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The Stock Market in Spain: Performance, Structure, and the Behavior of Asset Prices

1. Introduction

The last decade or so, the Spanish financial system in general and the capital market in particular have been characterized by an intensive change. Traditionally, it has been a very regulated market. Mainly by 1977, the economic crisis forced the monetary and financial authorities to provide the market with more possibilities of playing its real function of efficiently allocating resources. Among the important objectives and measures adopted, the economic authorities made clear that more competition among financial institutions, and an assured flow of volume of resources sufficient to meet medium and long-term financing were needed. At the same time, modernization of the securities markets with liberalization measures for foreign investments, foreign banks, interest rates, and dividends were also adopted in order to improve the allocation of existing resources, and to provide a more adequate return for savings. It was also necessary to develop measures related to the security and solvency of financial institutions, and to take steps toward effective instruments for implementing monetary policy.

It is clear that, at this point, the Spanish financial system is a modern and competitive system. Most of the objectives established at the end of the seventies have been satisfied, and there is no doubt that the financial institutions are now prepared to confront the ongoing reforms for the liberation of capital movements within the European Community.

The objective of this paper is to provide an overview of the main characteristics of the Spanish stock exchange. The paper discusses the evolution of the Spanish market in terms of performance and microstructure. It may be concluded that the Spanish authorities have been active enough in developing a modern and competitive market. Of course, the main reform of the stock market has not yet been completed. However, the enormous effort made by the different agents involved should be recognized. It has also been the case that these years of continuous structural changes have been accompanied by an impressive performance. Section 2 of the paper provides a detailed analysis of these issues.

On the other hand, from sections three to five the paper contains empirical evidence regarding the behavior of asset pricing in the Spanish equity market. Relevant issues for portfolio management like the importance of beta risk, the impact of taxation of capital gains and dividends on the price formation of risky assets, the relationship between inflation and real stock returns and the discussion of some well known anomalies also found in other stock exchanges around the world are presented in a rather intuitive fashion. Finally, section five concludes the paper.

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2. Performance and Structure of the Spanish Stock Market

2.1 Performance

As it will become evident throughout this section, the Spanish equity market has also experienced a tremendous change during the eighties. By 1988, data on market value and volume of transactions, shown in table 1, reflect that Spain reached competitive magnitudes relative to most of the European stock markets. As an example, the turnover ratio increased steadily between 1980 and 1987. In particular, 1987 represented the highest figure for the eighties reaching 47.7%. In 1988 and 1989, the turnover ratio was 14.7% and 20.8% respectively. The market capitalization has also increased from 0.5% of the total world market in 1984 to 1% in 1988. On the other hand, it is clear that New York, Tokyo and London are by far the leading markets both in terms of market value and transaction volume. In 1988, together they represented 71% of the total world capitalization.

Panel A of table 2 contains a comparative evolution of total annual returns in domestic currency among the most important stock exchanges in the world. Spain presents an impressive performance. From 1980 to 1988, Spain has the highest ratio of average return to standard deviation among the countries of table 2. The average return for the eighties is 31% with a maximum of 108% during 1986. Unfortunately, in 1989 the results for the Spanish stock market were not as competitive as before relative to other major stock exchanges. The index went up only 8.2%, whilst New York, Tokyo, and London had increases of 26.1%, 29.0% and 32.9% respectively. In fact, Madrid had the worst performance among the major stock exchanges in the world. However, as we will see later, in 1989 the difference between purchases and sales of foreign investors was the highest of the last years. This may indicate a maintained confidence of foreign institutional investors in the Spanish market.

It should be noted that both in terms of price earnings ratio (PER), and price to book value, Spain presents an important potential growth. It is also interesting to point out that, during the last years, the Spanish equity market has maintained a relatively high dividend yield. This evidence is reported in Panel B of table 2. In 1989, the PER was just 12.2. This ratio was again low relative to other stock exchanges.

Table 1: Equity Markets: Market Value and Transaction Volume (December 1988).

Country	Market Value Local Currency*	Market Value US Dollars**	Market Value/ GDP (%)	Transaction Volume US Dollars	Turnover*** Ratio
SPAIN	19'792.4	174.6	26	25.6	0.147
FRANCE	1'350.5	222.9	24	65.5	0.294
GERMANY	446.6	250.9	20	350.3	1.396
ITALY	176'827.0	165.7	-	31.7	0.191
JAPAN	892'017.2	7'087.9	134	2'497.3	0.352
NETHERLANDS	232.3	115.6	-	30.5	0.264
UK	454.9	823.2	89	290.0	0.352
US	3'027.1	3'027.1	51	1'356.1	0.448

Notes:
* Amount in billions of local currency or dollars.
** Translation into US dollars based on year-end exchange rate.
*** Volume of transactions divided by market value.

Table 2.A: Equity Markets: Comparative Evolution of the Total Annual Returns. (In percentages, domestic currency).

Country	1989	1988	1987	1986	1985	1984	AVERAGE RETURN 80-88	STANDARD DEVIATION 80-88	AVG.RETURN/ STD.DEV
SPAIN	8.15	20.80	9.06	108.31	35.78	40.66	31.03	22.63	1.37
FRANCE	28.30	60.10	-28.20	57.00	54.50	21.00	21.54	23.01	0.94
GERMANY	32.59	27.10	-36.49	4.87	76.14	6.35	15.16	20.30	0.75
ITALY	16.57	20.85	-32.48	58.15	98.50	19.81	30.15	28.90	1.06
JAPAN	29.03	39.86	14.58	49.23	14.72	24.81	22.37	17.51	1.28
UK	32.90	5.97	4.52	16.13	18.81	21.85	23.14	19.98	1.16
US	26.14	11.85	2.26	22.59	27.66	-4.33	16.34	16.88	0.97

Table 2.B: Equity Markets: Comparative Ratios.

	1989			1988			1986		
COUNTRY	PRICE/ BOOK VALUE	PER	DIV.YIELD	PRICE/ BOOK VALUE	PER	DIV.YIELD	PRICE/ BOOK VALUE	PER	DIV.YIELD
SPAIN	1.31	12.2	4.0	1.22	15.6	4.0	0.94	16.0	4.0
FRANCE	2.09	12.5	2.7	1.82	12.6	2.8	2.15	19.0	2.5
GERMANY	2.39	17.8	2.9	1.54	17.5	2.0	2.67	14.7	2.8
ITALY	1.74	14.0	2.5	1.74	15.1	2.6	2.51	21.0	1.7
JAPAN	4.79	51.9	0.4	4.79	53.8	0.5	3.93	45.7	0.7
UK	1.95	11.7	4.5	1.68	10.4	5.0	1.84	13.4	4.2
US	2.16	14.1	3.3	1.81	11.6	3.7	1.78	14.1	3.6
World Average	2.60	19.3	2.2	2.41	18.1	2.4	2.17	18.2	2.6

Given these results, it is not surprising that foreign investment has grown steadily since 1980. The figures are contained in table 3.

They clearly indicate the increasing interest of foreign investors in the Spanish market. Between 1980 and 1983 the percentage of foreign investment-desinvestment was around 5% of the volume of trading. Even with a much higher level of transactions, this percentage reached 24% during 1987 and 1988. In 1989, the proportion decreased to 15.5%. The evolution of net holdings is also interesting to note. They have always been positive, with an important increase in volume during 1989. In particular, in this year and with the highest trading volume in history, the purchases were 215'000 millions of pesetas which represented 45% more than the selling volume.

Geographically, in 1989 the European Community represented 77.7% of the total foreign participation. Out of this volume, the United Kingdom had 48%. It should be said that a major proportion of the British holdings are really coming from the United States and Japan.

Regarding the sectorial distribution of foreign participation, banks, construction, and chemicals were the most active sectors.

It must be recognized that during the last months, foreign investors have been clearly disappointed with the Spanish market. At this point, the market suffers from high volatility, low levels of transac-

Table 3: Foreign Investments. (Millions of pesetas).

YEAR	PURCHASES	SALES	BALANCE	FOREIGN INVEST OVER TOTAL TRADING VOLUME
1980	3'608	1'887	1'721	4.9%
1981	9'600	3'837	5'763	5.7%
1982	4'493	4'283	210	3.5%
1983	8'770	5'034	3'736	5.0%
1984	28'765	14'096	14'669	7.9%
1985	89'370	36'740	52'630	12.8%
1986	414'437	262'638	151'799	18.7%
1987	991'819	956'052	35'767	24.2%
1988	623'445	586'363	37'082	23.8%
1989	694'811	480'222	214'589	15.5%

tions, as well as lack of liquidity and institutional investments [1]. The Spanish economy does not seem to be able to compete dynamically with its most direct competitors, and despite having a high growth, the level of inflation, interest rates and trade deficit are certainly too high. Finally, the constant rumour of devaluation does not help clarifying the situation for foreign investors.

