VALUATION OF SHARES AND OTHER EQUITY IN THE FINANCIAL ACCOUNTS OF THE SPANISH ECONOMY

2005

Notas Estadísticas
N.º 2

BANCO DE ESPAÑA

VALUATION OF SHARES AND OTHER EQUITY IN THE FINANCIAL ACCOUNTS OF THE SPANISH ECONOMY

VALUATION OF SHARES AND OTHER EQUITY IN THE FINANCIAL ACCOUNTS OF THE SPANISH ECONOMY

Statistics and Central Balance Sheet Data Office Department

Notas Estadísticas. N.º 2
2005

This series disseminates papers of a statistical nature prepared by the Banco de España. The Notes address methodological aspects such as the scope, sectorisation and recording of financial stocks and transactions; characteristics of securities markets and of interest rates; background notes and others.

The opinions and analyses in the Notas Estadísticas (Statistical Notes Series) are the responsibility of the authors and, therefore, do not necessarily coincide with those of the Banco de España or the Eurosystem.

The Banco de España disseminates its main reports and most of its publications via the INTERNET at the following website: http://www.bde.es

ISSN: 1699-3985 (on line)
Imprenta del Banco de España

Abstract

The document develops in detail the references in the Methodological Notes to the *Financial Accounts of the Spanish Economy* (FASE) to shares and other equity. In addition to referring to the determining of the market value of quoted and unquoted shares, of shares issued by mutual funds and of other equity, the document focuses particularly on the valuation of Spanish non-financial corporations' unquoted shares. The market value of these unquoted shares is estimated by discounting the profits obtained, using as a discount factor a rate inferred from the implicit discount rate obtained for quoted corporations and from other adjustments. The significance of this method as opposed to that recommended by ESA 95 (based, in short, on applying the capitalisation/own funds ratio of quoted corporations to the own funds of unquoted corporations), is that it is better adapted to the Spanish securities market, where a small number of securities account for a very sizable percentage of stock market capitalisation. Further, the method followed by the Banco de España is underpinned both by SNA and ESA 95, as the two Manuals show that the valuation at current prices of an asset can be approximated by calculating the present or discounted value of the flow of future returns generated by that asset. Finally, the document explains the use of the databases of the Banco de España Central Balance Sheet Data Office to approximate the market value of non-financial corporations' shares.

INDEX

1 Introduction[1]

The *Financial Accounts of the Spanish Economy* (FASE) compiled by the Banco de España are part of the Spanish system of national accounts and are published quarterly on the Internet (www.bde.es). Moreover, in June each year, coinciding with the Annual Report of the Banco de España, a printed edition is published which includes the main revisions in the year to date and Methodological Notes. The latter detail the main references on the scope and limitations of the estimations in the accounts, including those relating to the valuations used. As these references are necessarily brief, this note seeks to supplement them for the case of shares and other equity, a heading which poses specific problems. In addition to referring to the determining of the market value of quoted and unquoted shares, of shares issued by mutual funds and of other equity, the document focuses particularly on the valuation of Spanish non-financial corporations' unquoted shares. The market value of these unquoted shares is estimated by discounting the profits obtained, using as a discount factor a rate inferred from the implicit discount rate obtained for quoted corporations and from other adjustments. The significance of this method as opposed to that recommended by ESA 95 (based, in short, on applying the capitalisation/own funds ratio of quoted corporations to the own funds of unquoted corporations), is that it is better adapted to the Spanish securities market, where a small number of securities account for a very sizable percentage of stock market capitalisation. Further, the method followed by the Banco de España is underpinned both SNA (13.34) and ESA 95 (7.27) as the two Manual shows that the valuation at current prices of an asset can be approximated by calculating the present or discounted value of the flow of future profits generated by that asset. Finally, the document explains the use of the databases of the Banco de España Central Balance Sheet Data Office to approximate the market value of non-financial corporations' shares.

1. An initial version of this document was prepared in 2002 and a second one in 2003. Both were distributed internally in the Banco de España. The present version is the 2003 one and is in the process of being updated, especially as regards the tables at the end of the document. The Statistics and Central Balance Sheet Data Office (CBSO) Department is grateful for the comments on a preliminary version of this note of Roberto Blanco of the Monetary and Financial Studies Directorate. These comments have enabled improvements to be made to the text, although Roberto Blanco is clearly not responsible for any limitations it may still contain.

2 Valuation methods

Table 1 shows how six different methods (referred to as A, B, C, D, E and F) are followed in the FASE to value the shares and other equity issued by resident sectors, and also the shares and other equity issued by non-residents and held by residents. Each of these methods is based on the technical rules inferred from the ESA 95. Table 2 supplements Table 1, showing how these methods are applied to the different units and groupings of units that it is considered important to highlight. The following sections explain how the outstanding stocks of these financial instruments have been valued and the reasons for applying each method. In principle, all these methods attempt to determine the market price of these instruments, in accordance with the general requirement of the ESA 95 which, in this specific case, poses particular challenges that require simplifications and approximations. Indeed, the latter are envisaged in the System. As seen in Table 1, the valuation methods that have been applied to the instruments issued by the units of the system and grouped under the heading "shares and other equity", can be classified into:

Issues of Resident units (total economy)

– Market valuation in the strict sense, i.e. information from the markets (applied to obtain the value of the quoted shares issued by resident public limited companies and all the shares issued by mutual funds)

– Estimation of market-price valuation on the basis of inferences drawn from the market value of similar instruments (applied to obtain the value of most of the unquoted shares issued by public limited companies)

– Cases in which, for various reasons, it is considered that own funds (capital plus reserves) are a good approximation to the market value (applied to obtain the value of other equity—except mutual fund shares—issued by companies other than public limited companies and, in certain particular cases, of unquoted shares issued by public limited companies).

Issues of Non-resident units (Rest of the world)

Apart from this list of valuations, it should be taken into account that, as indicated in Tables 1 and 2, there are units and groupings of units that do not issue shares or other equity. It should also be taken into account that, apart from the particular case of shares and other equity issued by the rest of the world and held by residents, in this note shares and other equity are valued as liabilities[2], which obviously determines their valuation as assets of the counterpart sectors that hold them; the outstanding stock issued up to a point in time (i.e. the liabilities under this heading of resident sectors and the rest of the world) is equal to the portfolio held at that point in time (i.e. the assets under the heading shares and other equity of resident sectors and the rest of the world). Except in the particular case mentioned above, the estimation of the heading "shares and other equity" as financial assets (in practice, limited to the distribution of the values estimated on the liabilities side among the institutional groupings that hold them in their portfolios) is not covered in this note.

2. "Shares and other equity" are not, legally, a liability of the issuer, but an ownership right on the liquidation value of the corporation, whose amount is not known in advance (ESA 7.52). However, apart from this legal consideration, the national accounts consider these instruments to be both a liability of the issuer and a financial asset of the holder. In this context, what has been called own funds when referring, for example, to the equity that appears on the liabilities side, should be understood as the value of the equity to its owners and not the own funds of the corporation in question, as is colloquially acknowledged and even implied by the text of this note.

