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THE IMPACT OF THE INTRODUCTION OF THE EURO ON CAPITAL MARKETS

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I. Introduction and executive summary

In order to study the impact of the introduction of the euro on capital markets, the Commission constituted a group of experts chaired by Mr. A. Giovannini.This report is the result of the work undertaken by this group.

The Commission considers that the market harmonisation is a matter for the finanical markets. In this context, it warmly welcomes the report of the group. It recommends the financial markets to take full account of the report in their preparations for the introduction of the euro.

The report reflects the Commission's understanding of the conclusions of the consultative group.[1] It is focused on technical and other issues that will have a direct impact on the functioning of the capital markets after the introduction of the euro. The report sets out recommendations on redenomination of the bond and equities markets, and on the market conventions that should be applied to the new euro market.

The report examines the consequences of the introduction of the euro in the bond market and the equity market, and in particular the necessary technical preparations. These are the issues on which market participants expect clear answers now to be able to proceed with the preparations for the introduction of the euro. The report is not a complete review of all the issues related to the changeover of capital markets. It is a reflection of the current state of knowledge and consensus. Other issues remain to be examined, aiming at developing best practices and at reaching consensus at the European level wherever it is necessary.

1. Aims and objectives

The main objectives of the report are to identify technical solutions which may be adopted by markets; and to provide guidance for both public authorities and markets.

The start of stage three of EMU offers the possibility of creating a euro securities market as broad, liquid, deep and transparent as possible by defining a set of common rules, applied in all participating countries of the euro-area, governing various aspects of market operations. In an ideal world, harmonisation might occur in one big bang. However, practical and political constraints make such an approach problematic. Harmonisation of legal and administrative issues is the responsibility of the authorities, but technical issues like market conventions, for example day counts, settlement periods and business day conventions, are market issues. The market has demonstrated in the past its ability to harmonise procedures to improve market efficiency. This paper draws together the current views of the market on how harmonised the future euro markets should ideally be, and sets out recomendations for the common technical specifications for these markets.

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[1] The members of the group participated in a personal capacity, rather than as representatives of their respective institutions.

2. Main conclusions

Regarding the **bond market**, the main results on which the report presents recommendations are the following:

Redenomination of existing debt. Although redenomination does not appear to be essential for the transition to the euro, it would enhance liquidity and would enhance the credibility of the process by demonstrating governments' commitment. For a given issuer, investors could for psychological reasons prefer to hold securities denominated in the national currency unit rather than in euro and this could conceivably lead to differential rates emerging. Whilst this is a remote possibility, redenomination would remove this risk.

Concerning the technique for redenomination, a "bottom-up" approach would be the best method. This method starts with each individual holding being converted into euro using the fixed conversion rates and rounded to two decimal places (i.e. to the nearest cent). The sum of all individual holdings is computed and matched against the total held at the central depository. Holdings at the central depositories remain unchanged and thus redenomination would not affect the total volume of securities issued. The cash flow from coupon payments and the maturity value of a bond would be virtually unchanged except for small (not more than 1 cent) potential rounding differences. Exchange offers could also be considered since they would allow the modification of conventions and the creation of more liquid issues.

Market rules and conventions. Harmonised rules would be desirable. They would provide greater transparency, avoidance of disputes (fewer back office errors) and greater clarity as to the format of the future market to allow preparations to go ahead. Actual/Actual should be recommended for day counts for bond markets. On coupon frequency, the choice should be left open given that semi -annual coupons have benefits for swaps and a reduced risk exposure, while annual coupons are cheaper for issuers. A standard definition for business days is recommended (i.e. TARGET business days). Although a common standard would be best for settlement dates, it appears technically difficult to move to shorter periods than two days. At the same time for financial centres operating on same-day basis it would be unacceptable to move backwards. Market rules and conventions suggested for bond markets are compatible with the ones suggested by the EMI for money markets.

Price sources. Continuity in price sources has to be ensured. Prices calculated on a national basis (PIBOR, FIBOR, etc) and on a European basis (EURIBOR) can coexist. Euro area-wide published indicator rates or harmonised criteria for computation of regional indicators are desirable. A statement from the price source sponsors on what prices will be available in Stage 3 is required.

Issuing procedures. Some informal co-ordination of government debt issuing would be beneficial. The development of issuing calendars would be welcome for the market but opportunistic issuing should not be precluded.

Benchmarks. In the absence of a federal issuer, markets will decide which is the benchmark issue on the basis of quality, liquidity and the range of derivatives products.

Ratings. It has been argued that membership of the euro-area could result in an adjustment for some sovereign credit ratings. This is based on the argument that euro denominated debt should be treated as foreign currency debt given the transfer of monetary sovereignty to the ECB. However, a number of counter arguments have been stated. Membership of EMU will strengthen fiscal policy in terms of discipline and credibility, and monetary financing of debt is no longer available to Member States.