On the same line, during the last fifteen years, the primary market has been characterized by a dramatic change, as shown in table 4. From 1970 to 1979 the average new issues of the public sector represent 17.3% and the new issues of shares by Spanish companies reached 39.0%. From 1980 to 1989, the average figures were 49.3% and 12.0% respectively. Taking into account only issues of new shares, banks and utilities alone represented 56.3% from 1980 to 1985. However, the average figure between 1986 and 1989 was just 49.3%. It is interesting to observe that during the last years the industrial sector is becoming an active group in the primary market.

Table 4.A: Securities Issues. (US-billions of pesetas).

YEAR	SHARES	%	BONDS	%	PUBLIC SECTOR	%	TOTAL
Average 70-79	93.6	39.0	104.9	43.7	41.4	17.3	239.9
Average 80-89	212.5	12.0	683.6	38.7	872.2	49.3	1768.3

Table 4.B: New Shares Issued by Groups. (US-billions of pesetas).

YEARS	BANKS	%	UTILITIES	%	INDUSTRIAL	%	OTHERS*	%	TOTAL
1980	25.4	18.3	54.1	38.9	42.4	30.5	17.2	12.3	139.1
1981	20.7	12.3	71.4	42.3	25.3	15.0	51.3	30.4	168.7
1982	25.5	27.2	52.1	55.6	9.3	9.9	6.8	7.3	93.7
1983	10.7	7.6	37.8	27.0	35.8	25.6	55.8	39.8	140.1
1984	2.0	1.1	100.8	55.9	39.3	21.8	38.1	21.2	180.2
1985	11.7	4.8	115.2	46.9	13.7	5.6	105.2	42.8	245.8
1986	10.6	5.1	119.0	56.7	64.2	30.6	16.0	7.6	209.8
1987	26.4	10.1	82.6	31.8	90.2	34.7	60.9	23.4	260.1
1988	134.9	28.7	73.5	15.6	146.2	31.1	115.8	24.6	470.4
1989	62.7	28.9	43.6	20.1	60.0	27.7	50.3	23.2	216.6

Note:
* It includes Telefonica.

Table 5.A: Trading Volume. (US-billions of pesetas).

YEAR	SHARES	%	BONDS	%	PUBLIC SECTOR	%	TOTAL
Average 70-79	66.4	72.3	17.2	18.7	8.2	8.9	91.8
Average 80-89	1'291.2	88.9	82.5	5.7	78.9	5.4	1'452.6

Table 5.B: Trading Volume by Groups. (% of total volume).

YEARS	BANKS	UTILITIES	INDUSTRIAL	INVESTMENT FUNDS	OTHER*
1980	51.8	17.7	7.1	7.5	15.9
1981	54.1	18.0	7.8	4.5	15.6
1982	57.4	20.3	6.9	5.2	10.2
1983	41.3	21.5	19.4	5.2	12.6
1984	37.7	27.4	19.4	4.5	11.0
1985	22.9	28.1	19.3	3.2	26.5
1986	29.1	21.3	30.7	2.2	16.7
1987	26.8	8.5	47.6	2.1	15.0
1988	25.5	12.2	46.1	2.2	14.0
1989	22.6	11.5	50.3	7.1	8.5

Two reasons explain the increasing importance of the public sector in the primary market: the deficit in the budget of the public sector and the more rational way in which public institutions obtain funds. During the seventies, official credit institutions were entirely financed with appropriations from the Treasury, which issued special investment certificates to cover these appropriations. Due to the compulsory investment regulations of those years, commercial banks bought these issues of certificates almost entirely and thus financed the activities of official institutions at privileged interest rates. Currently, official credit institutions must appeal to the market in order to obtain financial resources.

Contrary to the average figures of the primary market, trading volume in the secondary market, shown in table 5, has been dominated by shares. Between 1970 and 1979, the transaction of shares represented 72.3% of the total trading volume in the stock exchange. This figure went up to 88.9% of trading volume between 1980 and 1989. It must also be pointed out that the trading volume of industrial corporations have gone up steadily in percentage terms since 1980.

Other characteristics of the secondary market are that by 1988, the ten most traded companies represented 29.1% and the 15% most traded companies reached 79.5% of the trading volume.

Table 5.C: Concentration of Trading Volume. (% of total volume).

YEARS	BANKS and UTILITIES	INDUSTRIAL	OTHER *
1970	68.5	13.2	18.3
1976	56.8	14.3	28.9
1982	77.7	6.9	15.4
1987	35.3	47.6	17.1
1988	37.7	46.1	16.2
1989	34.1	50.3	15.6

Note:
* It includes Telefonica.

This might be an indication of the highly concentrated transactions in the market. However, it should be noted that by 1980 the figures were 55.3% and 89.4% respectively. At the same time, by 1988, chemicals and construction companies became part of the ten most traded shares in the secondary market.

With respect to market value, similar results are found. The evidence, contained in table 6, demonstrates that industrial corporations represent an increasing percentage of the capitalization in the stock exchange.

In summary, it seems clear that the Spanish stock market is becoming more diversified in nature and increasingly competitive in performance. Despite that banks, utilities and communications are the core of the stock market, there is enough evidence of less concentration during the last years. The fact that the industrial sector is becoming an active member of the market indicates that the stock exchange is playing a much more important role in the financing activities of the Spanish economy.

Table 6.A: Market Value of Shares by Groups. (% of total value).

YEARS	BANKS	UTILITIES	INDUSTRIAL	INVESTMENT FUNDS	OTHER*
1980	41.0	21.2	14.6	5.6	17.5
1981	44.1	20.7	14.3	5.2	15.7
1982	42.1	22.4	14.4	6.7	14.4
1983	38.0	17.2	24.8	5.4	14.6
1984	34.1	24.9	17.9	5.9	17.2
1985	31.0	24.0	17.7	5.2	22.1
1986	36.4	21.6	19.6	5.3	17.1
1987	41.4	15.3	23.6	4.1	15.6
1988	38.0	13.6	27.8	4.9	15.7
1989	30.8	14.8	36.8	6.0	11.6

Table 6.B: Concentration of Market Value. (% of total value).

YEARS	BANKS and UTILITIES	INDUSTRIAL	OTHER*
1970	60.9	15.5	23.7
1974	59.4	11.2	29.4
1978	56.3	13.1	30.6
1982	64.5	14.4	21.1
1987	56.7	23.6	19.7
1988	51.6	27.8	20.6
1989	45.6	36.8	17.6

Note:
* It includes Telefonica.

2.2 Structure

Given the increasingly international nature of the stock markets, it seems clear that in order to consolidate the previously discussed accomplishments, to increase the capacity of absorption of the market which depends basically on the total savings of the economy becomes the first requirement. At the same time, the structural change of the capital market in terms of new financial products, new price-setting mechanisms, better information and, more important, new institutions is also required. The further needed push in the demand for financial assets, particularly for shares, cannot be expected to come from individual investors. The appearance of Mutual Funds in 1966 was one of the main factors which provided the Spanish stock market with the necessary dynamism during the late sixties and beginning of the seventies. In the late eighties, the new legislation of Investment Funds and the development of the Pension Funds are thought to be the factors that will convert the Spanish market into a rather efficient capital market for better allocation of resources and better financing decisions.

However, it should also be taken into account that very few companies are listed in the stock market. The supply side of the market is an additional problem that must be solved. In 1988, and in the Madrid stock exchange, only 368 companies were admitted. It is well known that two factors work against the desire of companies to become public. The first one is the amount of information required by the stock exchange. Spanish companies have been traditionally reluctant to provide information to the market. The second and more important

factor is related to tax legislation. If companies become public, important capital gains will be realized, implying that tax incentives must clearly be provided by the authorities. Otherwise, a significant increase in the supply side of the market cannot be expected. At present, the owners of a private company that chooses to go public must pay the top rate of income tax, 56%, on the difference between the book value and the market value of the shares that are sold. Capital gains cannot even be staggered over a number of years [2].

Without any doubt, all of these changes must be supported by an operationally efficient market. Until July 1989, the price-setting mechanism in Spain was based on a periodic call or batch system in a verbal form. Orders are still centralized in a single location, official floor trading hours are maintained and a lack of liquidity is a typical characteristic of the market. It seems clear that one of the most important sources of competitive advantage may come from a centralized system of clearing and settlement. Even at this point, the Spanish system practices physical delivery of stocks with obvious long delays and costs that prevent both domestic and foreign investors from participating more actively in the market. It should also be remembered that the market was particularly vulnerable to manipulation. In particular, around half of all orders were placed through commercial banks which also have enormous holdings in industrial and service companies [3].