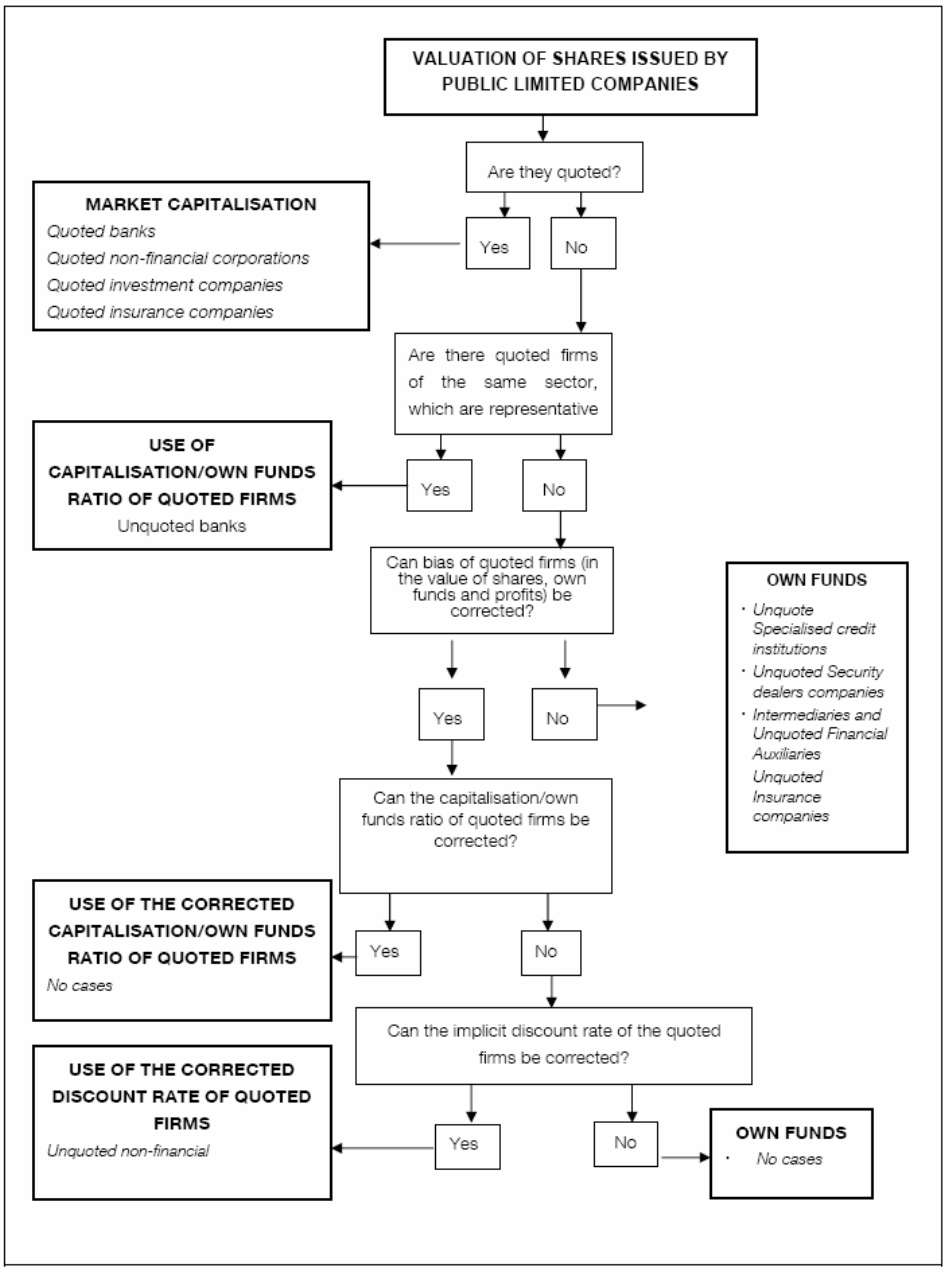
The following sections describe the valuation criteria followed. Quoted shares issued by public limited companies, whose value is directly observable on the markets (a situation that also applies to shares in mutual funds), are dealt with first. Then the various procedures for valuing both unquoted shares and other equity are described, with an explanation of which have been used and why. Also, as regards the valuation of unquoted shares, the main recommendations issued by the Working Group on Unquoted Shares are stated, their level of convergence with the procedures described is analysed, the problems involved in complying with these recommendations in the specific case of Spain are considered and the decisions adopted regarding the future course of action are set forth.

Box 1 represents schematically the sequence followed to determine the criteria used to value shares issued by public limited companies when compiling the FASE. This sequence reproduces the priorities inferred from the ESA 95 regarding the valuation method to use and the solution adopted when actual circumstances prevent the valuation method explicitly recommended by the System from being used.

Box 1. Summary of the procedure followed to determine the value of shares issued by public limited companies

This box contains a schematic representation of the steps followed to value shares issued by public limited companies when the FASE are compiled. The basic principles are those laid down by the ESA 95, which specifies that unquoted shares should be valued with reference to the value of quoted shares, taking into account the sector, and possible differences in the factors that influence the values of the two types of shares, in particular their liquidity.

While quoted shares are valued directly at their market price, a market reference must first be sought in order to value unquoted shares, i.e. shares of the same sector that, in addition to being quoted on the stock market, are representative of the sector as a whole. In the event that shares of the same sector are quoted on the stock market and are representative of the sector as a whole the ratio explicitly recommended by the ESA 95 (capitalisation/own funds) of the quoted corporations shall be applied to the unquoted ones. In the case of the FASE, up until now only quoted bank shares have been considered sufficiently representative of their sector. When the quoted corporations are not representative of the sector as a whole, the system followed tries to analyse whether the bias that arises can be corrected. It has not been possible to correct this bias in the case of insurance corporations (only three of which are quoted), and other non-financial intermediaries and financial auxiliaries. As a result the unquoted shares issued by these units have been valued at the book value of their own funds. In contrast, it has been possible to correct this bias in the case of non-financial corporations, given the wealth of available information compiled at the CBSO Division. In the case of non-financial corporations, it has been concluded on the basis of analysis carried out by the CBSO Division that it is not possible to correct the capitalisation/own funds ratio of quoted shares for the above-mentioned bias, but that it is possible to correct for bias if the value of the unquoted shares is determined using the present value of future profits.


VALUATION OF SHARES ISSUED BY PUBLIC LIMITED COMPANIES
Are they quoted?
Yes
No
MARKET CAPITALISATION
Quoted banks
Quoted non-financial corporations
Quoted investment companies
Quoted insurance companies
Are there quoted firms of the same sector, which are representative
Yes
No
USE OF CAPITALISATION/OWN FUNDS RATIO OF QUOTED FIRMS
Unquoted banks
Can bias of quoted firms (in the value of shares, own funds and profits) be corrected?
Yes
No
OWN FUNDS
Unquote Specialised credit institutions
Unquoted Security dealers companies
Intermediaries and Unquoted Financial Auxiliaries
Unquoted Insurance companies
Can the capitalisation/own funds ratio of quoted firms be corrected?
Yes
No
USE OF THE CORRECTED CAPITALISATION/OWN FUNDS RATIO OF QUOTED FIRMS
No cases
Can the implicit discount rate of the quoted firms be corrected?
Yes
No
USE OF THE CORRECTED DISCOUNT RATE OF QUOTED FIRMS
Unquoted non-financial
OWN FUNDS
No cases

3 Application of market-price-valuation criterion to the shares issued by public limited companies and mutual funds

3.1 Valuation at market prices in the strict sense (Methods A and B)

As at end-2000, 45.7% of shares and other equity issued by resident units were valued in accordance with these methods (Table 1), that is to say by using the stock market capitalisation of the shares issued by quoted public limited companies (method A), which is used to value 31.9% of the shares and other equity issued by resident units, or the so-called net asset value of the shares issued by capital-market and real-estate mutual funds (method B), i.e. their current redemption value insofar as, in the case of Spain, these shares are redeemable by the funds that issue them (this method is used to value 13.8% of the shares and other equity issued by resident units).

It is not necessary to explain why these valuations, which always refer to the end of a calendar quarter, are called market valuations, given that they are inferred from transactions executed on organised markets and the information to determine their amounts is available and published in the financial market statistics of the CNMV, the Banco de España, etc.

3.2 Estimation of market value based on certain inferences: the general case of unquoted shares issued by public limited companies[3] (Methods C and D)

As at end-2000, 41.2% of all the shares and other equity issued by resident units were valued in accordance with these methods (*Table 1*). The first method is based on the market-capitalisation-to-own-funds ratio of quoted public limited companies (method C) used in the valuation of 1.7% of shares and other equity issued by resident units, and the second one on the discounting of future profits using the discount rate for quoted shares, having made certain adjustments to it (method D), used in the valuation of 39.5% of shares and other equity issued by resident units.

Tables 1 and 2 summarise methods C and D and their scope of application. The following sections describe how each of these two methods has been applied to the FASE and the grounds for their adoption.

3. As noted in Section 2c) and discussed later on, there are certain specific cases of unquoted shares for which this estimation procedure is not used.

4 Estimation of the market value of the shares issued by unquoted public limited companies using the ratio of market capitalisation to own funds for quoted public limited companies (Method C)

This method, which is the one primarily recommended by the ESA 95, estimates the market value of the shares issued by unquoted public limited companies (VMnc = C) on the basis of the hypothesis that the ratio between such value and the book value of the own funds of unquoted public limited companies (RPnc) is the same as that between the market capitalisation of quoted public limited companies (VMc) and the book value of the own funds of quoted companies (RPc) with similar characteristics[4]. That is to say:

$$VM_{nc} = RP_{nc} \frac{VM_c}{RP_c} \quad (1)$$

"Similar characteristics" should be understood not only in relation to the type of business but also as meaning that the quoted public limited companies used as the reference for the extrapolation must be representative of the unquoted firms which it is sought to value. When compiling the Financial Accounts of the Spanish Economy (FASE) it has been concluded that only the shares issued by unquoted banks should be calculated using this method. Box 2, shows that banks are well represented on the Spanish stock market (in 2001 Q2 the own funds of quoted banks represented more than 80% of the total own funds of all banks), and other analysis confirms this conclusion. Box 2 also shows the need to adopt a certain margin when defining the market-capitalisation-to-own-funds ratio of the quoted public limited companies that is to be extrapolated to unquoted public limited companies. This margin is used to exclude anomalous cases and is envisaged in the ESA 95.