Repo market. Market participants consider that overly aggressive use of initial margin/haircut in the official repo market should be avoided. On the other hand the use of variation margins in financing transactions is important for the efficiency of the capital markets.

Regarding the **equity market**, the main conclusions are the following:

- exchanges will trade and quote in euro from first January 1999. Intermediaries will have to make the necessary conversion in order to account to their clients in the currency chosen by the latter;

- coordination and harmonisation of market rules and conventions appears to be less important than for other markets;

- redenomination would be a sensible step to take at the same time as the change in the accounting unit. It is a company's decision independent from stock exchanges decision about trading in euro. It is not essential that redenomination happens at the start of Stage 3 as the denomination of share capital should neither affect its economic value nor investors' ability to trade the shares

- **non par value (NPV) shares.** This is a solution to be recommended. With NPV shares there is no need for physical exchange of share certificates. The share prices can be adjusted by simple splitting and there is no need for capital adjustment. NPV shares are allowed by the second Community Company Law Directive. However, the implementation of the NPV share solution would require national legislation to be adopted in most of the Member States.

II. Overview of the task ahead

The euro securities market will be composed of a group of national markets sharing a single currency. Unless the market takes action to define and implement a common euro-area wide approach the market in euro will be divided by the current different national practices, conventions and standards. Most or perhaps all market participants could operate in such an environment (which would be little different from the status quo), but a multiplicity of markets in euro each with different national features would not be as efficient as a more homogeneous market.

There is a serious risk that the existence of different conventions for similar types of euro denominated instruments will result in additional confusion and increased cash flow matching problems and reconciliation errors. This might be particularly true for the non-sovereign sector. For example, whereas the retention of country specific conventions for sovereign debt would be simple to manage, in the case of a large corporate that issued bonds in more than one country in the euro area, all denominated in euro but subject to different conventions, there could be considerable confusion as to which set of conventions should be applied. It would be necessary for a check to be made each time there was any doubt as to the appropriate conventions. Whilst such checking appears to be simple, perhaps no more than a short telephone call, it would be an additional cost, and a potential source of errors. Investors, particularly those from countries outside the EU, might also be deterred by the lack of transparency. Thus although harmonisation is not a prerequisite for the introduction of the euro, there would be advantages in doing it and disadvantages from not doing it.

During the transition period, contracts drawn up in old national currency denominations are likely to be executed on the basis of pre-existing conventions. Even once national currency units have ceased to exist certain differences might continue: for example, it is unlikely that national holidays will be harmonised, but for other technical issues it should be relatively simple to achieve consensus on a harmonised approach. To extract the greatest gains from the introduction of the euro with the least disruptive adjustments it will be necessary to identify issues that require a common technical approach and those which can be left unaltered.

III. Recommendations

The group supported the concept of harmonisation of market conventions for the new euro markets. The group recommends that issuers and other market participants employ the standards proposed in the report.

Specifically, the group reached consensus on the following recommendations:

- That sovereign issuers redenominate their tradable debt at the start of stage 3, employing a bottom up methodology with rounding to the nearest cent, and whilst other methods should not be excluded, the group supported the aim of keeping the number of approaches to redenomination as small as possible.

- That existing conventions are retained for redenominated debt, and for all outstanding issues and instruments, and that exchange offers be considered to

repackage existing issues into larger, more liquid euro issues with round nominal bond values.

- That new harmonised market conventions be applied to new euro debt. The method for calculating accrued interest should be based on Actual/Actual. The frequency of coupons should be left to individual choice. There should be a single definition of what is a business day for the euro, specifically any day when TARGET and one settlement system are open.

- That price sponsors and subsequently screen providers announce quickly their plans regarding publication of existing national rates.

- That the redenomination of equities would be the consequence of the change to the euro of a company's accounting unit. Moving to non par value shares would be the best way to facilitate the changeover.

IV. The report

1. The bond markets

1.1 Redenomination: its rationale

The Madrid European Council in December 1995 decided that from the start of Stage Three of EMU all new tradable pubiic debt will be issued in euro. It now appears that in addition to issuing new debt in euro, many sovereign issuers are considering redenominating into euro their outstanding national currency unit debt. Governments see clear advantages to redenomination in terms of enhanced credibility of their commitment to the EMU process. Moreover redenomination is identified as a means of instantly generating euro liquidity in government bond markets. Redenomination would also allow the re-opening of existing issues by tap issues in euro. Were there to be no redenomination, then any tap stock would have to be made in old national currency units. While repo and derivative markets could operate with securities remaining temporarily in national denominations (up till the end of the transition period) there is a compelling case, from the point of view of increasing confidence in a new European capital market, for securities to be converted at the beginning of 1999 to create a uniform euro market as swiftly as possible. Given the central role of government debt it is clearly of paramount importance that if such a conversion is to be successful then governments must act quickly and decisively.

