

Figure 21 shows the trend of four countries' stock market indexes. The starting point for all indexes is 100 points in December 1991. It can be seen that the IBEX 35, the S&P 500, and the DAX 30 have followed parallel paths: all of them have increased significantly. The behavior of the Japanese Nikkei 225 index has been completely different: not only has it not increased but its value in 2001 was less than in December 1991.

Figure 21. Trend of the stock market indexes of Spain, Germany, Japan and United States December 1991 = 100 points

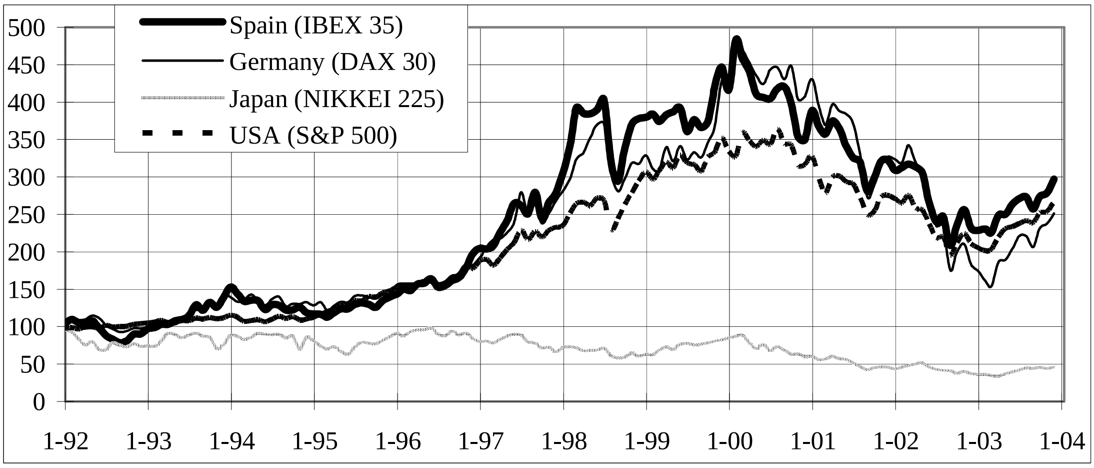


Table 8 shows the correlation matrix between the increase in interest rates in the different countries and the returns of the market indexes. The correlations between the U.S., German and Spanish stock market indexes have been greater than the correlations between these three indexes and that of the Japanese market. Also, the correlation between the indexes' returns and the increase in interest rates has been greater (in absolute terms) in Spain (-33.3%) than in the other countries (7.3%. 25.7% and 0.4%). The correlation between interest rate increases has naturally been greater between Spain and Germany than between Spain and the United States. There has also been a strong correlation between interest rate increases in Germany and the United States. The correlation between interest rate increases in Spain and Japan was virtually zero.

Table 8. Correlation matrix. Monthly data, 1991-2003

	Return of the				Increase of the risk-free rate in			
	IBEX	**DAX**	**NIKKEI**	**S&P 500**	**Spain**	**Germany**	**Japan**	**USA**
Return IBEX (Spain)	100.0%	74.8%	37.1%	63.8%				
Return DAX (Germany)	74.8%	100.0%	31.4%	71.1%				
Return NIKKEI (Japan)	37.1%	31.4%	100.0%	38.5%				
Return S&P (USA)	63.8%	71.1%	38.5%	100.0%				
Δ risk-free rate Spain	**-33.3%**	-13.3%	-2.6%	-10.4%	100.0%	59.8%	4.9%	35.4%
Δ risk-free rate Germany	3.4%	**7.3%**	5.3%	2.7%	59.8%	100.0%	25.1%	60.4%
Δ risk-free rate Japan	15.4%	4.1%	**25.7%**	3.5%	4.9%	25.1%	100.0%	18.8%
Δ risk-free rate USA	15.7%	24.8%	6.4%	**0.4%**	35.4%	60.4%	18.8%	100.0%

Figure 21, like many of the previous figures, shows that market prices rose dramatically during the 1990s, except for the Japanese market, only to fall in 2000, 2001 and 2002. In 2000, two explanations were commonly given for the rise in prices during the '90s:

one, that the required market risk premium had declined, and two, that stocks were overvalued[20].

10. Does the required market risk premium exist?

One of the hypotheses on which the CAPM –and most financial models– is based is that of homogenous expectations: all investors have the same return and risk expectations[21] for all assets. If that were the case, all investors would have portfolios composed of risk-free debt and an equity portfolio with the same percentage composition as the market (the stock market). However, it is obvious that not all investors have the same expectations, that not all investors have equity portfolios with an identical composition, and that not all investors have a portfolio composed of all the stocks traded on the market[22].