4. This method, which is the one primarily recommended by the ESA 95, estimates the market value of the shares issued by unquoted public limited companies (VMnc = C) on the basis of the hypothesis that the ratio between such value and the book value of the own funds of unquoted public limited companies (RPnc) is the same as that between the market capitalisation of quoted public limited companies (VMc) and the book value of the own funds of quoted companies (RPc) with similar characteristics

Box 2. Valuation of shares issued by unquoted banks

Banks make up a sub-sector that is well represented on the Spanish stock market. The table below shows the own funds of quoted banks as a percentage of the own funds of all banks (quoted and unquoted). The same percentage is also calculated for their share capital.

EUR millions

	Own Funds			Share capital		
	Total	Quoted	Percentage	Total	Quoted	Percentage
	1	2	3=2/1	1	2	3=2/1
1995	26,511	17,887	67.47%	9,337	5,445	58,31%
1996	27,470	18,716	68.13%	9,318	5,393	57.88%
1997	28,227	17,917	63.47%	9,565	5,671	59.29%
1998	27,582	19,749	71.60%	8,749	5,323	60.84%
1999	27,765	19,492	70.20%	9,252	5,692	61.52%
2000	41,118	31,952	77.71%	9,477	5,967	62.97%
2001	43,010	35,026	81.44%	9,688	6,044	62.39%
2002	45,034	35,584	79.02%	9,971	6,177	61.95%
2003	45,355	36,022	79.42%	9,681	5,903	60.97%

According to both parameters, quoted banks are very well represented on the stock market (their own funds, in the last years, accounted for approximately 80% of the own funds of all banks). In principle, therefore, they are an ideal group for the application of Method C to obtain an estimate of the value of the unquoted shares on the basis of the capitalisation/own funds ratio of the quoted banks. This is what has been done in the Financial Accounts of the Spanish Economy, as indicated in the main text of the document. However, the ratio obtained as a weighted average of the individual capitalisation/own funds ratios of quoted banks has not been applied directly, because it is distorted by the valuation of two very large banks. Moreover, the capitalisation of one bank in particular has been found to be systematically above the average for the sector, so that it has been left out of the ratio. In order to correct for the effect of directly applying the ratio obtained as a weighted average of the ratios of the quoted banks for valuing the unquoted banks, a ratio has been obtained as a simple average of the ratios of the quoted banks (in both cases with the exception mentioned). This filter, or editing, is in line with the provisions of paragraph 7.55 of the ESA 95, which sets out the procedure for applying the capitalisation/own funds ratio of quoted shares. This paragraph states, inter alia, that: “There may be other differences between quoted and unquoted corporations, which may have an effect on the estimation method”.

The initial public offering in mid-2001 in Spain of a medium-large bank has enabled the validity of the indirect estimation made for this bank to be tested against the “true” market value on the stock market. Specifically, had this bank been valued at the average price calculated on the basis of the unedited capitalisation/own funds ratio, it value on the day before the IPO would have been 1000 units of account. Using the edited ratio, its value at that date was 630 units of account. In the first few days trading on the stock market its capitalisation was established at around 600 units of account, which is closer to the value obtained with the edited ratio than that obtained with the unedited ratio and, in any case, the difference in relation to the former value is explicable if it is taken into account that the capitalisation refers to the first few days of quotation.

5 Estimation of the market value of the shares issued by unquoted public limited companies using the present value of future profits (Method D)

This method estimates the market value of the shares issued by unquoted corporations (VMnc = D) by calculating the present or discounted value of the future profits generated by such corporations. This method, which is among those recommended by the ESA 95 (see paragraph 7.27b) is one of those most commonly used by financial analysts. It is also used by the CBSO Division of the Banco de España in its individual treatment of the more than 30,000 unquoted non-financial public limited companies in its databases.

The method is based on the fact that the value of quoted firms (VMc), i.e. their capitalisation, can be obtained by dividing their expected profits by a discount factor:

$$Capitalisation = VMc = \frac{RONc}{d_c} \quad (2)$$

where VMc is the market value of the quoted shares; RONc is the expected profits for the following year of the quoted firms (represented by Net Ordinary Profits, a variable which is defined later); and *d* is the implicit discount factor for quoted shares, which incorporates the risk-free interest rate, the risk premium for quoted corporations and the expected growth rate of profits. When the value of the capitalisation is known and the future profits have been estimated, the above expression, inferred from a discount model described in Annex 1, gives the implicit discount factor (d_c)[5].

Likewise, the value of unquoted shares can be obtained from the expression:

$$VMc = \frac{RONnc}{d_{nc}} \quad (3)$$

where VMnc is their market value, RONnc is the expected profits of unquoted public limited companies for the following year and d_{nc} is the discount factor applicable to unquoted shares. This latter variable is obtained by correcting the variable. This correction is required as the characteristics of unquoted shares (in particular their time horizon, liquidity and risk) differ from those of quoted shares. As will be seen below, the correction can be additive or multiplicative. In the first case: $d_{nc} = d_c + z$, while in the second case $d_{nc} = d_c * z$, z being the correction factor.

The procedure following in the FASE has been to apply an additive premium of 3%[6], so that expression (3) becomes:

$$VMnc = \frac{RONnc}{d_c + 0{,}03} \quad (4)$$

The reasons for incorporating this premium and for its level are found in Annex 2[7].

5. Box 5 of the Methodological Supplement to the publication "Banco de España. Central de Balances. Resultados anuales de las empresas no financieras. Año 2000" available, along with the other CBSO Division publications, at www.bde.es, includes a chart showing the similarity between the level and trends in the market capitalisation of a group of quoted firms and the level and trends in the estimated capitalisation of the same firms obtained by discounting future profits (i.e. using formula 2). This chart, which uses the rate of interest on 10-year government bonds as the discount factor, also shows the book value of the own funds of the firms in question. Compared to the market capitalisation and the estimated capitalisation obtained by discounting profits, the level of the book value of own funds is much lower and its trend uneven.

6. The fact that floor-traded and unquoted corporations have similar illiquidity levels to those traded on the Spanish continuous market (at least for certain floor-traded aggregates) suggests that it may be useful to investigate whether the premium described in this section can be inferred from this market, subject to whatever considerations apply at the time. However, this work has not yet been undertaken

In practice, the CBSO Division has taken the value of *RONnc* to be the weighted average of the net ordinary profit over the last five years of the unquoted public limited companies, the value of whose shares it is sought to calculate. Accordingly

$$RONnc = \frac{5RONnc_{n-1} + 4RONnc_{n-2} + 3RONnc_{n-3} + 2RONnc_{n-4} + RONnc_{n-5}}{15} \quad (5)$$

The value of d_c has been taken to be the discount factor implied by non-financial corporations traded on the continuous market [8]. As is explained below, when making these calculations to obtain the discount factor, the influence of companies reporting anomalous earnings, i.e. earnings unrelated to their capitalisation, is stripped out. In short, applying expression (2) to the corporations traded on the continuous market gives:

$$d_c = \frac{RONc}{VMc} \quad (6)$$

for the calculation of which the variable RONc has been obtained in a similar way to that indicated in expression (5).

In short, method D, as described above, is based on the discounting of expected flows of ordinary profits, i.e. Net Ordinary Profit (RON), calculated on the basis of recent experience, using a discount rate based on the market discount factor (dc), which incorporates the rate of interest on 10-year bonds (r) (which is considered to represent the rate of interest of risk-free assets), an implicit risk premium (p) and the expected growth of profits (g). All these elements appear, implicitly, in expressions (2) and (6), as explained in Annex 1. Initially, the method is applied to a sample of approximately 30,000 non-financial public limited companies that are not quoted on the stock market, available in the CBSO Division and subsequently totals are

---

7. In the event that the discount factor for quoted shares is used directly, i.e. without being corrected, to discount the profits of unquoted shares, the market value of the unquoted shares (VMnc) so obtained can also be expressed in terms of the quoted shares price/profit ratio, referred to as the PER (Price Earnings Ratio). In fact, starting from expression (4) without a correction factor, i.e. from:

$$VMc = \frac{RONnc}{d_c} \quad (i)$$

and taking into account that the discount factor for quoted shares (dc) is simply the net ordinary profits of the quoted firms divided by their capitalisation, gives:

$$VMnc = \frac{RONnc}{d_c} = \frac{RONnc}{\frac{RONc}{VMc}} = VMc * \frac{RONnc}{RONc} \quad (ii)$$

This expression is similar to that which determines the value of unquoted shares using the ratio between the own funds of unquoted and quoted firms (expression 1 of the main text). Finally, if it is considered that the capitalisation value of quoted firms (VMc) is obtained by multiplying the number of quoted shares (Nc) by their price (Pc), then VMc = Nc * Pc and, given that the PER of quoted shares is given by

$$PERc = \frac{Pc}{\frac{RONc}{Nc}}$$

expression (ii) can be reformulated as

$$VMnc = RONnc * PERc \quad (iii)$$

which gives VMnc as in terms of the PER of the quoted shares.