Redenomination is also put forward by some as a means of avoiding any fragmentation of liquidity during the transition period from 1 January 1999 to withdrawal of national currency units. The hypothesis is that if two bonds issued by the same sovereign, with identical terms and conditions are treated by the market as different and not fungible simply because one is denominated in euro and the other in old national currency units then there would be a reduction in liquidity in the market. Such a difference in treatment would have no legal or

rational basis but would rest on psychological factors, such as the desire by certain investors to hold debt denominated in old national currency units.

The consensus of the group is that the liquidity, transparency and efficiency of the government bond market would be enhanced by the immediate quotation and settlement of all bonds, both old and new, in euro from the start of Stage Three. In addition to the technical arguments in favour of redenomination, the commitment of governments to the process and the precedent set for others would be reinforced, and their position as potential benchmark issuers would be enhanced. Thus although redenomination of government debt is not essential for the success of EMU it is highly desirable and should be encouraged, specifically for highly traded debt that will mature after the end of the transition period. However, the group thinks that the case for redenomination by corporates is far less strong, and that it is likely that costs and technical problems would outweigh benefits. Corporates are therefore unlikely to redenominate their debt, but may commence before the start of Stage Three to employ market solutions such as multi-denomination issues (parallel and catamaran bonds). In this paper, therefore, the discussion is limited to the possible approaches to redenomination that might be attractive to sovereign issuers.

In principle, the group would prefer that governments rely on a limited number of methods of redenomination. It is, however, clear that redenomination has competitive implications for issuers, and that their final decisions will be influenced by such factors as the relative costs of different redenomination methods, and the ability of national and international securities settlement systems to handle the change.

Regardless of the choice of methodology, there is an overriding urgency for a decision on redenomination. Market practitioners and settlement providers must be provided with sufficient time to undertake all necessary preparations. A late decision could jeopardise the smooth functioning of the market.

1.2 *Redenomination: its definition*

The term "redenomination" requires qualification. In the Council Regulation on the euro the term “redenomination” means the change of the unit in which the amount of outstanding debt is stated from a national currency unit to the euro unit. It does not mean the altering of any other term of the debt. The regulation does not address changes in the nominal value of a bond (often termed renominalisation). In a sense, from the start of Stage Three all bonds will be redenominated *de facto* into euro because there will be only one currency, the euro, and all participating national currency units will merely be expressions of it. In terms of currency, a bond expressed in participating national currency units and one expressed in euro are both euro. At the end of the transition period all national currency denominations will be read as references to the euro unit, according to the conversion rate (Council Regulation based on 109l(4) article 14). In this report the term “redenomination” is used to refer to methods which have the intention of simply restating the unit of a debt in euro rather than in national currency units, without affecting in a material way the economic value of the debt. It is however the case that all forms of redenomination, except perhaps the

absolute narrowest, entail a small change in economic value as a result of rounding.

The narrowest definition of redenomination is a simple conversion of a value expressed in one currency unit to another using a conversion factor. For example a bond with a national currency unit value of 2000 could be redenominated as a bond with a euro value of euro 312.600129 (2000/6.39795 [conversion factor] = 312.600129). Holding values to this many decimals might prove technically difficult. It is therefore proposed that the redenominated amount be rounded to the nearest cent, thus the original 2000 would become euro 312.60. This kind of redenomination will be made possible by the Council Regulation on the euro based on Article 109(l)4 of the Treaty (in particular Article 8.4).

One likely consequence of redenominating debt is that the amount of outstanding debt in euro will not be a whole number. Whilst redenominated debt should be fungible with new euro issues, its non-round form could present difficulties for trading and settlement. Clearly there will be costs for traders and settlement providers; however, the international and national clearing systems are prepared to meet the requirements of any redenomination process selected by governments, and the markets are more than capable of rising to the challenge of trading in non-round lots.

In addition to redenomination, it is open to issuers to consider renominalisation mechanisms to change the nominal value of their bonds to round euro values. The advantage would be a homogeneous pool of euro securities delivering enhanced liquidity. Moreover, the trading and settlement inconvenience that bonds with non-round nominal values would generate would be avoided. However, renominalisation would materially change the economic value of a bond and therefore would require the agreement of bondholders, and possibly some form of compensatory payment, which could have tax and reinvestment risk implications. It might also be necessary to issue new bond certificates or amend existing ones. In either case the issuer would have to absorb significant costs, in addition to the logistical problems or managing such operation. Another option for issuers might be to make exchange offers. To guarantee success, investors would require incentives to take up such offers. Thus the advantages to issuers, increased liquidity and reduced funding costs, would be balanced against the administrative costs, which could be large, and the need to provide investors with a financial incentive to take up the offer.

1.3 Redenomination: the methods

The method of redenomination should be quick, easy to implement, fair and cost effective. To avoid disruption to linked derivative positions it will be important to devise the most exact method of redenomination possible. The legal rights of bondholders, which cannot be limited or infringed unilaterally by the borrower, place cost and practicality constraints on redenomination. Additionally there are technical factors, such as the ability of settlement systems to handle transactions in cent, which need to be taken into account. Financial institutions perceive difficulties and high costs in handling a multiplicity of redenomination methodologies. They would prefer the selection of a common approach to

redenomination, that is transparent and which would cause the fewest secondary effects.