Fortunately, a big reform is under way. The actual periodic call system is progressively being replaced by a continuous market system with the assistance of computers and more flexible services from market making activities. Thus, the old monopoly broker has been substituted by "agencias" (brokers) and "sociedades" (brokers/dealers) who can act as counterparties to transactions operating as dual capacity dealers. This implies that they can now deal in their own accounts and that the access to stock exchange membership has been liberalized. Of course, minimum capital requirements have been imposed.

In addition, the National Stock Market Commission (Comisión Nacional del Mercado de Valores) has been created, which is the Spanish version of SEC in the U.S. market. It is an independent public entity with wide power in terms of regulation, supervision and control of stock market activities.

The computerized trading facility follows the system in Paris and Toronto. It is called CATS, or Continuous Automated Trading System. It began operating on August 1, 1989, trading at this point, approximately a third of all listed stocks. There is no mandatory timetable for the rest of the companies to enter the system, and it seems that it will take until the middle of 1991 for the change to be complete.

The reform also contemplates a needed change in the settlement system. It considers a paperless system on a book-entry basis. Real settlement is aimed to take place on the fifth working day after the trade date. The new settlement system is expected to be introduced by the end of 1990 or during 1991. The market has already introduced a book-entry with Spanish Public Debt which may facilitate the introduction of the new settlement system.

There is a clear trend towards negotiable commissions [4], insider trading has been regulated and markets for derivative assets are already functioning. In particular, there are institutional markets for futures on public debt and options on foreign currencies and public debt. On the other hand, maximum daily limits on price changes will be kept, no foreign stocks are allowed, and taxation of capital gains and dividends remains very high. In fact, dividends are subject to a 25% withholding tax which seems to be contrary to the practice in the rest of Europe.

Finally, it should be pointed out that in the coming years, the Spanish authorities will permit foreigners to hold a majority interest in local brokerage houses. This certainly may imply, as with the foreign banks at the beginning of the eighties, that a much more professional stock exchange will soon be at work.

3. Tests of Asset Pricing Models

3.1 The Cross-Sectional Relation between Risk and Return

According to the well known Capital Asset Pricing Model (CAPM), the beta coefficient is the only variable needed to explain cross-sectional differences in stock returns. More technically, and ignoring international considerations, financial market equilibrium in the Spanish market is not achieved until the Spanish market portfolio is mean-variance efficient. This, by itself, implies the CAPM. In other words, in equilibrium, we expect a linear and positive relation between an asset's expected return and its covariance with the return on the market portfolio,

$$E(R_i) = \gamma_0 + \gamma_1 \beta_i ; \qquad i = 1, ..., N, \qquad (1)$$

where

$E(R_i)$ is the expected return on asset i,
β_i is $\text{cov}(R_i, R_m) / \text{var}(R_m)$,
γ_0 is the expected return on a zero-beta portfolio (relative to the market),
γ_1 is the market risk premium,
R_m is the return on the market portfolio, and
N is the number of assets.

It should be noted that both γ_0 and γ_1 do not depend upon i. They are common factors affecting all financial assets in the economy. Therefore, once again, expected returns are cross-sectionally different because of beta. Alternatively, beta should explain returns that we observe at different points over time.

Throughout this work, monthly returns from the Spanish stock exchange are employed for the period January 1963 to December 1988. The final sample is composed of 160 stocks. Data on prices for shares trading on more than one stock exchange were obtained from the exchange on which the share had highest trading volume. The returns on all securities in the sample were used to compute an estimate of the monthly return on the value-weighted market portfolio. The weights are the market values of each security at the end of the preceding year.

On the other hand, daily returns on the market portfolio were obtained as a percentage changes in the index provided by the Banco Bilbao Vizcaya (BBV). This is an index adjusted by changes in the capital structure and by dividends. It contains approximately 70 stocks from the four stock exchanges in the country. It is also a value-weighted index rebalanced every year.

The empirical results of testing the cross-sectional relation implied by the CAPM are reported in table 7. The deviations between the theoretical implications of the model and the data actually observed, are based upon two statistics, Q and F, which are defined in the table 7 [5].

Both statistics are obtained by regressing the mean returns of the assets employed in the research, on a constant (an N-dimensional vector of ones) and on the beta coefficients of the given assets which are previously estimated. If the deviations captured by Q and F are higher than a given significance level, it may be concluded that the model does not confirm the observed data properly enough. In particular, table 7 investigates both the linearity of the model and the positive relationship between risk and return. Linearity is captured by the statistics Q and F already described. At the same time, whether or not investors are significantly compensated for bearing non-diversifiable risk is captured by the coefficient γ_1.

The first columns of table 7 report the results from 1963 to 1982 [6]. The full period was divided into four five-year subperiods. For each of the subperiods, the number of securities with complete data was observed. These securities were ranked according to their market value at the end of the year preceding the subperiod. This ranking was maintained throughout the subperiod, and ten equally weighted portfolios with approximately the same number of securities were obtained. Hence, N is equal to 10 in this section of the paper, where portfolio one contains the smallest firms and portfolio ten the largest. It should be pointed out that in order to accept the

Table 7.A: Mean-Variance Efficiency of the Value-Weighted Stock Market Index*.

	1963-67	1968-72	1973-77	1978-82	AGGREGATE p-VALUE	1980-87	
F(8,51)**	3.296	0.905	0.921	2.155	0.009	F(18,77)**	1.206
(p-value)***	(0.001)	(0.520)	(0.507)	(0.047)		(p-value)***	(0.280)
$\hat{\gamma}_0$	0.313	0.495	-1.397	0.361			-0.699
(t-stat)	(1.06)	(0.56)	(-2.51)	(0.45)			(-0.67)
$\hat{\gamma}_1$	0.107	1.334	0.888	0.278			3.455
(t-stat)	(0.28)	(1.36)	(0.98)	(0.29)			(2.50)

Table 7.B: The Relationship between Risk and Return: The Banking Sector.

	1963-67	1968-72	1973-77	1978-82	AGGREGATE p-VALUE	1980-87	
F(10, 49)**	1.600	0.454	0.796	0.505	0.205	F(10, 85)**	0.737
(p-value)***	(0.135)	(0.911)	(0.633)	(0.878)		(p-value)***	(0.680)
$\hat{\gamma}_0$	0.551	1.737	-1.867	-0.979			-0.689
(t-stat)	(1.23)	(3.98)	(-2.18)	(-1.65)			(-0.82)
$\hat{\gamma}_1$	1.014	0.277	1.187	1.471			3.702
(t-stat)	(2.44)	(0.45)	(1.26)	(1.76)			(2.49)

Notes:

* Cross-sectional regression F-tests for the mean-variance efficiency of the value-weighted Spanish Stock Market Index. For panel A, securities with complete data during each subperiod are ranked into ten portfolios according to market value. For panel B, twelve banking shares are employed in the estimation. Coefficients in percentages.

** $F = Q(T-N+1) / (N-2)(T-2), \quad Q = Te' \hat{\Sigma}^{-1} e / (1+\hat{\gamma}_1^2 / s_m^2)$

$F(N-2, T-N+1)$

$e = \bar{R} - \hat{X}\hat{\Gamma}, \quad \hat{X} \equiv (1_N : \hat{\beta}), \quad \hat{\Gamma} \equiv (\hat{\gamma}_0, \hat{\gamma}_1)'$

s_m^2 is the variance of the market index.
T is the number of observations,
N is the number of portfolios.

*** The p-value is the probability of exceeding a given level of the test statistic.

linear relationship between return and beta risk, the p-value reported must be higher than 0.05. The results for the whole period seem to indicate that linearity can be rejected. This implies that the stock market index employed in the research was not mean-variance efficient between 1963 and 1982.

On the other hand, the four market risk premiums (γ_l), obtained are always positive and, in particular, the market premium for the subperiod 1968-1972 is quite large. However, relative to their standard errors, the four risk premia are very small. Between 1963 and 1982, the Spanish investors were not compensated for accepting beta risk.

Panel B of table 7 reports the same test for the banking sector. It should be noted that, in this case, individual shares are employed in testing the relationship between risk and return. Given the particularly weak results obtained in Panel A, it was decided to see whether the same results hold for the most active sector in the stock exchange. As we can observe, linearity of the model cannot be rejected and investors in the banking sector are slightly compensated for bearing beta risk. The coefficients for beta are, in general, higher than in Panel A. Unfortunately, only one of them is clearly significantly different from zero.