8. Until March 2003 the discount factor used was that relating to the non-financial corporations included in the IBEX. For the reasons explained later on, it has been decided to replace this rate with one based on the non-financial corporations traded on the continuous market, after eliminating anomalous cases for the same reasons set forth in Box 2 for quoted banks.

calculated for the population of unquoted non-financial corporations. The following points should be highlighted:

– The concept **Net Ordinary Profit**, or RON, includes the gross operating profit (or surplus) plus financial receipts less financial costs and depreciation and operating provisions, i.e. neither taxes on profits nor extraordinary expenses are deducted from the surplus, nor are extraordinary receipts included, the latter items being erratic and therefore of little use for drawing inferences regarding "normal" profits. The variable that is calculated for each of the public limited companies of the sample, as a reference for their "historical" profits is the weighted average RON over the last five years, obtained as indicated in expression (5). The lack of data for a specific year for a particular company (for example because the data available are atypical as the company is in the process of merger/demerger or simply because the company in question has existed for less than five years), is resolved by not recording profits for that period.

– **The discout rate** (d_c) applied is the market discount factor, having stripped out those cases which could invalidate its use for this purpose[9]. The aggregate used to determine (d_c) is that made up of all the quoted non-financial corporations traded on the continuous market[10] and therefore, as an initial step, excludes floor-traded companies due to the high volatility of their market values. The final step is to edit out those corporations affected by merger and/or de-merger processes, newly formed corporations, corporations forming part of the so-called "Nuevo Mercado" (the Spanish equivalent of the NASDAQ), corporations belonging to regulated sectors, corporations with systematic losses, and others whose market price has proven to be extremely volatile. This aggregate has been used to obtain separate rates for the electricity sector, given the distinctness of the companies that belong to it. Regarding the statistical measure used, once the number of companies available to make this calculation has been increased, empirical experience has shown that the most satisfactory is the median, since this statistic most fully corrects the bias introduced by the larger companies.

– **The process of grossing up**, from the shares issued by the approximately 30,000 unquoted non-financial public limited companies in the sample to the total unquoted shares issued by all non-financial public limited companies, is part of the overall work of obtaining complete accounts for the non-financial corporations sector, from their accounting statements and population features. An intermediate system is obtained, which is used as an input in the overall process of compilation of the financial accounts of this sector, along with other alternative inputs. The extrapolation factors to apply to the sample to obtain the total are obtained from the Central Directory of Companies (DIRCE) of the National Institute of Statistics (INE). This is the official register which classifies the population of companies into 28 activity groupings, 8 levels or strata of employment and 4 types of legal status. The extrapolation factors, defined by the "population employment/sample employment" ratio, have been applied to the elements of the matrices that result from crossing the variables mentioned. Companies with more than 5,000 employees and those with anomalous values for a

9. As stated earlier, the procedure used here is the same as in the case of the own funds/capitalisation ratio of the quoted corporations referred to in Box 2, which is also edited for anomalous cases.

10. Until 2003 the aggregate used to determine (d_c) was that formed by the quoted public limited companies included in the stock market index known as IBEX-35, from which financial institutions were excluded. This was edited by methods similar to those currently used. However, the work performed in 2002 to develop alternative discount rate calculations using a larger number of companies in the determination, and even the calculation of different rates for different activity-based groupings, led to the replacement of the former discount rate by a rate based on a broader aggregate, with specific differentiation of the electricity sector. In any event, until the Spanish stock market evolves further and gains depth, the discount rate will continue to be regarded as subject to review in order to improve the estimate.

series of consistency and test ratios (for example, the ratio of capital to employment) are excluded from the extrapolation process, and included directly in the final result.

The particular case of public limited companies systematically reporting losses. Finally, doubts arise regarding the appropriateness of applying method D (valuation of unquoted shares on the basis of expected results) in the case of public limited companies systematically reporting losses, given that its strict application may mean that the valuation of the shares is negative. This result is, to say the least, anomalous, given that the shareholders of a limited company are never liable to third parties for more than their capital contribution (the financial instrument "shares" cannot represent a liability for their holder). This peculiarity, restricted to the aggregate of firms for which the valuation of their shares using method D is negative, has made it necessary to define an alternative criterion to address this case in the FASE. On the basis of the results obtained from studying quoted corporations reporting systematic losses, according to which they never trade on the market below their share capital, it has been decided to record the shares issued by public limited corporations that are in this situation at their nominal value (i.e. for the amount of their net paid-up capital). Moreover, Spanish law lays down minimum limits for net worth (in its legal-accounting sense) with respect to share capital, below which the firm must reduce its capital or be wound up. This rule attempts, in short, to ensure that the share capital of the firm provides a permanent guarantee to third parties, a further reason why it is the best reference for the minimum value of the shares.

6 Recapitulation of the reasons for applying Method D as an alternative to Method C to estimate the market value of unquoted public limited companies.

The six methods which have been considered in previous sections are based on the four possible ways of valuing shares and other equity laid down in ESA 95: market capitalisation or similar methods (methods A and B); application of the capitalisation / own funds ratio (C); the discounting of income (D); and book value of own funds (E), which is explained in the following section. Method F, explained in section 8, is not strictly an independent method given that it contains elements of methods A and E. The first method, market capitalisation, is directly observable and applicable to quoted shares (and mutual funds, whose shares are redeemable at their current redemption value). The second, the ratio between the capitalisation and own funds of quoted public limited companies, is explicitly indicated as the approach for valuing unquoted shares. The third, income discounting, is included among the general valuation principles in 7.27b of ESA 95. The book value of own funds is established as the criterion for valuing other equity and is also applicable to the odd residual case of unquoted shares (the case, in Spain, of private limited companies, credit co-operative banks and certain financial intermediaries and auxiliaries, as shown in Table 2). The latter is an accounting valuation procedure that is applied in the ESA 95 to securities representing the capital of companies that will never be traded on a secondary market and for which, therefore, there will be no yardstick on the market that can be used for their valuation. Finally, method F is used to value the shares and other equity issued by non-residents and held by resident units.

For the specific case of valuing unquoted shares in general, which is the most problematic, the ESA 95 establishes that the value of quoted shares that can be considered applicable to unquoted shares must be taken into account. Thus, paragraph 7.54 states that "The values of unquoted shares (AF.512), which are not regularly traded on organised markets, should be estimated with reference to the values of quoted shares". Although, as mentioned above, the ESA 95 states explicitly that the capitalisation / own funds ratio of quoted public limited companies is directly applicable to the own funds of unquoted public limited companies, the use of this yardstick depends fundamentally on how representative the quoted shares are of all the shares (quoted and unquoted). When this representativeness is guaranteed, as it is for banks on the Spanish stock market, this method, that is Method C, is the one applied in the Financial Accounts of the Spanish Economy, as indicated in Section 4 and Box 2.

When, on the other hand, there is a bias, arising, inter alia, from the fact that the quoted public limited companies are large, are concentrated among particular economic activities or among activities demanding larger volumes of funds than unquoted public limited companies, or that the number of quoted public limited companies is very small relative to the total (measured in terms of value added, level of own funds or some other variable), the yardstick taken must be corrected for this bias. In the case of Spain there is evidence that these biases exist so that the valuations of shares of all unquoted public limited companies, except banks, have had to be estimated using an alternative to Method C[11].

It therefore has to be decided which method resolves, or at least reduces, these problems of lack of representativeness so that the extrapolation has at least some guarantee of validity. Also, when selecting this alternative method, it should be considered that, as in the case of any

11. Of the 670,000 companies existing in Spain as at end-1997, only 285 were quoted. Moreover, at end-1999, the 28 non-financial corporations included in the IBEX-35 accounted for 75% of the market capitalisation of non-financial corporations, while just 3 corporations accounted for 50% of total capitalisation.

other financial asset, the market's valuation of the shares (quoted and unquoted) is, in principle, related to the profits they generate or are expected to generate in future. As already indicated, Box 1 sets out schematically the procedure followed, when compiling the FASE, to determine which valuation criterion of those laid down by the ESA 95 is adopted for the shares. The box shows that the application of methods C and D depends on whether there are quoted public limited companies in the sector concerned that can be used as a reference to value the shares issued by unquoted public limited companies. When no such firms exist alternative solutions are adopted.