The form of any public debt selected for redenomination, for example, listed physical bond, bearer bond or dematerialised security, has no material impact on the cost or on the complexity of the redenomination process because there should be no need to undertake any physical exchange or alteration of bond certificates. Whatever the method used for redenomination, it will be necessary to inform bond holders of the change. The decision on whether to redenominate will be taken by the issuer. According to Article 8(4) of the Council Regulation, consent of the bond holders will not be required.

There are a number of basic models for redenomination. All methods generate the potential for rounding errors. There are four broad levels at which the impact of rounding will have to be taken into account:

- individual portfolios
- portfolios at financial institution level
- depositories
- global volume of securities issued

In practice, the main difference between the methods set out below is the level at which the rounding errors are generated. The methods are:

1.3.1. redenomination on the basis of individual bonds or holdings - "bottom-up"

This is the preferred method of the group.

There are two basic methodologies within the "bottom-up" approach. The redenomination can take place at the level of individual bonds or individual holdings. In essence, the securities, either individually or by each individual customer portfolio and by each financial institution, are converted to euro using the fixed conversion factors. After conversion, euro amounts would be rounded to two decimal places (i.e. to the nearest cent). The sum of all individual bonds or holdings would then be calculated by the financial institutions and matched against the total held at the central depository. Any differences between the total calculated by the financial institutions and the total calculated by the central depository, which should only be a mater of relatively small amounts, would have to be accommodated by adjustments in financial institutions' trading accounts, adjustments in individual holdings (possibly with cash settlement) or adjustment via a correspondent bank. The adjustments would ensure that the sum of individual holdings equals the converted total at the central depository and that there was no change in the global certificate.

Rounding errors are less if holdings are converted, as the maximum rounding error would then be half a cent per holding as opposed to half a cent per bond. Redenomination at the level of individual holding moreover preserves more accurately the economic value of future coupon payments and the

maturity value. Redenomination at the level of each individual bond will also result in increasingly significant rounding errors being generated the smaller the nominal value of an individual bond. On the other hand, the redenomination of individual bonds removes the need to know the size of individual holdings, which might be difficult to ascertain, particularly in the case of bearer bonds, and results in all investors receiving the same euro value pro rata regardless of the number of bonds held.

A benefit of the "bottom-up" method is that there would be no change in the value of an issue at the level of the central depository, and thus redenomination would not alter the total volume of securities issued. The potential for rounding errors is greatly reduced: no more than half a cent per bond or per holding. The cash flows from coupon payments and the maturity value of a bond would only change, due to rounding, by an extremely small amount (not more than 1 cent per rounding). Such small differences should be judged not material. However, there is no possibility of avoiding the creation of bonds with uneven nominal amounts expressed in euro and cent. This could cause difficulties for trading and settlement. There are potential solutions. For example, the minimum tradable amount could be fixed at 1 cent, or a distinction could be made between sell orders (min. 1 cent) and buy orders (min.100 euro) to gradually eradicate uneven amounts, allowing the trading of uneven amounts only off-exchange. The simplest and most elegant solution is to trade and settle in cent, but this would reduce the maximum value that could be held in a data field by two decimal places.

1.3.2. redenomination on the basis of fixed minimum denomination with cash compensatory payments - "top-down "

In "top-down" redenomination a bond issue is converted on the basis of the minimum denomination fixed in terms of individual bonds. The original issue is broken down into a number of "pieces" with identical minimum denominations. The issue is then redenominated into euro at the level of these "pieces" using the conversion factors and rounded to the nearest cent. The new total amount of the issue is then calculated by multiplying the euro minimum denomination in euro by the number of pieces. This new total is likely to be different, because of rounding differences, from a simple conversion of the original national currency total into euro. The difference would have to be accounted for through compensatory payments (for example cash) to avoid the possibility of artificially generating or destroying stock.

One advantage of the "top-down" method is that, by use of a cash compensatory payment and an adjustment of the total number of individual bonds, it is possible to create new bonds with round nominal values in euro. However, the payment of cash compensation would expose either the issuer or investor to reinvestment risk. Moreover, there is a possibility that tax could be charged on the cash compensation for both the issuer and the investor. Arguably, however, the levels of risk and tax could be negligible.

A further undesirable consequence of the essential compensatory payment in a "top-down" redenomination is a small but not insignificant change in the

cash flow generated by coupon payments and in the maturity value of the bond. These changes whilst relatively small could be potentially disruptive for derivative markets. Hedges set up prior to redenomination might therefore be affected.

1.3.3. redenomination on the basis of fixed minimum denomination without cash compensatory payments - "top-down "

As in the previous method, the original issue is broken down into "pieces" with fixed nominal values and redenominated in euro by means of the conversion factor and rounded to the nearest cent. The new total for the issue is calculated in the same way, but no compensation takes place.