On the other hand, the relationship between risk and return during the eighties has been considerably different. The results of the same test presented above are contained in the last column of table 7. Linearity of the model is now accepted; so that the stock market index employed in the investigations seems to be mean-variance efficient. At the same time, investors were clearly compensated for bearing beta risk. Between 1980 and 1987, the estimated monthly risk premium was 3.5%, which is high enough relative to its standard deviation to be significantly positive. Similar results are found for the banking sector.

In the financial literature, we find asset pricing models with returns related to one measure of systematic risk (CAPM) or, alternatively, models in which asset pricing is dominated by multiple measures of exposure to systematic risk.

By assuming that the rates of return on risky assets are generated by a multiple factor model, we are able to derive the Arbitrage Pricing Theory (APT) of ROSS (1976). Unfortunately, this asset pricing model is based on multiple state variables or factors which are not theoretically identified. Hence, the econometrician, in order to transform the multi-beta pricing relation into a testable model must

Table 8: Risk Premia Estimation with Contemporaneous Beta Estimation. (20 size portfolios, coefficients equal the cross-sectional regression estimates for the 1980-1987 period, all estimates are multiplied by 100).

Asset Pricing with Multivariate Proxies Including the Market:

$$R_p = \gamma_0 + \gamma_1\beta_{1p} + \gamma_2\beta_{2p} + \gamma_3\beta_{3p} + \gamma_4\beta_{4p} + \gamma_5\beta_{5p} + \gamma_6\beta_{6p} + e_p$$

CONSTANT	UGIP	UI	URP	UTS	UFE	MARKET	F	F[A]
-1.155	-0.463	0.010	-0.012	0.003	-0.530	3.853	0.970	0.869
(-0.83)	(-0.80)	(0.08)	(-0.87)	(0.19)	(-0.60)	(2.24)	(0.49)	(0.59)
(-0.83)	(-0.81)	(0.08)	(-0.89)	(0.19)	(-0.61)	(2.45)		

Notes:
UGIP = Unanticipated growth of industrial production.
UI = Unexpected inflation.
URP = Unanticipated change in the risk premium.
UTS = Unanticipated change in the term structure.
UFE = Unanticipated change in foreign exchange rates.
Time series estimates based on all data for the whole period are substituted for the true betas.
The first t-statistic is adjusted for the errors-in-variables, whilst the second represents the usual t-statistic.
The numbers below the F-test are p-values.

exogenously choose the relevant state variables. Recently, CHEN/ROLL/ROSS (1986), SHANKEN/WEINSTEIN (1987), and MARTINEZ/RUBIO (1989) for the Spanish market have employed economic intuition to decide on the relevant set of macroeconomic variables to be used as proxies for the theoretically undefined state variables. The purpose of table 8 is to test whether innovations in macroeconomic variables are risks that are priced in the Spanish stock market.

The economic intuition, on which the choice of macroeconomic variables is based, may be easily justified by thinking about the basic theory of financial economics which prices stocks by the expectation of the present value of future cash flows. This implies that we need macroeconomic variables that influence either the future cash flows or the risk-adjusted discount rate. With this fundamental idea in mind, we propose the following variables: unanticipated changes in industrial production, the unanticipated rate of inflation, innovations in the risk premium measured by the spread between government and corporate bonds, and innovations in the term structure of interest rates. Moreover, given that the Spanish economy is largely dependent on foreign investment, international movements of capital and tourism, the volatility of foreign exchange rates may have systematic effects on the stock market. Thus, the innovation variable is given by the ratio of the forward exchange rate (peseta/dollar) at the end of month t-1 applicable to the end of month t, over the spot rate at t.

The results reported in table 8 are obtained by regressing the mean return of twenty size sorted portfolios on the sensitivities of the returns to the macroeconomic variables. It is important to note that, according to the APT, returns should be explained by the risks implicit in the chosen common factors.

The empirical evidence related to the five macroeconomic variables imposed are clearly disappointing. None of the cross section coefficients is significantly different from zero.

In order to see whether a systematic risk exists that may have not been captured by the macroeconomic variables, the CAPM beta relative to the value-weighted market portfolio return was also included in the cross-sectional regressions. The market betas were estimated in the same fashion as for the other macro betas.

The equation tested may be written as:

$$E(R_i) = \gamma_0 + \gamma_1\beta(M_1) + \ldots + \gamma_5\beta(M_5) + \gamma_6\beta(CAPM);$$

$$i = 1, \ldots, N \qquad (2)$$

where $\beta(M_1), \ldots, \beta(M_5)$ are the betas relative to the unanticipated changes in the five macroeconomic variables selected.

The results indicate that investors appear to be compensated for accepting beta risk in the traditional sense of the CAPM. It is possible to argue that the magnitude of the market risk premium implies that the macroeconomic variables add very little to the traditional CAPM. It seems that in Spain, between 1980 and 1987, stock returns were explained considerably better by the CAPM than by the APT with macroeconomic variables [7]. In other words, the market return as a single factor incorporates by itself all possible effects of macroeconomic risks.

3.2 Dividends, Capital Gains and Taxes

The simplest form of the capital asset pricing model ignores the presence of taxes in determining the equilibrium expected return of risky assets. In principle, this is a reasonable model as far as investors are indifferent between receiving income in the form of capital gains or dividends. On the other hand, if it is accepted that capital gains are taxed, in general, at a lower rate than dividends, the equilibrium expected return before taxes should be adjusted to incorporate the tax differential.

The new model employs beta as the appropriate measure of risk, but it includes an extra term which implies that the expected return on an asset depends upon dividend yield [8]. Thus, investors taking positions in high yield stocks will require an additional

return to be compensated for the additional tax to be paid, given the tax asymmetry between capital gains and dividends.
The model may be written in the following way:

$$E(R_i) - R_f = \gamma_0 + \gamma_1\beta_i + \gamma_2(d_i - R_f), \quad i = 1, ..., N \quad (3)$$

where R_f is the return on the risk free asset and d_i is the dividend yield for asset i..

It is also interesting to point out that γ_2 may be shown to be a tax factor that measures a complex weighted average of the investors' tax rates where the weights are a function of the wealth the investor places in risky assets and his degree of risk aversion. The empirical results are reported in Panel A of table 9. It is necessary to indicate that in 1979 a crucial tax reform took place in Spain. As can be seen form the results, particularly between 1979

Table 9.A: Differential Taxation between Dividends and Capital Gains: Effects on Stock Returns*.

	1967-78	1979-84	1967-84
$\hat{\gamma}_0$	-1.315	-0.522	-1.051
	(-1.78)	(-0.89)	(-1.99)
$\hat{\gamma}_1$	1.448	1.308	1.402
	(1.72)	(1.05)	(2.02)
$\hat{\gamma}_2$	7.295	11.458	8.683
	(1.43)	(3.24)	(2.41)

Table 9.B: Clientele Effect: Behavior of the Stock Prices when Dividends Are Paid. (1983-1988).

PORTFOLIOS RANKED BY DIVIDEND YIELDS**	AVERAGE PREMIUM*** $(P_{t-1} - P_t)/D$	IMPLICIT MARGINAL RATE	DIVIDEND YIELD	BETA
DIVY5	0.815	0.185	0.120	0.963
	(-1.74)			
DIVY4	0.664	0.336	0.066	0.994
	(-2.23)			
DIVY3	0.574	0.426	0.051	1.094
	(-2.33)			
DIVY2	0.545	0.455	0.040	0.903
	(-2.07)			
DIVY1	0.490	0.510	0.031	0.844
	(-2.01)			
Average premium using all data	0.744	0.256	-	-
	(-1.89)			

Notes:
* Monthly cross-sectional regressions of returns on a constant, betas and dividend yields over the risk free rate. Securities with complete data during each subperiod are ranked into ten portfolios according to dividend yields. Results in percentages. t-statistic in parenthesis.
** DIVY1 is a portfolio with low dividend yield.
DIVY5 is a portfolio with high dividend yield.
*** t-statistic for premium different than one in parenthesis.

and 1984, it seems that investors required an additional return as a compensation for taking an additional tax burden. Thus, 1 peseta in the form of dividends were priced by the market as 0.89 pesetas in the form of capital gains [9]. In other words, on average, the market allowed the investors to trade 1 peseta of dividends for 0.89 pesetas of expected capital gains. An alternative manifestation of the impact of taxes on investors' attitudes towards dividends and capital gains is given by the behavior of an asset's price after going ex-dividend. Panel B of table 9 shows that, on average, between 1983 and 1988, the price of an asset by the end of day in which dividends are paid drops by an amount equal to 0.74 pesetas. This means that, on average, investors are indifferent between receiving 1 peseta in terms of dividends and 0.74 pesetas in the form of capital gains. Moreover, high-bracket investors should tend to hold relatively more low-yield stocks, and low-brackets individuals should be in high-yield assets. This is the well known clientele effect. What is important is that this phenomenon should be reflected in ex-dividend price behavior as well. The results of Panel B of table 9 are clearly consistent with the clientele effect [10]. Note that the implied tax bracket decreases when dividend payout increases.