When studying the problems of representativeness of the methods referred to above, it should be recalled that method C applies the ratio VMc/RPc (obtained for the quoted shares) to the variable RPnc, while method D, applies the ratio VMc/RONc (obtained for the quoted shares) to the variable RONnc. Method C, based on the extrapolation of the VMc/RPc ratio (see expression 1) to all unquoted public limited companies, can also be expressed as follows:

$$\frac{VMc}{RPc} = \frac{\frac{VMc}{RONc}}{\frac{RPc}{RONc}} = \frac{\frac{1}{d_c}}{\frac{RPc}{RONc}} = \frac{\frac{RONc}{RPc}}{d_c} \quad (7)$$

The numerator of the expression represents the endowment of capital (own funds) relative to profits earned (net ordinary profits). The denominator is the discount rate (d_c), and therefore depends on the variables that determine (d_c) which are mentioned in the explanation of expression (2).

When considering the representativeness of the discount rate (dc), i.e. the ratio that appears in the denominator of this alternative expression of Method C, which is precisely the ratio that is considered by Method D, to decide whether it is meaningful to apply it to unquoted shares, the variables of which it is composed should be taken into account (long-term interest rate, future profit expectations and risk premium). It may be inferred from their analysis: a) that the long-term interest rate is the same for quoted and unquoted shares; b) that although in the short term the expectations of future profits diverge significantly, in the long term there is some convergence determined by macroeconomic conditions and c) that the risk premium implicit in the discount rate taken as reference should, however, be corrected for any bias it may have, by means of an additional risk premium[12]. Note that these conclusions, which validate the representativeness of this ratio and, therefore, its extrapolation to enable a value to be obtained for unquoted shares, are applicable both to Method C and Method D, since it is common to both in the way it is expressed here.

Regarding the endowment of capital relative to the profits earned, the ratio that appears in the numerator of this way of expressing Method C, i.e. *RONc/RPc*, it is reasonable to suppose that it is not necessarily similar in quoted and unquoted public limited companies, since the financing that facilitates the earning of profits also depends on external funds and the own funds / external funds ratio, i.e. the financial structure of unquoted public limited companies may be very different from that of quoted ones (and there is evidence of this in studies by the CBSO Division). Therefore, insofar as the ratio *RONc/RPc* is higher (lower) for quoted than for unquoted public limited companies, the application of the ratio *VMc/RPc* for quoted public limited companies to unquoted public limited companies would give rise to an overvaluation (undervaluation) of the latter, which would affect the level of the series obtained. Moreover, it is normal for the ratio *RONc/RPc* to display some volatility, owing to the different paths of its two components.

12. In the case of the FASE the mark-up on the implicit risk premium obtained from *Table 3* considers the long term to be a horizon of around 20 years.

The foregoing shows the limitations of Method C for obtaining the value of shares issued by unquoted public limited companies when there are no quoted public limited corporations with similar characteristics (size, financial structure, branch of activity). Method D is not free from limitations either, but, from what has been said so far, they seem to be fewer. Moreover, as explained in the previous sections, the application of Method D can be supplemented by the introduction of filters (exclusion from the calculation of the discount rate for those quoted shares showing anomalous behaviour, the introduction of a risk premium not implicit in the discount rate…). For all these reasons, and also for a number of other reasons, including the availability of data (including RON) for more than 30,000 corporations and of the tools that enable them to be grossed up, as referred to in paragraph 5, and the familiarity of the analysts of the Banco de España's CBSO Division (a fundamental source for obtaining estimates for unquoted shares in the FASE) with the method that is referred to in some spheres as the "financial valuation" of firms, the compilers of the Financial Accounts of the Spanish Economy have applied Method D to value the unquoted shares issued by non-financial public limited corporations.

7 Eurostat recommendations for valuing unquoted shares. Procedure applied in Spain

The completion in December 2003 of the work performed under the auspices of Eurostat to determine optimum valuation criteria for unquoted shares and the issuance by the working group set up for this purpose (Working Group on Unquoted Shares—WGUS) of a set of recommendations as a result of this work, signify the creation of a methodological framework at international level and the obligation of Spain to explain the ultimate reasons for its position, which contains some particular elements with respect to the general recommendation.

The recommendations issued the WGUS are summarised basically as follows:

7.1 Eurostat recommendations

1 Need to distinguish three categories of shares and other equity: quoted shares (excluding shares in mutual funds), unquoted shares (excluding shares in mutual funds) and other equity.

2 Preparation at national level of a set of methodological notes to clarify the methods applied in each country, devoting special attention to non-financial corporations and households.

3 Preparation of full charts of accounts, including those relating to other changes in volume and revaluation, with particular reference to the latter for the purpose of assessing quality of statistics

4 Segregation of information by sector of economic activity[13] with special mention of new technologies.

5 Preparation of a European database of quoted firms allowing the "Capitalisation/Own Funds" ratio to be obtained in weighted average terms after editing out the firms included in the Stoxx-600 index and those with own funds below €10 million.

6 Use of this ratio adjusted by an illiquidity premium for the valuation at market prices of unquoted shares. However, if it is not feasible to calculate this premium, it is recommended to perform the calculations referred to in the previous point by using a median rather than a weighted average.

7 Finally, the recommendations establish different levels of permitted flexibility:

– Choice of illiquidity premium: either that determined at European level or one obtained at national level can be used

– Choice of the database from which the Capitalisation/Own funds ratio is obtained: either a European database or a national database can be used

– Degree of sectorisation applicable: either predetermined or none.

The use of alternative methods other than those envisaged in the foregoing recommendations is also permitted. However, in this case it is required to provide documentation supporting the theoretical basis (in the framework of SEC 95) of the factors preventing harmonisation at European level and a quantification of the effects of using methods other than those envisaged.

13. The document refers to eleven sectors of economic activity: mining and energy; manufacturing; construction; commerce; hotels and restaurants; transport and communications; real estate and corporate services; financial intermediation; insurance; financial and insurance auxiliaries; and other.

7.2 Procedure applied in Spain

It can be deduced from a reading of these recommendations and from the treatment described above for valuing unquoted shares, that the variety of methods permitted by SEC 95 entails the appearance of divergences between the statistics of the different member States. In the case of Spain, the reasons for the choice of each method are based on the exercise of a legally recognised option (ESA 95 was set in place by means of an EU Regulation) and on the existence of the proven methodology included in this document. The differences between the method used in Spain to calculate the value of unquoted shares issued by certain institutional groupings and that currently under study by the WGUS can be summarised as follows:

– Regarding banks, for those where the valuation methods used are similar to those defined at international level, there are still some divergences. These can be summarised as the absence of an illiquidity premium in current valuation methods, and the use of a ratio obtained from a strictly national database (envisaged in the system) and expressed in terms of an arithmetic mean rather than a weighted average.

– Regarding the non-financial corporations, the valuation of shares by the discounting to present value of future profit rather than via the Capitalisation/Own funds ratio; the use of a discount rate tied to a strictly national base and, within this framework, the use of the median as the most representative market statistic rather than the weighted average, and the use of an illiquidity premium calculated according to national criteria. Calculations have yet to be performed to determine the differences between applying the method proposed by Eurostat and that used in Spain.

Currently, for the reasons set out, the application of the method proposed by Eurostat is not being considered. The fundaments detailed in the previous section, warranting the use of method D to value non-financial corporations' unquoted shares, refer to limitations (specifically, to the thinness of the domestic market for obtaining sectoral Capitalisation /Own Funds ratios) which could hardly be resolved were a European base more extensive than the Spanish base to become available. But even in this case, non-national references will always be further removed from actual national economic circumstances than references prepared with strictly national data, and they may add bias to the valuation which is difficult to quantify[14]. Finally, both the availability of a high-quality data source on non-financial corporations' profit and loss accounts, as provided by the Banco de España Central Balance Sheet Data Office, and the fact that the discount method for estimating the current/market price valuation of any type of asset is accepted by SNA (13.34) and by ESA 95 (7.27.b), warrant Spain maintaining the current method until there are more justified reasons for adopting an alternative.

14. All the more so in view of the volatility and the structural differences that the RONq/OFq ratio (which is ultimately, as seen in expression 7 of the previous section, that which is behind the Capitalisation/Own Funds ratio) introduces into the valuation at market prices.

8 Valuation of other equity according to the book value of own funds (Method E)

8.1 General considerations

First, the concept of own funds needs to be clarified, owing to the confusion that may arise between the traditional or business accounting terminology and that of the national accounts (ESA 95). In traditional accounting (the administrative accounting of public-sector units, the charts of accounts of financial institutions and the general charts of accounts applied by non-financial companies), the valuation of financial and non-financial assets and of liabilities follows specific rules that, unlike those followed in ESA 95, in most cases do not attempt to value such assets or the liabilities at market prices[15].