The most important disadvantage is that rounding errors are accumulated on each conversion of a bond. As a result the value of the customer portfolios could change considerably. The same holds true for the total value of the issue. Were investors to view the conversion as interference in the legal position, they might take legal action. Moreover, without compensatory payments the new euro-denominated bonds are likely to have uneven euro nominal values and thus would present complications for trading and settlement.

1.3.4. redenomination on the basis of the nearest round euro nominal amount - "arbitrary conversion method"

The strength of this method is the maintenance of the economic value of cash flows and redemption values coupled with round nominal value euro bonds. To achieve this the nominal value of a bond is changed to the nearest round euro amount. No cash compensation is paid, but the coupon rate and redemption price are adjusted to compensate for the change in the nominal value, thus preserving all cash flows. There should therefore be no disruption to derivative products.

However, on the down side, there would be a discontinuity between the old price and the redenominated one, and repayment at a premium might cause difficulties for some yield calculation systems and some confusion if similar bonds were to trade at par. Moreover there is a question as to whether the change of the nominal value of the bond to the nearest round euro contravenes the requirement that the full conversion factor is used in conversions from national currency units to euro.

1.3.5. redenomination on the basis of odd lots - "odd lots top-down"

This is a variant of "top down" which avoids any need for compensatory cash payments. It converts the bulk of an issue into euro bonds with even nominal values. As in other versions of "top-down", the original issue is broken down into "pieces" and redenominated into euro. However two sets of nominal values of the pieces are created. The nominal value of one set is so selected that upon conversion the bonds redenominate into round-figure euro amounts. The other set, which represents the remainder which could not

be converted into whole euro, converts into bonds with odd-figure euro amounts.

The advantage of this approach is that the bulk of an issue would convert into round euro amounts and hence would facilitate trading and liquidity, requiring no changes to trading or settlement systems, while at the same time not requiring any compensatory payments. However, the cost of the process would be carried by those managing the odd amount bonds. These bonds would presumably be more expensive to trade and much less liquid. One solution might be to repackage the odd lot bonds.

Example One

"Bottom-up"

An issue consisting of ten bonds each with a nominal value in national currency units ("ND") of ND 1,000 is split in three holdings: holding "A" two bonds (ND 2,000), holding "B" three bonds (ND 3,000) and holding "C" five bonds (ND 5,000). A conversion is undertaken at the level of these holdings, using a conversion factor of 1 euro equals ND 6.39785. Thus holdings convert after rounding to: "A" euro 312.61, "B" euro 468.91, and "C" euro 781.51. The new total amount for the issue is therefore euro 1,563.03, equalling ND 10,000.03, and compared with euro 1563.02510 for a simple conversion of the original total amount. The rounding error is clearly very small.

Were the same issue to be converted on the basis of individual bonds then the holdings would convert to: "A" euro 312.60 (euro 156.30 * two), "B" euro 468.90 (euro 156.30 * three) and "C" euro 781.50 (euro 156.30 * five). In this example all holdings have lost 1 cent. Clearly the larger the holding the larger the loss (or gain) could be. The total amount of the issue after conversion is euro 1563.00. Thus the difference is again greater by 2.5 cent.

Example Two

"Top-down" with compensatory payments

An issue expressed in national currency units ("ND") is to be broken down into ND 1 nominal value "pieces". These "pieces" are bundled together to produce new bonds with a euro 1 nominal value using the conversion factor, imbalances in terms of fractions of a bond left over are compensated by small cash payments (though there is still a small reinvestment risk). Thus an issue of ten bonds, each with a nominal value in national denomination ("ND") of ND 1000, is broken down to 10,000 ND 1 pieces. Assuming a conversion factor of 1 euro equals ND 6.39785 the holding is redenominated into 1,563 bonds each of euro 1 nominal value. The difference in value of the holding is 2 cent (10,000/6.39785=1,563.0251). Thus the issue would be converted from the original ten ND 1000 bonds into 1,563 euro 1 bonds and a payment to bondholders of cent 2.

"Top-down" without compensatory payments

An issue of ten bonds, each with a nominal value in national denomination ("ND") of ND 1000, is converted into ten bonds of euro 156.30, assuming a conversion factor of 1 euro equals ND 6.39785 (1000/6.39785=1,56.30251). Thus the issue would convert from ten bonds totalling ND 10,000 to ten bonds totalling euro 1,563.

"Top-down" using odd lots

An issue of ten bonds, each with a nominal value in national denomination ("ND") of ND 1000, is broken down into fifteen round-figure euro bonds and one odd-figure bond. Assuming a conversion factor of 1 euro equals ND 6.39785 the holding is redenominated into fifteen bonds of euro 100 and one of euro 63.03 (ND 10,000/6.39785 = 1,563.0251 = 15*100 plus 1*63.03).