4. Inflation and Stock Returns

Even if on intuitive grounds it may seem reasonable to think of stocks as a hedge against inflation, the international empirical evidence has shown that, in fact, inflation has a negative effect on the stock market. The Spanish market is not an exception [11]. Over the period 1976-1988, both expected and unexpected inflation have a negative and significant effect on real stock returns. Still, if we divide the period so as to allow for structural changes in the economy, we observe that, in fact, only expected inflation had an effect on stock returns over a first period, 1976-1979, whilst exactly the opposite seems to hold true for the posterior subperiod, 1980-1988. More precisely, expected inflation had an influence on stock returns over a two year period, during which inflation was close to 20%. Except for that period unexpected inflation seems to be the relevant variable as far as the analysis of the stock market is concerned. Of course, this should be the case given that information already available about future economic activity is expected to be embedded in stock prices and to have no effect on the valuation of real cash flows.

The preeminence of the unexpected inflation variable is corroborated by using a portfolio approach. When there is a decrease in the rate of return on the market portfolio, those assets whose betas are particularly high will be more affected and, consequently, their results will vary more negatively with unexpected inflation. In other words, we expect an inverse relationship between systematic risk and inflation betas. Moreover, the conjecture is that this relationship may clarify the relative importance of expected and unexpected inflation [12].

In order to test this hypothesis, the number of securities with complete data from 1976 to 1987 was observed. These securities were ranked according to their beta estimated during the whole period. Therefore, this ranking was maintained throughout the period, and ten equally weighted portfolios with approximately the same number of securities were obtained. Hence, portfolio one contains the firms with the smallest betas and portfolio ten includes high beta firms.

Table 10 reports the results regressing the real returns on the ten beta sorted portfolios on unexpected and expected inflation. Two empirical regularities seem to be relevant in this table. First of all, the results confirm the unexpected inflation as the important variable affecting real stock returns. At the same time, except for the smallest beta firms, the level of expected inflation does not significantly affect real stock returns. However, it is interesting to note the rather high impact of expected inflation on low beta firms, which on the other hand, are firms with the smallest coefficients for the unexpected inflation.

Secondly, our results confirm the hypothesis that firms with the highest systematic risk would have rates of returns most negatively correlated with unexpected inflation. This is the case, irrespectively

Table 10: Unexpected Inflation and Systematic Risk. ($RSR_{it} = \beta_0 + \beta_1 EINF_t + \beta_2 UINF_t + \varepsilon^*_t$; i = 1, ..., 10).

1976:3-1987:12	β_0	β_1	β_2	$\bar{R}^2$	DW**	BETA
BETA 1	0.006	-	-1.888	0.020	1.34	0.497
	(1.25)***		(-1.96)			
	0.039	-3.177	-1.785	0.090	1.44	
	(3.67)	(-3.44)	(-1.92)			
BETA 2	0.009	-	-2.336	0.024	1.47	0.681
	(1.59)		(-2.12)			
	0.031	-2.153	-2.266	0.044	1.56	
	(2.48)	(-1.99)	(-2.07)			
BETA 3	0.008	-	-2.596	0.029	1.56	0.782
	(1.39)		(-2.27)			
	0.026	-1.738	-2.540	0.038	1.60	
	(1.99)	(-1.54)	(-2.23)			
BETA 4	0.008	-	-2.683	0.025	1.50	0.890
	(1.26)		(-2.16)			
	0.033	-2.411	-2.605	0.045	1.57	
	(2.33)	(-1.98)	(-2.12)			
BETA 5	0.010	-	-3.397	0.042	1.67	0.954
	(1.52)		(-2.67)			
	0.025	-1.489	-3.349	0.044	1.71	
	(1.72)	(-1.18)	(-2.63)			
BETA 6	0.013	-	-2.503	0.014	1.60	1.040
	(1.79)		(-1.73)			
	0.029	-1.586	-2.451	0.015	1.60	
	(1.77)	(-1.10)	(-1.69)			
BETA 7	0.010	-	-3.269	0.029	1.43	1.119
	(1.44)		(-2.29)			
	0.027	-1.569	-3.218	0.031	1.47	
	(1.62)	(-1.11)	(-2.25)			
BETA 8	0.008	-	-3.977	0.036	1.49	1.225
	(1.02)		(-2.51)			
	0.024	-1.567	-3.926	0.036	1.52	
	(1.34)	(-1.00)	(-2.48)			
BETA 9	0.014	-	-4.271	0.024	1.68	1.332
	(1.37)		(-2.13)			
	0.045	-3.022	-4.174	0.033	1.75	
	(1.97)	(-1.52)	(-2.09)			
BETA 10	0.011	-	-4.562	0.023	1.31	1.502
	(0.96)		(-2.07)			
	0.038	-2.579	-4.479	0.026	1.36	
	(1.48)	(-1.18)	(-2.03)			
MARKET	0.026	-2.801	-2.765	0.071	1.53	
	(2.04)	(-2.51)	(-2.46)			

Notes:
* RSR_{it} = real stock returns for 10 beta sorted portfolios;
$EINF_t$ = expected inflation at t -1 for period t;
$UINF_t$ = unexpected inflation for period t.
** DW = Durbin-Watson.
*** t-statistic in parenthesis.

of including expected inflation in the regressions. Moreover, using an F-test with a full covariance matrix of residuals, the hypothesis that unexpected inflation betas are equal across the ten beta sorted portfolios can be rejected. It can therefore be concluded that, even after controlling for systematic risk, unexpected inflation is negatively related to real stock returns, and that this is particularly the case for the highest systematic risks.

We now extend the previous empirical evidence by studying the reaction of daily stock returns to the announcement of the Consumer Price Index inflation rate. Previous empirical evidence is only found for the U.S. market by SCHWERT (1981), PEARCE/ ROLEY (1985) and JAIN (1988). Schwert shows that the market reacts negatively to the announcement of unexpected inflation; Pearce and Roley, using survey data, cannot find any significant relation, whilst Jain reports that when hourly data is employed, the CPI announcements are statistically significantly related to stock returns.

This type of study may be of interest since it allows a rather precise estimate of the impact of surprises regarding the inflation rate upon the stock market. Moreover, it becomes an effective way to study the informational efficiency of the market.

The period covered by this section goes from January 1984 to December 1988. This implies that we have data on 60 announcements. Given the empirical results of the previous section, we might expect a negative effect of unexpected inflation on stocks returns. Note also that independently of the reason for having a negative impact at the day of the announcement, if the stock is efficient, prices will react to information on the inflation rate when it first become available. Moreover, the hypothesis argues that, basically, the full negative response of stock prices to unexpected inflation should occur immediately.

To analyze the efficient market hypothesis, we observe the reaction of daily stock prices from -5 to +5 days after the announcement. It should be pointed out that the announcement date is the date in which daily newspapers include the actual inflation rate for the month.

In order to estimate the impact of new information regarding the inflation rate on stock prices and to test the efficient market hypothesis, the following regression model was run for the 10 dates around the announcement date and for the date itself:

$$R_t = \beta_0 + \beta_1 UINF_t + \varepsilon_t; \quad t = -5,-4,...,0,...,+4,+5 \quad (4)$$

where R_t is the return on the daily market index from t-1 to t and $UINF_t$ is the unexpected inflation for the corresponding month.

The empirical results are contained in table 11. From 1984 to 1988, the results tend to indicate that

Table 11: Real Stock Returns and Unexpected Inflation: Announcement Effects. (Using the ARIMA methodology; 1984-1988; $RSR_t = \beta_0 + \beta_1 UINF_t + \varepsilon_t^*$).