In the balance sheet expressed in terms of what is here referred to as traditional or business accounting, and which the ESA 95 refers to in 7.55 as the "corporation balance sheet", own funds are recorded at book value, i.e:

Own funds (book value) = Book value of (financial and non-financial) assets less the book value of liabilities (without including the capital of the corporation in the liabilities)

According to the foregoing, these own funds include the capital and reserves, both at book value. It is not considered necessary to go into more detail regarding the specific headings that make up the capital and reserves, since they depend on the charts of accounts in force, which are not entirely homogenous. However, it is clear that, when this information is available, it is necessary to deduct from the capital any holding of own shares and unpaid shareholder subscriptions, and to add other capital contributions.

At the same time, own funds compiled "according to ESA 95 principles" (paragraph 7.55) are, according to paragraph 7.05 of ESA 95, "the sum of net worth and shares and other equity issued", both defined in terms of ESA 95 which, as already stated, values shares and other equity at their market value and calculates net worth as follows:

Net Worth (national accounts) = Financial and non-financial assets at market prices less liabilities at market prices (including shares and other equity in the liabilities)[16]

In short, own funds according to ESA 95 are as follows:

Own funds (national accounts) = Financial and non-financial assets at market prices less liabilities at market prices (without including shares and other equity in the liabilities)

This expression is formally identical to that for the book value of own funds except as regards valuation at market prices. In addition to these considerations, the important thing to highlight here is that the own funds referred to in this note, and in its annexes, refers to the book or accounting value of own funds.

15. The national accounts do not calculate values company by company, but rather by blocks of companies classified in the various sectors, sub-sectors and agents into which the economy is divided.
16. There is no estimate in the FASE of the net worth of the various resident sectors, basically because there is no official estimate available of the non-financial assets of such sectors, a vital input for calculating this aggregate.

8.2 Valuation of the other equity (Method E)

Table 1 shows that 13.1% of the shares and other equity issued by resident sectors as at 31/12/00 were valued according to the book value of own funds. In most cases this valuation has been applied to what ESA 95 (7.56) calls specific institutional units and, in short, to legal entities other than public limited companies. In the case of FASE this group is composed of private limited companies, partnerships (ordinary and limited), co-operatives (including credit co-operative banks, autonomous bodies and other units that belong to general government but are not part of general government (which, despite bearing some resemblance to quasi-corporations, are not strictly so since they are separate legal entities), the branches of non-resident corporations and certain financial intermediaries belonging to the State with an unconventional capital structure (the Banco de España and the Official Credit Institute)[17]. Table 4 shows the weight of the different kinds of company and other legal entities in Spain, using data for 2000.

Finally, and for the reasons given in the case of unquoted shares, the minimum value of other equity is set by the amount of the share capital of the corporations in question.

8.3 Homogeneity of valuations

The fact that "other equity" is valued according to the book value of own funds, introduces an element of heterogeneity into the valuation of the heading "shares and other equity", which makes the comparisons that it is sought to make questionable. This is because the proportions of public limited companies and mutual funds (i.e. firms that issue shares that should be valued according to market value) and of other firms that issue other equity that should be valued according to book value, differs significantly across the countries that apply the ESA 95, as can be seen in Table 5. These different proportions, which give rise to heterogeneity in the valuations, are a result of differences in the structure of ownership in the various countries. In some EU Member States (such as France and Spain), the relative importance of public limited companies is greater, while in others (such as Germany and Italy), the relative importance of private limited companies and partnerships is greater. Another possible source of heterogeneity is the different way in which the unquoted shares issued by public limited companies may be estimated in countries that apply ESA 95 (only Spain seems to apply profit discounting, in the situations described above). However, and unlike the case of the heterogeneity arising from the different legal structure of the countries, the heterogeneity arising from the different way of estimating the unquoted shares issued by public limited companies is generally recognised as a problem, when that which arises from the different legal structure of the firms may be greater.

17. The National Accounts of Spain (INE) do not recognise the existence of any quasi-corporations, i.e. units that, despite not having a legal status independent from their owners, are considered independent institutional units if they keep a complete set of accounts and they have an economic and financial behaviour that is different from that of their owners and similar to that of corporations. Until 1991, the market activity of the Dirección General de Correos y Telégrafos (DGCT), which was part of the Finance Ministry was classified as a quasi-corporation. In 1991 the DGCT became the Organismo Autónomo Comercial Correos y Telégrafos (RD 1766/91 of 13 December 1991), and subsequently an Ente Público Empresarial (Law 6/97 of 14 April 1997).

9 Valuation of the shares and other equity issued by the rest of the world and held by residents (Method F)

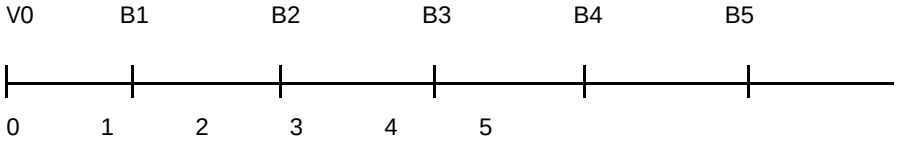
The data for "quoted shares issued by the rest of the world and held by residents" are obtained from information supplied by the Ministry of Economy in its publication "Posición de España frente al exterior. Valores negociables" (Spain's external position. Negotiable securities). These data are annual, and the valuation of the shares corresponds to their value at market prices (quotation) at year-end, or the latest available quotation, converted into euro using the end-year exchange rates.

"*Unquoted shares issued by the rest of the world and held by residents*" are obtained as the difference between the estimate of the total shares and other equity issued by the rest of the world and held by residents, that is disseminated in the international investment position (IIP) statistics and the data for the quoted shares issued by the rest of the world and held by residents, referred to in the previous paragraph. It should be taken into account that the two elements of this equation are valued according to different criteria, so that the valuation of the unquoted shares issued by the rest of the world and held by residents, obtained from this base statistic, incorporates these limitations and transmits them to the whole System. Finally, it should be clarified that the figures for shares and other equity issued by the rest of the world and held by residents that appear in the IIP statistics include instruments of this nature classified as either portfolio investment or direct investment. These are valued at their accounting value (in the case of the shares issued by the rest of the world and held by resident financial institutions) or by the simple accumulation of flows corrected for the exchange rate effect (in the case of shares issued by the rest of the world and held by other resident sectors).

The "other equity issued by the rest of the world and held by residents" is determined on the basis of the IIP data for the endowments transferred by residents to foreign branches, the amounts sent for current expenditure, the maintenance or acquisition of buildings and property situated abroad and owned by residents. They are valued in the same way as indicated for unquoted shares in the IIP. Also included in other equity, at nominal value, is that held by the State in international bodies.

Annex 1. Profit discounting model

The calculation of the present or discounted value of a flow of future profits may be considered from both a theoretical and a practical standpoint. In theory, the present value V0, i.e. the value at the start of period 1 (which coincides with the end of period 0) of a flow of profits B1, B2, B3, B4, … Bn, generated up to the end of period 1, 2, 3, 4,…. N, that is to say of:



is given by the following expression (assuming that all profits are discounted at the same discount rate):

$$V_0 = \frac{B_1}{1+i} + \frac{B_2}{(1+i)^2} + \frac{B_3}{(1+i)^3} + \frac{B_4}{(1+i)^4} + \frac{B_5}{(1+i)^5} + \ldots\ldots \quad (1)$$

where *i* is the discount rate which, in the case of risk assets, is the sum of *(r+p)*, where *r* is the rate of risk-free assets and p the risk premium.

Replacing *i* by *(r+p)*, and assuming that: a) the profits grow at a constant cumulative nominal rate g ,and b) the life of the firm is unlimited, expression (1) becomes:

$$V_0 = \frac{B_1}{1+(r+p)} + \frac{B_1}{(1+(r+p))^2}(1+g) + \frac{B_1}{(1+(r+p))^3}(1+g)^2 + \ldots\ldots \quad (2)$$

where:

$$V_0 = B_1\left[\frac{1}{1+(r+p)} + \frac{1+g}{(1+(r+p))^2} + \frac{(1+g)^2}{(1+(r+p))^3} + \ldots\ldots\right] \quad (3)$$

The expression in square brackets is a geometric progression whose first term is

$$\frac{1}{1+(r+p)}$$ and whose ratio is $$x = \frac{1+g}{1+(r+p)}$$

If this progression has a solution [18] its sum is given by:

$$V_0 = B_1 \frac{1}{(r+p)-g}$$

where using *d* to denote the overall discount premium, i.e. *d = (r+p)–g*

$$V_0 = B_1 \frac{1}{(r+p)-g} = \frac{B_1}{d} \quad (4)$$

From expression (4), which corresponds to expression (2) in the main text, it can be concluded that the present value of a financial asset under the assumptions set out above, is determined by that of the expected profits for the next financial year (estimated on the basis of recent experience) and by a discount rate that incorporates the rate of interest on risk-free assets, a risk premium and the expected rate of growth of profits.