Alternatively, to reduce the size of the odd lot, a nominal value of euro 50 could be selected resulting in thirty-one euro 50 bonds and one euro 13.03 bond.

Example Three

"Arbitrary conversion method"

Ten bonds each with a nominal value in national currency units ("ND") of ND 1000, and a coupon of 5%, is changed to the nearest round nominal amount, based on a conversion factor of euro 1 equals ND 6.39785. The nominal value of each bond is changed to 156 euro and the coupon and redemption price are adjusted:

each new coupon equals 5 multiplied by 156.3025 divided by 156

the new redemption price equals 1000 multiplied by 156.3025 divided by 156

Were the same arbitrary figure to be chosen per national denomination then all bonds would be subject to the same conversion factor so simplifying the process. All cash flows would be preserved to the limits of money rounding conventions.

1.4 conventions applying to redenominated debt

The basic principle of the continuity of contracts has the consequence that the original conventions and rules will continue to apply to an issue that has been redenominated. The retention of the original conventions would ensure that bond holders' rights are left unchanged and that cash flows and existing hedged positions would be unaffected. There would be complete continuity in the conditions set out in the original legal documentation. It is the group's firm recommendation that existing conventions are retained for redenominated debt, and for all outstanding issues and instruments.

Markets do not require that the same conventions are applied to redenominated debt and new euro issues. Fungibility would not be hampered since market forces will be able to deal with variants. Moreover, to change the conventions would definitely not fall within the scope of the Council Regulation on the euro.

1.5 exchange offers

Exchange offers provide issuers with a tool that would allow the redenomination, change of nominal value (renominalistion) and consolidation of debt into fewer, larger issues. This would increase liquidity and reduce funding costs for the issuers. It would also be possible to adopted the market conventions for new euro issues, thus enhancing fungibility. Exchange offers are voluntary and hence there would be no need to obtain bondholders' agreement nor would bondholders be forced to accept redenominated stock. On the down side, it is clear from market experience that exchange offers are costly to undertake, expose the issuer to market risk whilst the offer is open, and can result in the portion of the original issue that remains outstanding becoming illiquid.

1.6 market rules and conventions

Greater harmonisation of market conventions towards best practice is a goal worth pursuing regardless of EMU. The harmonisation of market rules and conventions cannot be achieved without costs; however, many of the costs will arise from the introduction of the euro whether there is harmonisation or not. Moreover, it is conceivable that without harmonisation, systems would be more costly to develop as the multiplicity of conventions for the euro would have to be managed. The costs attached to harmonisation will largely be borne by the markets themselves, thus it is totally justifiable that the markets should decide on the strategy to be adopted. One possibility might be to move towards those conventions which are currently the most common, but this must not result in harmonisation to the least efficient or outdated conventions. Given the natural desire of national markets to retain their own familiar systems a move towards harmonisation based on a current national standard would be problematic for those countries giving up their current conventions. A possible solution could be to harmonise on a current international standard, for example that of the euro dollar market. It has become clear from the considerable work already undertaken by the market associations in this area, and the recent joint statement on market conventions for the euro, that the market consensus is in favour of harmonisation, and that the aim should be to select the optimal conventions to enhance efficiency and transparency.

It is simple to produce, in isolation, harmonised conventions for new euro denominated contracts, drawn up after the start of Stage Three. However the impact of any new conventions, for example on the ability to execute without disruption contracts denominated in national currency units and on redenominated debt, must also be considered. Imposing new conventions on old contracts could result in the intended economic effect being disrupted. For example, a change in business days might result in a position no longer being perfectly hedged if one side of the hedge were to be executed a day later than originally intended.

To achieve greater harmonisation decisions on the following will have to be made:

1.6.1. day counts

The day count convention is the method for determining the number of days used to calculate the accrual of interest.

Within the EU practice varies from one financial centre to another, and in some countries the day count convention of the bond and money markets differ.

The current bond market conventions in the EU are:

Country	Day count basis
- Austria	30/360
- Belgium	30/360
- Denmark	30/360
- Finland	30/360
- France	Act/Act
- Germany	30/360
- Greece	Act/365
- Ireland	30/360
- Italy	30/360 + 1 day
- Luxembourg	30/360
- Netherlands	30/360
- Portugal	30/360
- Spain	Act/Act
- Sweden	30/360
- UK	Act/365
- Eurobonds	30/360

The 30/360 convention is the most common, but it arose largely because of limitations in the calculation capacity of the systems that were operating at the time of the development of the markets. Thus it is a legacy of obsolete technology and has well known inherent weaknesses. A move to Act/365 or Act/Act would be totally feasible with modern systems and would bring several advantages.

Act/Act is the most accurate means of measuring accrued interest on bonds and thus provides the best practical solution. Moreover, a move to Act/Act

would provide consistency with the approach adopted by the US Treasury bond market, whilst Act/365 would harmonise with the Japanese government bond market. It has also recently been proposed that Eurobonds issued after 1 January 1999 should use the Act/Act methodology. In practice the difference between Act/365 and Act/Act is only in the treatment of leap years. A move from 30/360 would enhance transparency for investors and analysts in the assessment of euro assets against dollar and yen assets.