Days Relative to the Announcement Date	β_0	β_1	$\bar{R}^2$	D W**
-5	-0.0003	0.166	-0.015	1.872
	(-0.17)***	(0.37)		
-4	0.002	0.242	-0.012	1.770
	(1.29)	(0.56)		
-3	-0.0005	-0.738	0.046	2.458
	(-0.33)	(-1.97)		
-2	0.003	-0.892	0.063	2.044
	(2.20)	(-2.22)		
-1	0.001	-0.183	-0.012	2.272
	(0.96)	(-0.54)		
0	0.001	-0.664	0.031	2.019
	(0.92)	(-1.70)		
+1	-0.002	-0.995	0.054	1.691
	(-0.98)	(-2.09)		
+2	-0.002	0.035	-0.017	1.978
	(-1.12)	(0.10)		
+3	0.017	0.018	-0.017	1.987
	(1.39)	(0.06)		
+4	0.001	-0.641	0.011	1.212
	(0.65)	(-1.29)		
+5	0.002	-1.071	0.066	1.770
	(1.13)	(-2.27)		

Notes:

* RSR_t = real stock return for period t relative to the announcement day;
$UINF_t$ = unexpected inflation for period t. Inflation series based on the ARIMA methodology.

** DW = Durbin-Watson statistic.

*** t-statistic in parenthesis.

inflation surprises affect stock prices negatively and significantly. The major impact, however, seems to occur on the first day after the announcement. At the same time, three and two days before the announcement, the relationship between unexpected inflation and stock returns is also negative and significant. The coefficient on the announcement date is negative but significant only at the 10% level.

The results clearly indicate that common stock returns tend to be significantly and negatively affected during the days surrounding the innovation on inflation. On the other hand, the effect does not seem to occur primarily on the announcement date. On the contrary, the empirical results seem to imply that there is both leakage of information prior to the official announcement date, or else production of a good estimate of unexpected inflation by financial operators, and a rather slow response by the stock market to the news contained in the unexpected inflation.

It is interesting to examine the pattern of the negative response. Even if there is an effect two and three days before the announcement, it seems that on the day just before the formal arrival of news, the market becomes cautious waiting for the confirmation of the rumours that reach the market during the previous days. Finally, on the announcement date and on the next day, the negative impact is confirmed.

5. Anomalies in Stock Returns

5.1 Seasonality in the Empirical Market Risk Premium

According to the results presented in section 3, in Spain and over a long period of time, the empirical evidence for a positive relationship between risk and return is positive but weak. It seems natural to extend the investigation in order to find potential seasonalities in the risk-return tradeoff.

Monthly estimates of the market risk premium were estimated for the 216 months from January 1970 to December 1987. Estimators for each month were calculated from a regression of a 9-vector of industry returns realized at month t on a nine by two matrix of betas and ones, where the industry betas were previously estimated [13].

Table 12: Seasonality in the Empirical Market Risk Premium and Stock Market Returns. (1970-1987*).

RETURNS AVERAGE OVER	STOCK MARKET RETURNS	MARKET RISK PREMIUM
January	4.77	7.21
	(2.95)	(3.53)
February	3.39	5.75
	(2.98)	(3.71)
March	1.05	3.11
	(0.58)	(1.36)
April	1.60	3.79
	(1.15)	(1.55)
May	0.44	-0.43
	(0.44)	(-0.25)
June	1.48	1.23
	(1.04)	(0.63)
July	1.79	2.16
	(1.37)	(1.08)
August	1.20	1.41
	(0.99)	(0.71)
September	-1.65	-2.79
	(-1.32)	(-1.41)
October	-1.72	-2.60
	(-0.83)	(-0.97)
November	0.71	0.67
	(0.60)	(0.28)
December	-0.05	-2.59
	(-0.05)	(-1.50)
All Months	1.08	1.41
	(2.63)	(2.26)
All Months Except January	0.76	0.88
	(1.82)	(1.37)

Note:
* Results in percentages, t-statistic in parenthesis.

The results are reported in table 12. The first column contains the stock market returns averaged over each month. Both January and February have positive and significant average returns.

The second column presents the market risk premium for each month. The seasonal similarity between

this estimate and the stock returns of the first column should be noted. It seems that the reasons behind market risk premium and stock market return seasonality are the same [14]. Again, only January and February have a positive and significant average risk premium. It should also be pointed out that the estimate of the market risk premium over all months is positive and significantly different from zero. Note, however, that the tradeoff between return and risk is much larger in January than in the rest of the year. When January is deleted, the premium becomes much lower and insignificantly different from zero. At the same time, we can not reject the hypothesis that the January risk premium differs from the mean risk premium during the rest of the year. However, this is not the case for February. We may therefore conclude that the Spanish investors are not consistently compensated for taking risk throughout the year. January is the only month in which significant rewards can be obtained.

5.2 The Size and the January Effects

In recent years, systematic cross-sectional differences among stock returns not explained by the usual implementation of modern asset pricing models have been reported in the main stock markets throughout the world. This section investigates, within the Spanish market, the phenomenon known as the size effect, namely that small companies seem to earn systematically higher returns than large firms after adjusting for risk.
In particular, linearity of expected returns with size may be tested using the following specification:

$$E(R_i) = \gamma_0 + \gamma_1\beta_i + \gamma_2 S_i\,; \quad i = 1, ..., N. \qquad (5)$$

where S_i is the size variable, usually the logarithm of market capitalization.
Between 1963 and 1982, the average coefficient for the size variables was -1.14% per month with a t-statistic of 2.61 [15]. This implies that, on average, small firms earn more than large firms once risk is taken into account.

The approach presented below allow us to report some evidence on the hypothesis of stability of month-to-month excess returns associated with size. To empirically test the negative relation between excess returns and market value, estimates of the monthly zero-beta portfolio and the market risk premium were employed to compute residuals for each of ten size portfolios in the following way:

$$\hat{e}_{it} = R_{it} - \hat{\gamma}_{0t} - \hat{\gamma}_{1t}\hat{\beta}_{it}\,; \quad i = 1, ..., N; \quad t = 1, ..., T \ (6)$$

where R_{it} and β_{it} are the return and systematic risk of each portfolio for each month respectively.
The next step consisted in obtaining the time-series average of residuals for each portfolio. We can interpret these average as the monthly returns above or below to level predicted by the empirically implemented CAPM. The results are reported in table 13. The smallest portfolio earns 0.58% per month more than it should relative to the CAPM. Moreover, this excess return is significantly different from zero. Table 13 also contains the average difference in the monthly excess returns between the smallest and largest firms for each month during the period 1963 to 1982. The difference between the smallest and the largest portfolio is 0.56% per month, or approximately 6.9% per year. This difference is significant. However, the most interesting characteristic of table 13 is the difference of excess returns between MV1 and MV10 during January. Smallest companies earn a significant 3.2% more than the largest companies in the month of January from 1963 to 1982. This means that around 47% of the size effect in the Spanish capital market is due only to the month of January. Similar evidence is found by KEIM (1983) in the US market.
We can conclude that, in Spain, there is a negative relation between monthly excess returns and market value, and that this relation is particularly pronounced in January when it is measured as the difference between the smallest and the largest firms.
Without an economic explanation of the size effect, our understanding of the price formation of financial assets is incomplete. These results are not based on any theoretical equilibrium model. It seems clear

Table 13: The Size and the January Effects. (1963-1982).

MONTHS	EXCESS RETURNS* SMALLEST FIRMS	EXCESS RETURNS LARGEST FIRMS	DIFFERENCE
January	2.920	-0.251	3.171
	(2.29)	(-1.27)	(2.46)
February	0.414	-0.163	0.578
	(0.43)	(-0.85)	(0.59)
March	0.222	0.143	0.079
	(0.31)	(1.00)	(0.11)
April	1.269	-0.019	1.288
	(1.51)	(-0.11)	(1.51)
May	0.328	0.142	0.186
	(0.43)	(0.77)	(0.23)
June	0.105	0.191	-0.086
	(0.13)	(1.07)	(-0.10)
July	0.604	0.006	0.598
	(0.97)	(0.00)	(0.92)
August	0.821	-0.177	0.998
	(0.88)	(-1.03)	(1.05)
September	0.124	0.152	-0.029
	(0.30)	(1.46)	(-0.07)
October	0.216	0.197	0.020
	(0.22)	(0.19)	(0.02)
November	0.320	0.019	0.302
	(0.67)	(0.19)	(0.62)
December	-0.413	0.030	-0.444
	(-0.44)	(0.17)	(-0.46)
All Months	0.578	0.022	0.556
	(2.37)	(0.45)	(2.23)

Note:
* Excess returns obtained from the CAPM in percentages, t-statistic in parenthesis.

that size is a proxy for some missing factor. If we accept the hypothesis that small firms trade less frequently than large firms, it could be argued that frequency of trading is the real factor behind the systematic cross-sectional differences not explained by our pricing models.