We can find out an investor's market risk premium by asking him, although for many investors the market risk premium is often not an explicit parameter but, rather, an implicit one that manifests in the price they are prepared to pay for shares[23]. However, it is impossible to determine the premium for the market as a whole, because it does not exist. Even if we knew the market premiums of all the investors who operated on the market, it would be meaningless to talk of a premium for the market as a whole.

The rationale for this is to be found in the aggregation theorems of microeconomics, which in actual fact are non-aggregation theorems. One model that works well individually for a number of people may not work for all of the people together[24]. For the CAPM, this means that although the CAPM may be a valid model for each investor, it is not valid for the market as a whole, because investors do not have the same return and risk expectations for all shares. Prices are a statement of expected cash flows discounted at a rate that includes the risk premium. Different investors have different cash flow expectations and different future risk expectations. One could only talk of a market risk premium if all investors had the same cash flow expectations.

Figure 22 is proof that investors do not have the same expectations: it presents the result of a survey performed among IESE MBAs in January 1998 regarding their return and risk (volatility) forecasts for the Spanish stock market in 1998. It is plain to see that individual expectations vary enormously. The return of the IBEX 35 in 1998 was 36% and the volatility was 38%.

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[20] When talking of market overvaluation, people often talk about the existence of a speculative bubble, which means that when this bubble bursts, the stock market will fall to correct price levels (according to those who believe that the market is overvalued). One example: Greenspan, president of the US Federal Reserve, said on December 5, 1996 (when the Dow Jones was at 6,437 points) that the stock market was showing "irrational exuberance". In August 1999, when the Dow Jones was at 11,090 points, he said that, in his opinion, the stock market was under the effects of a speculative bubble.

[21] Identical risk expectations is when all investors agree on their expectations regarding the future volatility of each share's return and the correlation between the shares' returns.

[22] For a good article on the non-existence of homogenous expectations, see Levy & Levy (1996).

[23] An example: An investor is prepared to pay 100 euros today for a perpetual annual cash flow of 6 euros guaranteed by the State (risk-free fixed-income securities). This implies that the risk-free rate is 6%. However, for another perpetual annual cash flow of 6 euros in year 1 and growing at an annual rate of 3%, which he expects to obtain from a diversified equity portfolio, he is only prepared to pay 80 euros. This means that the required market return is 10.5% ([6/80] + 0.03). Consequently, this investor's market premium is 4.5%.

[24] As Mas-Colell *et al.* (1995, page 120) say, "it is not true that whenever aggregate demand can be generated by a representative consumer, this representative consumer's preferences have normative contents. It may even be the case that a positive representative consumer exists but that there is no social welfare function that leads to a normative representative consumer."

Figure 22. Return and risk (volatility) expectations for the Spanish stock market in 1998. Survey performed among IESE MBAs in January 1998

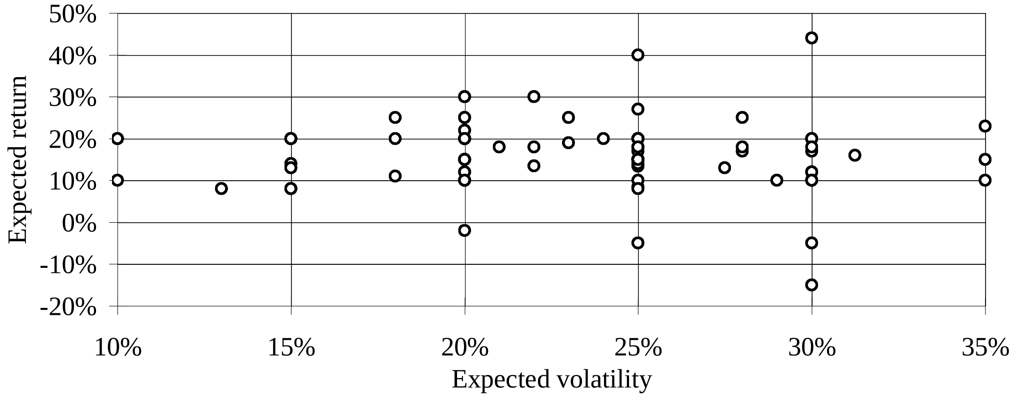

Table 9 shows the forecasts made at the end of 1997 by a number of analysts about the level of the Dow Jones at the end of 1998. It also shows their recommendations for the composition of a portfolio: %S is the proportion of stocks that they recommended (the difference in fixed income). Note the scatter of the forecasts (between 6,100 and 10,250), and the scatter of the proportion of stocks in the portfolio. One would expect that those who forecast a larger rise in the Dow Jones Index would recommend a higher proportion of stocks, but, as can be seen, this is not always so. The Dow Jones stood at 7,908 points on 31 December 1997 and 9,181 points on 30 December 1998.