Were the EMI's proposal for Act/360 for the money markets to be adopted and an Act/Act standard selected for the bond market there would not be a serious problem. As stated above, different conventions can apply in the two markets. For example, in repo transactions the day count convention of the bonds supplied as collateral is used simply to calculate the interest accrued. The convention to be applied to the repo is that prevailing in the money market even if this is different to that in the bond market.

Any change in day counts would have to take into account the treatment of outstanding instruments. Would it be necessary, for example, to continue to make calculations related to "old" instruments on the "old" day count basis, or could there be a complete move to the new day counts? It is feasible for different conventions to co-exist in the same market, and were new issues to be subject to new conventions then over time the old conventions would cease to be used. It would nevertheless be essential to ensure that systems could accommodate any proposed change.

1.6.2. coupon frequency

The norm in the EU is annual coupons. Only Italy and the UK, two of the largest and most developed bond markets in the EU, provide for semi-annual coupons. Semi-annual coupons would improve the matching of cash flows and would reduce the investors' exposure credit risk, and they are the norm in the US and Japanese government bond markets. Thus semi-annual coupons would be beneficial to the operation of the market and derivative products in particular, and would enhance direct comparison with the other major world bond markets. However, there does not appear to be a consensus in this area. For issuers, semi-annual coupons would entail increased costs. Retail investors are also reputed to prefer annual coupons.

1.6.3. business days

The existence of different business holidays in the various Member States is a factor that is unlikely to change in the short term, and it could hinder the use of the euro. The best solution is therefore to create a standard definition of what is a business day. For example, today the ECU faces a similar problem and the ECU Banking Association produces a calendar of business days for the ECU. Its calculation is complicated but in broad terms only permits settlement of ECU on days in which a large number of financial centres are open in the EU. In practice the ECU calendar is unpopular and a similar approach for the euro would probably be unacceptable to the market.

One option would be to define a business day as when TARGET and an appropriate settlement system are open for business. This would provide the

greatest number of business days as it is proposed that TARGET, like CEDEL and Euroclear, will function for all but two business holidays (Christmas day and New Year's day). The need is to agree a common approach to allow for there to be as many business days for the euro as possible, thus providing the greatest flexibility in terms of matching cash flows.

1.6.4. euro settlement basis

The settlement periods, in the various markets, differ greatly across the EU. The most common inter-bank offer rate settlement period is a spot standard with a two day settlement period. This would be a suitable standard to harmonise on for euro money market transactions. Were no standard to be implemented the smooth functioning of the euro market could be disrupted, and the search for a solution to the business day question made more difficult.

The settlement standard for internationally traded bonds is currently trade date plus three business days. With the introduction of real time gross settlement systems and the obvious advantages to reducing settlement risk there is likely to be a move towards a shorter settlement period. However, it may prove least disruptive to retain the current T+3 standard for the euro, at least in the short term.

The most common standard, in the EU, for the fixing of the amount of time elapsing between fixing of a rate and its application to a contract is a two day period. This should be applied to euro contracts.

2 The equity markets

2.1. General considerations

In general the impact of the euro on organized markets for equities appears to be less strong and less immediate than on other segments of the financial markets.

Issuers tend to focus mainly on their national share market. Trading tends to concentrate on the most liquid market which is generally the domestic market.The choice of the quotation market is mainly influenced by variables other than the currency of denomination (the geographical allocation of the issuer's main activities, the country of incorporation, the convenience of listing requirements, the way in which the equity market is organized).

The introduction of the single currency and disappearance of exchange rate risk in the euro area will not, at least in the short term, modify the existing relation between issuers and their domestic markets.

In the medium term the combined effect of the single currency and the implementation at national level of the Investment Services Directive[2] will increase competition within the national markets and might affect the structure of the equities markets.

The Investment Services Directive grants authorisation to foreign intermediaries to operate on national markets either by physical presence (e.g. a branch) or by remote access from other Member States. The conditions for remote access i.e. by electronic trading, are already present. The opening of domestic securities markets will increase liquidity on national markets and might even strengthen the existing links between issuers and their home market.

From a technical point of view the introduction of the euro will require relatively few changes by the stock exchanges themselves.

In particular, for those stock exchanges which can already operate in a multi-currency environment the switch to the euro will be simple in technical terms.

2.2. Impact on market functioning and on companies decisions

As a consequence of the introduction of the euro, markets and market participants will have to review their operating and regulatory procedure and modify their trading, settlement and reporting systems. Companies will have to manage conversion of their share capital, and therefore will have to deal with redenomination issues.

The introduction of the euro could be an opportunity to harmonise market rules and conventions. However, any benefit resulting from harmonisation would have to be balanced aginst the costs it will generate also in terms of smoothing the transition.