18. For this progression to have a solution x<1 or, equivalently:: *1 + g < 1+ (r + p)* then: *g < (r + p)*

Annex 2. Approximation of the risk premium not implicit in the market discount factor *(p*)*

There is no doubting the need to add a certain mark-up to the risk premium implicit in the market discount factor, in order to relax somewhat the hypotheses underlying its calculation, which are more difficult to apply when estimating the value of unquoted shares. However, any estimate of the amount of this mark-up, i.e., of the risk premium not implicit in the market discount factor, is necessarily conventional. Also, in cases such as the one that concerns us (estimation of the value of a financial instrument as peculiar as unquoted shares), just as important, or more important, than the level of this mark-up at a particular time, is the monitoring of its path over time, which is ensured by using the same method of estimation, until experience (the evidence) recommends its replacement.

Starting from this general consideration, it is possible to question the application to unquoted shares of the hypothesis underlying the calculation of the discount rate whereby the profits generated by firms are considered to be a perpetual income, especially in the case of small and medium firms. The latter have a personal nature, so that their average life is linked to that of their owners or managers. To correct the implications of the aforementioned hypothesis, it has been decided to introduce a time horizon adjustment of the firms that, in part, is determined by their lower liquidity owing to the absence of an organised market on which the shares can be traded. This adjustment can be formulated in the following way:

If for a particular discount rate (d), the present value of a perpetual income (V_0) is compared with the present value, applying the same discount rate, of the same flow of income during a limited period (V_0'), assuming that the capital invested is not recovered, a valuation gap is obtained. This difference enables the mark-up or premium *(p*)* that would have to be added to the discount rate for perpetual income (*d*) to correct it, given that it has been obtained from firms with an unlimited time horizon and cannot be directly applied to firms with a limited time horizon.

When the discount rate is applied, in the case of a perpetual income we obtain:

$$V_0 = \frac{B_1}{d} \qquad (1)$$

and in the case of a temporary income with no recovery of the initial investment [19]

$$V_0' = B_1 \left[\frac{1}{1+d} + \frac{1}{(1+d)^2} + \ldots + \frac{1}{(1+d)^n} \right] \qquad (2)$$

Given that (1) is applied to obtain the present value of firms with a temporary income, "*d*" must be adjusted so that applying the adjusted value *d'* to the profits, i.e. when calculating $\frac{B_1}{d'}$, (V_0') is obtained. Therefore,.

19. Such recovery has not been taken into account because it does not occur in all cases (many firms cease to exist without any residual value) and because the effect of such recovery declines as the time horizon used to correct the discount rate is extended. In a time horizon in which the investment is recovered the present value would be given by

$V_0' = B_1 \frac{1-(1+d)^{-n}}{d} + A(1+d)^{-n}$ where "A" is the capital recovered

$$\frac{1}{d'} = \frac{1 - (1+d)^{-n}}{1} \quad (3)$$

However, as indicated in Section 5, besides for the different time horizon of the firms, it is necessary to correct the discount factor obtained from quoted shares for two other characteristics that differ between quoted and unquoted shares, namely the lower liquidity and greater risk of the latter with respect to the former. All three reasons for adjustment will tend to raise the discount rate for unquoted shares above the one obtained implicitly for quoted shares.

Accordingly, although identity (3) has been used to adjust the time horizon and estimate a value for the mark-up, it should be taken into account that this mark-up reflects, in addition to the mark-up arising from the different time horizon, that which arises from the different degree of liquidity and risk. This mark-up, referred to as *p*,* may be fixed (or additive) or proportional (or multiplicative), so that:.

in the case of a fixed mark: $$V_0' = \frac{B_1}{d + p^*} \quad (4)$$

and in that of a proportional mark $$V_0' = \frac{B_1}{d * p^*} \quad (5)$$

In order to define the possible range, or order of magnitude, of the mark-up p*, obviously only approximately, the example given in Table 3[20]. The first part of this table shows that, for example, the present value of a perpetual income of one euro discounted at a rate of 10% is 10 and that the present value of an annual income of one euro for 15 years discounted at a rate of 10% is 7.6 (or 76.1% of the present value of a perpetual income of one euro discounted at 10%). Also, it can be seen that the present value of a perpetual income of one euro discounted at a rate of 5% is 20 and that the present value of an annual income of one euro for 15 years discounted at a rate of 5% is 10.4 (or 51.9% of the present value of a perpetual income of one euro discounted at 5%).

In the second part of Table 3, solving for p* in equations (15) and (16) it is inferred that, for example, the mark-up that must be applied to the discount rate of 10%, so that the present value of an annual income of one euro for 15 years is equal to the present value of a perpetual income of one euro, is 3.15%, in the case of the fixed mark-up and 1.31% in the case of the proportional mark-up. The second part of Table 3 shows all the fixed and proportional mark-ups applicable to the cases included in the first part. In short, in the example given, the fixed mark-ups range from 7.95 to 0.61 and their average value for the periods and rates considered amounts to 3.18. Meanwhile, the proportional mark-ups range from 2.59 to 1.06 and their average value for the periods and rates considered amounts to 1.48 (which entails an increase in the discount rate of almost 50%). It can also be seen in Table 3 that the mark-ups show some variability and that they are inversely proportional to the discount rate so that, the lower the discount rate the higher the mark-up and, obviously, the longer the period the smaller the mark-up.

It has been considered, when deciding what value of p* to work with in the FASE, that introducing a proportional mark-up would merely amplify the market-price fluctuations. By

20. The initial version of this document (ES/2001/7 of 17 December) included, in addition to Table 3, a chart showing how the use of an additive or multiplicative premium leads to a different final valuation of unquoted shares and, in particular, how in the first case the values generated by the series were dampened. Since the discount rate then used was based on the IBEX index, and that rate no longer has any purpose, the chart is not included in this document, although the conclusions drawn from it continue to be valid.

contrast, a fixed mark-up would moderate this behaviour, while maintaining the profile of the market-price fluctuations. This reason, together with the ratios inferred from the example given in Table 3, has led to the application of a fixed 3% mark-up to the discount rate adopted, which is the discount factor of the companies traded on the continuous market (which in the context of the hypotheses presented in Table 3, equals, approximately, a proportional mark-up of 40% of the amount of the discount rate)[21]. The level of the premium having been established, it should be taken into account that it is incorporated to correct for all the elements that make the discount factors for quoted shares different from those for unquoted shares and not only the time horizon. Thus, the 3% mark-up implicitly includes a correction for the different degrees of liquidity and risk, which are not evaluated separately since the magnitude of the assumptions incorporated into the calculation of the mark-up arising from the time horizon means that it is not necessary to put a figure on the hypothetical mark-ups for lower liquidity and higher risk. However, the characteristics and the amount of this mark-up are reassessed periodically and it will be changed if desirable in the light of such assessments[22].

We are now in a position to formulate the expression that has been used to obtain the present value of unquoted shares by discounting the flows of profits generated during their life (i.e. that in Table 1), simply by introducing into expression (3) of the main text the risk premium not implicit in the market discount factor, that is to say:

$$VMnc = \frac{RONnc}{d_c + p^*} = \frac{RONnc}{TIR_{MC} + p^*} = \frac{RONnc}{TIR_{MC} + 0{,}03} \qquad (6)$$

21. The final two columns of the lower part of Table 3 ("Average values") give the values 3.18% for the additive premium (rounded to 3%) and 1.48 for the multiplicative premium (rounded to 1.40). These values roughly correspond to the surcharge that must on average be added to the discount factor for quoted corporations (d c), which is assumed to have a value of between 5% and 10%, to adjust the value of a perpetual income to a temporary income for an average time horizon of between 10 and 30 years.

22. In this connection, work is pending on an analysis of floor-traded firms to determine whether, given the liquidity characteristics of this market, a premium can be inferred by comparing the discount rate obtained from firms traded on the continuous market with that obtained from floor-traded firms.