In order to clarify the size effect, securities were classified by both the market value and frequency of trading. Number of trading days was used as the proxy for liquidity. For some securities for which conflict on the ranking was inevitable, volume of trading was used. Even though the results are not reported in this paper, it seems clear that frequency of trading is not the factor behind the size effect.

5.3 Overreaction

It has been accepted for a long time that stock prices should be determined by the expectation of the present value of future cash flows. This important idea reflects the rational market hypothesis for the valuation of equity prices.

In recent years, however, the empirical evidence appears to be inconsistent with the previous fundamental valuation hypothesis. Strong seasonalities in stock prices, and the excess volatility relative to the variation of dividend payments and discount rates are just some examples. As it has been understood, this new evidence would be inconsistent with the rationality of market participants. The results seem to imply that equity prices may, at least temporarily, differ from the underlying fundamental values. It should be clear that fundamentals are directly connected to the long run power of dividends. In this sense, of course, the recent empirical evidence becomes a clear departure from fundamentals and therefore from rationality. On the other hand, given that the equity markets are efficient in the sense of incorporating very rapidly new information, it should not be surprising that investors tend to attach relatively more weight to short-run economic events. Moreover, the uncertainty that investors must confront when estimating long run valuation models is so large that they should be mainly concerned with short term price variations. This perspective would be contrary to long run fundamentals, but it may be argued that it is consistent with rational behavior. To distinguish between a short run and long run perspective in a future notion of market efficiency, seems to be an adequate route to follow.

This paper investigates the behavior of the Spanish investors' reaction to either very high or very low price levels. It is based on the work by DE BONDT/THALER (1985), which is motivated by the idea that most investors are not Bayesian decision makers. This behavior implies that individuals tend to overreact in the sense that they give excessive weight to recent information and underweight prior information. Prices will be biased by either too

much optimism or pessimism, relative to long run fundamental values. Stock prices would be consistently pushed to either high or low unsustainable levels. This behavior necessarily leads to disappointment for the optimists who have pushed prices too high, whilst the contrary happens for the pessimists.

As pointed out by De Bondt and Thaler, if prices systematically overshoot, their reversal should be predictable from past prices. It becomes unnecessary to use fundamental data. This result violates the traditional weak-form market efficiency. At the same time, the idea that stock returns may be predictable from past levels of equity prices has been tested and accepted by FAMA/FRENCH (1988) and KEIM/STAMBAUGH (1986). Hence, once more, the extreme consequences of the traditional framework of market efficiency should not be taken as granted. In summary, the overreaction hypothesis implies the following two consequences:

1) Extreme movements in stock prices will be followed by subsequent price movements in the opposite direction.
2) The more extreme the initial price movement, the greater will be the subsequent adjustment.

In order to investigate whether systematic nonzero excess returns in the period after some reference month are related to systematic nonzero excess returns in the pre-reference months, the behavior of extreme winners and extreme losers will be followed throughout the years between 1967 and 1984. A clear implication of this methodology is that the winner and loser stocks are identified on the basis of past excess returns. Of course, some model of market equilibrium should be used in order to estimate the excess returns of the securities in the sample. Once again, we will be assuming that the market portfolio index is mean-variance efficient during the sample period, so that the empirically implemented zero-beta CAPM becomes the relevant model [16]. The differences in average excess returns between the losers and winners several months after the formation period are contained in table 14.

Table 14.A: Cumulative Excess Return at the End of the Formation Period*.

Winner Portfolio	Loser Portfolio
143.8	-83.4

Table 14.B: Difference between Losers and Winners after the Formation Period*.

MONTHS AFTER PORTFOLIO FORMATION	DIFFERENCE IN ACAER**
1	4.60
	(1.00)
5	18.60
	(4.01)
7	23.60
	(3.83)
10	31.20
	(7.87)
12	24.50
	(4.94)
14	25.70
	(2.10)
24	35.00
	(1.74)
30	42.50
	(1.36)
36	36.90
	(1.47)

Notes:
* Difference in average cumulative average excess returns (ACAER) between the loser and winner portfolios at the end of the formation period and 36 months into the test period. Three-year formation-test period with 3 independent replications. Excess returns obtained from the CAPM. Results in percentages.
** t-statistic in parenthesis.

The results are surprisingly consistent with the overreaction hypothesis. Over the last twenty years, loser portfolios of five stocks outperformed the return implied by the empirically implemented zero-beta CAPM by, on average, 7.9%, twelve months after portfolio formation. Winner portfolios, on the other hand, earned 16.6% less than the return

suggested by the empirically implemented zero-beta CAPM, so that the difference in cumulative average excess returns between the extreme portfolios was equal to 24.5% (t-statistics: 4.94). The stronger evidence in favor of the overreaction hypothesis occurred ten months after portfolio formation. The difference between the loser and the winner portfolios reached 31.2% (t-statistics: 7.87). As we move through the test period, the empirical evidence is slightly reduced in terms of statistical significance. Twenty four months after portfolio formation, the loser portfolio outperformed the winner portfolio by, on average, 35% (t-statistics: 1.74) and thirty six months after portfolio formation, the difference became 36.9% (t-statistics: 1.47).

Three more aspects of the results should be taken into account. First of all, the overreaction is rather symmetric. Except for some months during the first year after portfolio formation, winners lose as much as losers win. Secondly, for the most part, the size and January effects appear to be a clearly independent phenomenon. Thirdly, a similar pattern is found both in earnings per share and the price earnings ratio of winners and losers.

Undoubtedly, these results are quite dramatic because they appear to be even inconsistent with the weak form of the efficient market hypothesis. In spite of the fact that some controversy surrounds these results, it should also be recognized that some of the extreme arguments of the proponents of the informational efficiency of markets are seriously affected. In any case, more research is certainly justified.

5.4 Daily Seasonality in the Spanish Stock Market

Since 1980, researches, particularly from the US market, have consistently reported evidence of anomalous returns between the market close on Fridays and the market close on Mondays. Most notably, the average return for Monday is negative [17]. Moreover, this evidence is also found for the most important stock exchanges around the world. It is also the case that for markets in the Far East (Singapore, Tokyo and Sydney), the average return on Tuesday is negative and significant [18]. It should be said that researches have been unable to explain the causes behind the reported seasonalities. At the same time, CONNOLLEY (1989) argues that the day-of-the-week and weekend effects seem to depend on the estimation and testing methods. In particular, this author argues that both effects appear to have disappeared by 1975, once all the statistical adjustments are properly made.

This section reports empirical evidence regarding daily seasonality in stock returns between 1984 and 1988 for the Spanish market. The results presented in table 15 are quite striking. They are obtained by the following regression [19]:

$$R_t = \beta_1 D_{1t} + \beta_2 D_{2t} + \beta_3 D_{3t} + \beta_4 D_{4t} + \beta_5 D_{5t} + u_t \quad (7)$$

where R_t is the daily stock market return, D_{it} is a dummy variable for the day of the week, i = Monday,...,Friday, and u_t is a disturbance term. The coefficients in equation (7) are the mean returns for Monday through Friday.

Table 15: Daily Seasonality in the Spanish Stock Market. (1984-1988).

TOTAL RETURNS* SPANISH MARKET		TOTAL RETURNS AFTER US ADJUSTMENTS		
DAY	RETURNS	LAGS IN DAYS		
		0 and 1	1 and 2	2 and 3
Monday	0.61	0.48	0.45	0.46
	(5.73)	(4.53)	(4.22)	(4.21)
Tuesday	-0.08	-0.17	-0.17	-0.23
	(-0.77)	(-1.74)	(-1.73)	(-2.11)
Wednesday	0.14	-0.09	-0.08	-0.07
	(2.55)	(-0.59)	(-0.54)	(-0.46)
Thursday	-0.10	-0.25	-0.24	-0.24
	(-0.67)	(-1.67)	(-1.60)	(-1.59)
Friday	0.19	0.02	0.02	0.06
	(1.89)	(0.16)	(0.19)	(0.54)

Note:
* Results in percentages, t-statistic in parenthesis.

The results clearly indicate that, in Spain between 1984 and 1988, the well known negative Monday return is reversed on its sign. In fact, the Monday return is positive and significantly different from zero. Most important, this result is maintained even after adjusting for the potential influence of the US market.

Of course, more data should be collected before concluding that there is something special in the Spanish market. A potential difficulty is that the institutional arrangements are very much affected after July 1989. On the other hand, to compare results under these two different markets may provide some clues as where to look for reasonable explanations.