Table 9. Forecasts made at the end of 1997 by analysts about the level of the Dow Jones at the end of 1998

Analyst/Company	Dow Jones 1998	%S	Analyst/Company	Dow Jones 1998	%S
BIRINY JR. Birinyi Assoc.	10,250	75	E. CRIPPS Legg Mason Wood Walker	8,600	80
J. FROEHLICH Zurich Kemper Invest.	10,000	75	J. PRADILLA Cowen & Co.	8,600	45
E. PERONI JR. Janney Montgomery Scott	9,850	100	F. SKRAINKA Edward Jones	8,600	70
F. DWYER Ladenburg Thalmann & Co.	9,800	65	T. MADDEN Federated Investors	8,500	55
S. ROBBINS Robinson-Humphrey	9,455	60	A. SMITH Prudential Securities	8,500	85
J. APPLEGATE Lehman Brothers	9,200	75	J. MACKAY Bear Stearns	8,350	50
J. CANELO Morgan Stanley, Dean Witter	9,000	70	P. ANDERSON American Express Fin.Adv.	8,100	70
J. DOMBICIK McDonald & Co.	9,000	75	M. ACUFF Salomon Smith Barney	8,000	55
G. RILEY JR BankBoston	8,950	60	G. CRANE Key Asset Management	7,800	75
S. RONESS JW Charles	8,900	85	G. JACOBSEN Trevor Stewart Burton&J.	7,750	60
T. McMANUS NatWest Markets	8,850	64	C. MOORE Principal Financial Securities	7,675	60
D. CLIGGOTT J.P. Morgan	8,800	60	E. MILLER Donaldson, Lufkin&Jenrette	7,300	50
A. GOLDMAN A.G. Edwards & Sons	8,800	70	R. BROWN Feris, Baker Watts	7,061	40
M. SIMPSON Kirkpatrick Pettis	8,800	70	H. BARTHEL Fahnestock	7,000	60
W. ZEMPEL Robert W. Baird & Co.	8,740	70	M. DION Ziegler Asset Management	7,000	95
J. COHEN Goldman Sach	8,700	65	M. METZ Cibc-Oppenheimer	7,000	25
K. LYNCH Interstate Johnson Lane	8,700	60	R. HAYS Wheat First Butcher Singer	6,300	72
R. DAVID JR. Rauscher Pierce Refsnes	8,666	65	F. DICKEY Dain Bosworth	6,100	60

Source: *Business Week*. 29 December 1997. Page 65.

The required market risk premium is one thing; the historical return of stocks over the risk-free rate is quite another. It is a common error to confuse them.

The problem with the market risk premium is that investors do not have homogenous expectations. If they did, it would make sense to talk of a market risk premium because all investors would have the market portfolio. However, expectations are not homogenous.

11. The HMDYWD method

My friend Guillermo Fraile, professor at IAE in Buenos Aires, jokes in his classes about a new method for calculating the risk premium for family businesses: the HMDYWD (an abbreviation for How much do you want, Dad?) method. After what we have seen in this chapter, the HMDYWD method is no joke: it does not make much sense to talk about the market risk premium as a magnitude shared by all investors; but it does make sense to talk about each investor's market risk premium, including Dad's.

12. Conclusion

The market risk premium (MRP) is one of the most important but elusive parameters in finance. It is also called equity premium, market premium and risk premium. The term MRP is used to designate three different concepts (although many times they are mixed):

1. **Required** MRP. It is the incremental return of a diversified portfolio (the market) over the risk-free rate (return of treasury bonds) required by an investor. It is needed for calculating the required return to equity (cost of equity).

2. **Historical** MRP. It is the historical differential return of the stock market over treasury bonds.

3. **Expected** MRP. It is the expected differential return of the stock market over treasury bonds.

Many authors and finance practitioners assume that **expected** MRP is equal to the **historical** MRP and to the **required MRP**. The CAPM assumes that the **required** MRP is equal to the **expected** MRP.

The **historical** MRP is equal for all investors, but the **required** and the **expected** MRP are different for different investors. The **expected** MRP (an expectation) is one parameter; the **historical** differential return of stocks over treasury bonds (historical MRP) is another. It is a common mistake to think that they are equal.

We also claim that there is no **required** MRP for the market as a whole: different investors use different **required** MRPs.

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