TABLE 1

VALUATION METHODS FOR THE HEADING "SHARES AND OTHER EQUITY"

VALUATION METHODS	Source	% estimated using this method as at 31/12/00	ESA 95 ref.	Remarks
SHARES AND OTHER EQUITY ISSUED BY RESIDENT UNITS (TOTAL ECONOMY)		100.0		
Market valuation in strict sense		46.7	7.52	
A. Market capitalisation (quoted shares)	St. Exchs. & CNMV	31.8	7.53	
B. Net asset value (mutual funds)	CNMV	13.8	7.57	
Approximations to market valuation		41.2	7.54	
C. Estimation of the market value of the shares issued by unquoted companies on the hypothesis that the ratio between such value (VMnc) and own funds (RPno), is the same as that between the capitalisation (VMo) and own funds of quoted companies with similar characteristics (RPo). Specifically: C = RPno*(VMo/RPo)	In-house calculations	1.7	7.55	"Accounting" own funds consist of capital plus reserves, although in some cases the definition of their scope requires some clarification ...
D. Estimation of the market value of the shares issued by unquoted companies as the present or discounted value of the future profits generated by such companies. Specifically: D = RONno/(IRR_{MC} + 0.03)	In-house calculations	(38.5)	7.55, 7.27b	RONnc is the net ordinary result of unquoted companies; IRR_{MC} is the MC discount factor applicable to these companies and 0.03 is the estimated value of the risk premium not implicit in the MC discount factor.
E. Valuation according to own funds *(Book Value)*	In-house calculations	13.1	7.56	
SHARES AND OTHER EQUITY ISSUED BY NON-RESIDENT UNITS HELD BY RESIDENTS (REST OF THE WORLD)		100.0		
F_1. Determination of quoted shares by their market value	Ext. Inv. Registry Min. of Econ.	43.7		
F_2. Determination of unquoted shares using inconsistent sources	Reg. Min. of Ec. & IIP / BoP	45.6		
F_3. Determination of other equity by accumulation of flows	IIP / BoP	10.7		

SPECIAL CASES

1. Institutional groupings or units, other than general government, that do not issue "shares and other equity"
   - Savings banks
   - Deposit guarantee funds and Underwriters' Settlement Board (CLEA)
   - Securitisation funds
   - Pension funds

   The contributions of their owners are recorded as capital transfers

2. When the application of method D to determine the value of unquoted shares yields a value less than zero, the amount of the share capital is taken as the value of the company

3. The minimum value of the other equity of owners in their companies cannot be less than the share capital

TABLE 2

OUTSTANDING SHARES AND OTHER EQUITY BY ISSUER. CALCULATION METHOD AND STRUCTURE AS AT 31/12/2000

	TOTAL	Quoted shares		Unquoted shares		Other equity		Shares in mutual funds	
	%	Calculation method	%	Calculation method	%	Calculation method	%	Calculation method	%
TOTAL ECONOMY	**100.0**		**31.9**		**42.6**		**11.6**		**13.8**
Non-financial corporations	**70.0**		**20.4**		**39.5**		**10.1**		
Public limited companies	59.9	A	20.4	D	39.5				
Other legal forms	10,1					E	10.1		
Financial institutions	**30.0**		**11.5**		**3.1**		**1.5**		**13.8**
MONETARY FINANCIAL INSTITUTIONS	15.5		9.4		2.1		1.5		2.5
Banco de España						E	1.2		
Other monetary financial institutions	14.2		9.4		2.1		0.3		2.5
Banks (excl. branches of foreign banks)	*11.2*	A	*9.4*	C	*1.7*				
Branches of foreign banks						E	*0.1*		
Savings banks									
Credit co-operative banks				E	*0.2*				
Specialised credit institutions				E	*0.1*				
Official Credit Institute						E	*0.2*		
Money market funds (FIAMM)								B	2.5
NON-MONETARY FINANCIAL INSTITUTIONS	14.5		2.0		1.1		0.0		11.4
Other financial intermediaries	13.3		1.8		0.1		0.0		11.4
SIM and SIMCAV	*1.8*	A	*1.8*						
Securities dealer companies				E	*0.1*				
Mutual funds and Real estate invest. institutions								B	*11.4*
Securitisation funds									
Financial auxiliaries	0.2		0.0		0.2		0.0		0.0
Deposit guarantee funds									
Insurance Company Liquidation Board (CLEA)									
Other financial auxiliaries				E	*0.2*				
Insurance companies and pension funds	1.0		0.2		0.8				
Insurance companies	1.0	A	0.2	E	0.8				
Pension funds									
REST OF THE WORLD	**100.0**	F_1	**43.7**	F_2	**45.6**	F_3	**10.7**		

Table 3

Number of years	PRESENT VALUE OF AN ANNUAL INCOME OF 1 EURO FOR A CERTAIN NUMBER OF YEARS AND OF A PERPETUAL ANNUAL INCOME OF 1 EURO					
	d = 5%		d = 7.5%		d = 10%	
	present value of an annual income of one euro for n years	previous column as % of the value of a perpetual income	present value of an annual income of one euro for n years	previous column as % of the value of a perpetual income	present value of an annual income of one euro for n years	previous column as % of the value of a perpetual income
10	7.7	38.6	6.9	51.5	6.1	61.4
15	10.4	51.9	8.8	66.2	7.6	76.1
20	12.5	62.3	10.2	76.5	8.5	85.1
25	14.1	70.5	11.1	83.6	9.1	90.8
30	15.4	76.9	11.8	88.6	9.4	94.3
Perpetual income	20	100.0	13.3	100.0	10.0	100.0

n	MARK-UP TO BE APPLIED TO THE DISCOUNT RATE (d) TO ADJUST THE VALUE OF A PERPETUAL INCOME TO THE VALUE OF A TEMPORARY INCOME						Average values	
	MARK-UP ON 5%		MARK-UP ON 7.5%		MARK-UP ON 10%			
	Fixed	Multiplicative	Fixed	Multiplicative	Fixed	Multiplicative		
10	7.95	2.59	7.07	1.94	6.27	1.63	7.10	2.05
15	4.63	1.93	3.83	1.51	3.15	1.31	3.87	1.58
20	3.02	1.60	2.31	1.31	1.75	1.17	2.36	1.36
25	2.10	1.42	1.47	1.20	1.02	1.10	1.53	1.24
30	1.51	1.30	0.97	1.13	0.61	1.06	1.03	1.16
Average	**3.84**	**1.77**	**3.13**	**1.42**	**2.56**	**1.26**	**3.18**	**1.48**

TABLE 4

LEGAL FORMS OF CORPORATIONS IN SPAIN (31/12/2000)

	Legal forms		Employees	
	Number	Percentage	Number	Percentage
Public limited companies	126,558	15.6	3,997,523	48.6
Private limited companies	656,886	80.9	3,719,297	45.3
General partnerships	491	0.1	4,796	0.1
Limited partnerships	126	0.0	8,903	0.1
Cooperatives	23,798	2.9	229,275	2.8
Administrative and commercial agencies and the like (1)	4,397	0.5	257,708	3.1
TOTAL	812,256	100.0	8,217,502	100.0

(1) Owned by the General Government but classified as Non-financial corporations
Source: Directorio Central de Empresas (DIRCE). Instituo Nacional de Estadística (INE)

SUMMARY OF LEGAL FORMS OF CORPORATIONS IN GERMANY, SPAIN, FRANCE AND ITALY. 1995 (1)

TABLE 5

LEGAL FORMS	MAIN DIFFERENTIAL CHARACTERISTICS	GERMANY			SPAIN			FRANCE			ITALY		
		CORPORATIONS		Weight (2)	CORPORATIONS		Weight (2)	CORPORATIONS		Weight (2)	CORPORATIONS		Weight (2)
		Number	%		Number	%		Number	%		Number	%	
1.- Public limited companies	Capital divided into shares. Shareholder's liability limited to capital contributed. Shares are transferable.	2,069	0.3	23.0	143,175	24.2	56.0	154,960	20.8	61.0	31,583	3.5	35.0
2.- Private limited companies	Capital divided into participations. Participant's liability limited to capital contributed. Participations are transferable subject to some restrictions	399,022	54.6	39.0	422,051	71.2	30.0	494,680	66.4	22.0	224,567	24.7	27.0
3.- General partnerships	Unlimited liability. Participations are not transferable	230,136	31.5	7.0	733	0.1	0.0	26,820	3.6	4.0	367,731	40.4	21.0
4.- Other		99,409	13.6	31.0	26,770	4.5	14.0	68,540	9.2	13.0	285,239	31.4	17.0
4.1.- Limited partenerships	Partnership in which some partners have only limited liability	88,217	12.1	27.0	118	0.0	0.0	...	...	...	133,315	14.7	7.0
4.2.- Rest		11,192	1.5	4.0	26,652	4.5	14.0	...	...	...	151,924	16.7	10.0
TOTAL		730,636	100.0	100.0	592,729	100.0	100.0	745,000	100.0	100.0	909,120	100.0	100.0

Source: BCE: MUFA Task Force. Sub- group on shares and other Equity. 1998

1.- In the case of Germany the reference year is 1994

2.- Weight in terms of deliveries and other performances (excluding VAT). Source: VAT Statistics 1994. Weight in terms of number of employees