6. Conclusions

This paper has provided an overview of the performance, structure, and the behavior of asset prices in the Spanish equity market over the last decades. At this point, the Spanish market experiences a crucial transition towards becoming an operationally and informationally efficient market. The increase in trading volume experienced on the Spanish stock exchange over the last few years has clearly underlined the need for a deep reform. The reform was inevitable in view of a single European financial market in 1992 and the important measures taken by the rest of community markets so far. The trend towards highly competitive exchange markets has propagated a series of big reforms among the main European countries. Spain could not be the exception.

The paper has also pointed out the main regularities in the behavior of asset prices. It turns out that beta is an important component of stock returns. However, well known anomalies are shown to be relevant in the Spanish market. In particular, a negative relationship between real returns and unexpected inflation, the size effect and strong seasonalities influence the price formation of risky assets in Spain. Finally, some evidence of investors overreaction and a serious manifestation of the impact of differential taxation between dividends and capital gains on stock returns are also presented in the paper.

It may seem that Spain captures some of the most relevant aspects of the empirical evidence built around modern financial theory during the last two decades of research.

Footnotes

[1] The actual clearing and settlement system causes considerably losses and delays for foreign investors with serious legal constraints that are not easily understood.

[2] See EUROMONEY (1989).

[3] See EUROMONEY (1989).

[4] The fact that the National Stock Market Commission decided to retain minimum commissions (at 0.25%) until 1993 may imply that the arrival of market-making by "sociedades" will not be happening in the near future. It seems reasonable to expect that few of them may be willing to take the risks involved before building up their clientele.

[5] For a detailed description of multivariate tests of the CAPM, see SHANKEN (1985), GIBBONS/ROSS/SHANKEN (1989) and MACKINLEY (1987). For different applications to the Spanish market, see RUBIO (1988, 1989).

[6] See RUBIO (1988) for a detailed description of the results.

[7] Both CHEN/ROLL/ROSS (1986) and SHANKEN/WEINSTEIN (1987) do not formally employ innovations when testing arbitrage pricing relations for the US market. Their results are more promising that the results of table 8. We replicated the previous test by using original series of industrial production, risk premia and the term structure of interest rates. The coefficient of the CAPM beta remains positive and significantly different from zero; however, the sign for the industrial production change becomes positive as suggested by theory and the coefficients associated with risk premia and the term structure have the intuitive sign and become significant. This supports the evidence found in the US market when original series rather than innovations are employed in testing the model.

[8] See BRENNAN (1970) and LITZENBERGER/RAMASWAMY (1979).

[9] See BASARRATE (1988) for details.

[10] See BASARRATE/RUBIO (1989) for details. There are several technical difficulties in arriving at an appropriate drop in the stock price. The results presented are adjusted for correcting all of them.

[11] There have been many contributions on this apparent paradox, both at the theoretical and empirical level. See FAMA (1981), GESKE/ROLL (1983), STULZ (1986), and KAUL (1987).
[12] See FREIXAS/RUBIO (1989) for details.
[13] Different procedures were used for this and similar researches. The results were the same independently of the number of portfolios employed.
[14] See BASARRATE/RUBIO (1990) and CORHAY/HAWAWINI/MICHEL (1987) for details.
[15] Later results also show that the size effect has been relevant for the eighties.
[16] The results do not vary when the CAPM is adjusted to incorporate the size effect. See ALONSO/RUBIO (1989) for details.
[17] See, among others, FRENCH (1980), and SMIRLOCK/STARKS (1986).
[18] See CONDOYANNI/O'HANLON/WARD (1988).
[19] See RUBIO/SALVADOR (1989) for details.

References

ALONSO, A. and G. RUBIO (1989) "Overreaction in the Spanish Equity Market", in: "Studies in Banking and Finance", A. Sametz and G. Szego Editors, North Holland. Forthcoming.

BASARRATE, B. (1988): "El Efecto Tamano y la Imposicion Sobre Dividendos y Ganancias de Capital", Investigaciones Economicas 12, pp. 225-242.

BASARRATE, B. and G. RUBIO (1990): "A Note on the Seasonality in the Risk-Return Relationship", Investigaciones Economicas 14.

BASARRATE, B. and G. RUBIO (1989): "La Valoracion de los Dividendos en Relacion a las Ganancias de Capital: Un Estudio del Comportamiento del Precio de las Acciones en el Dia del Pago del Dividendo", Revista de Economia Publica 3, pp. 31-52.

BRENNAN, M. (1970): "Taxes, Market Valuation and Corporate Financial Policy", National Tax Journal 12, pp. 417-427.

CHEN, N., ROLL, R. and S. ROSS (1986): "Economic Forces and the Stock Market", Journal of Business 59, pp. 383-409.

CONDOYANNI, L., O'HANLON, J. and C. WARD (1988): "Weekend Effects in Stock Market Return: International Evidence", in: "Stock Market Anomalies", E. Dimson Editor, Cambridge University Press.

CONNOLLY, R. (1989): "An Examination of the Robustness of the Weekend Effect", Journal of Financial and Quantitative Analysis 24, pp. 133-169.

CORHAY, A., HAWAWINI, G. and P. MICHEL (1987): "Seasonality in the Risk-Return Relationship: Some International Evidence", Journal of Finance 42, pp. 49-68.

DE BONDT, W. and R. THALER (1985): "Does the Stock Market Overreact?", Journal of Finance 40, pp. 793-805.

EUROMONEY (1989): "Investing in Spain: The Markets Mature", a supplement to Euromoney, December.

FAMA, E. (1981): "Stock Returns, Real Activity, Inflation and Money", American Economic Review 71, p p. 545-565.

FAMA, E. and K. FRENCH (1988): "Permanent and Temporary Components of Stock Prices", Journal of Political Economy 96, pp. 246-273.

FREIXAS, X. and G. RUBIO (1989): "Inflation and Stock Returns: Evidence from the Spanish Stock Market", Working Paper No. 89-08, Fundacion de Estudios de Economia Aplicada (FEDEA), Madrid.

FRENCH, K. (1980): "Stock Returns and Weekend Effect", Journal of Financial Economics 8, pp. 55-69.

GESKE, R. and R. ROLL (1983): "The Monetary and Fiscal Linkage Between Stock Returns and Inflation", Journal of Finance 38, pp. 49-65.

GIBBONS, M., ROSS, S. and J. SHANKEN (1989): "A Test of Efficiency of a Given Portfolio", Econometrica. Forthcoming.

JAIN, P. (1988): "Response of Hourly Stock Prices and Trading Volume to Economic News", Journal of Business 61, pp. 219-231.

KAUL, G. (1987): "Stock Returns and Inflation: The Role of the Monetary Sector", Journal of Financial Economics 18, pp. 253-276.

KEIM, D. (1983): "Size Related Anomalies and Stock Returns Seasonality: Further Empirical Evidence", Journal of Financial Economics 12, pp. 12-32.

KEIM, D. and R. STAMBAUGH (1986): "Predicting Returns in the Stock and Bond Markets", Journal of Financial Economics 17, pp. 357-390.

LITZENBERGER, R. and K. RAMASWAMY (1979): "The Effect of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence", Journal of Financial Economics 6, pp. 163-196.

MACKINLEY, A. (1987): "On Multivariate Tests of the CAPM", Journal of Financial Economics 18, pp. 341-371.

MARTINEZ, M. and G. RUBIO (1989): "Arbitrage Pricing with Macroeconomic Variables: An Empirical Investigation Using Spanish Data", European Finance Association, 16th Annual Meeting, Stockholm, September.

PEARCE, D. and V. ROLEY (1985): "Stock Prices and Economic News", Journal of Business 58, pp. 49-67.

RUBIO, G. (1988): "Further International Evidence on Asset Pricing: The Case of the Spanish Capital Market", Journal of Banking and Finance 12, pp. 221-242.

RUBIO, G. (1988): "An Empirical Evaluation of the Intertemporal Capital Asset Pricing Model: The Stock Market in Spain", Journal of Business Finance and Accounting 16, pp. 729-744.

RUBIO, G. and L. SALVADOR (1989): "Estacionalidad Diaria de los Precios en el Mercado Espanol de Capitales", Instituto de Economia Publica, Universidad del Pais Vasco.

SCHWERT, W. (1981): "The Adjustment of Stock Prices to Information About Inflation", Journal of Finance 36, pp. 15-29.
SHANKEN, J. (1985): "Multivariate Tests of the Zero-Beta CAPM", Journal of Financial Economics 14, pp. 327-348.
SHANKEN, J. and M. WEINSTEIN (1987): "Macroeconomic Variables and Asset Pricing: Estimation and Tests", Working Paper, University of Rochester.
STULZ, R. (1986): "Asset Pricing and Expected Inflation", Journal of Fiance 41, pp. 209-223.