A certain level of coordination will be needed with derivative markets. Stock Exchanges will have to ensure that there will be a common approach with their national derivative markets.

2.2.1. Stock Exchange Operations

Market practitioners will be looking to exchanges in defining their own changeover strategy and it will be under the aegis of the exchanges that the markets as a whole will decided on the changeover strategy of their collective systems.

The main European Stock Exchanges, led by the Federation of European Stock Exchanges, have announced their intention to pursue a Big Bang approach.

That would mean that as from 4.1.1999 exchanges will trade and quote all securities in euro.

This approach is based on several considerations:

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[2] Council Directive 93/22/EEC of 10 May 1993 on investment services in the securities field O.J. N° L 141 11/06/1993 P. 0027

- having a common changeover date for all organized markets (money markets, bond markets, equity, derivatives, regulated or OTC) would enable market participants to plan their own systems in the knowledge that all securities would be dealt in euro;
- for many Stock Exchanges this choice is also linked to their inability to handle multi-currency trading;
- in the absence of any significant link between a share nominal value and the price at which it is traded, there is no strong argument to have securities quoted and traded partially in euro and partially in national currencies.

However, the basic working assumption is that only one currency will be supported in any given security for quotes, orders and trade reports.

There seems to be a general agreement on the need to avoid dual quotation (i.e. having two prices, one in euro and one in national currency), for many reasons:

- legal considerations: there is only one price made on an exchange;
- the cost and complexity of supporting two currencies in parallel for one security makes that alternative less attractive to exchanges and intermediaries;
- risk of public confusion.

The Big Bang approach would imply that:

- quotations displayed on screens of trading systems would be in euro;
- transactions would be executed, recorded, matched, confirmed and transmitted to settlement in euro. The inter-market settlement process would be in euro;
- intermediaries will have to make the necessary conversion in order to account to their clients in the currency chosen by the latter.

Fixing date of the conversion rates:

Stock exchanges have expressed the wish to know the conversion rates in advance (initially at least one month before). However, conversion plans are now being presented which cope with a fixing taking place on the last day of the year and a changeover on 4 January 1999.

In any case knowing the conversion rates does not seem to be crucial for testing the systems. Tests could be carried out in advance by using a rate approaching the conversion rates such as the current ecu rate. Anyhow, some markets might decide on an additional closing date (31st December) for changing and testing the systems.

Unsettled orders:

According to the big bang approach, all transactions executed in national currency for due settlement after 1.1.1999 should be settled in euro. The conversion will be executed by the Stock Exchanges and the security settlement systems.

Unexecuted orders:

Unexecuted orders remaining in a central order execution system on the last business day of 1998 should be canceled.

Intermediaries will have to convert and reintroduce such orders.

Notice should be given sufficiently in advance of this intention in order to allow intermediaries to agree on an automatic conversion procedure with their clients.

2.2.2. *Redenomination*

In the context of equity markets, redenomination is the conversion of the par value of the shares into euro. Such simple conversion may be combined with a change of the nominal value into a round amount, in such case one should be talking about renominalisation.

Given that share capital is permanent, the case for redenomination is stronger than for other securities, One cannot expect that old denominations will gradually disappear on their own as will be the case for maturing debt.

However, the impact of redenomination on market liquidity and market operations seems to be very limited or even non-existent. Indeed equity shares are units of the total capital stock. Their nominal value is not relevant to the price at which they trade. Therefore a change to the currency in which their par value is expressed need have no effect on the value of a share.

- WHEN SHOULD REDENOMINATION OCCUR?

  Redenomination is a natural consequence of the change to the euro of a company's accounting unit. It is a company decision independent from a stock exchange's decision about trading in euro.

  It is not essential that redenomination happens at the beginning of Stage Three as the denomination of share capital should neither affect its economic value nor investors' ability to trade the shares.
  Redenomination can take place at any time during the period 1999-2002. If nothing has been done by the end of transitional period, redenomination will occur automatically by application of the "109 l(4)" regulation.

  In order to avoid extra costs, a company wishing to redenominate its shares might take the decision at an annual general meeting (AGM). A resolution could be made even before 1999 by empowering the Board of Directors to make changes to the capital in a certain specified way (by moving to non par value shares or by having a capital increase).

- WHO HAS TO DECIDE ON REDENOMINATION?

  Redenomination is a decision of the shareholders' meeting.

  In some cases there may be a need for prior changes in national legislation.

  That would be necessary in some countries to authorize non par value shares or to authorize companies to issue shares in euro (e.g. in Sweden) or to change the minimum authorized share amount.

- WHAT SHOULD BE THE PRINCIPLES SUPPORTING REDENOMINATION?

  It seems generally recognized that as a consequence of redenomination:

  - voting rights should not be adversely affected;
  - holders should not be obliged to sell any part of their holding.

  Moreover in order to avoid changes in relative prices it seems desirable that the number of issued shares remains unchanged.

- WHAT ARE THE MODALITIES FOR REDENOMINATION?

  There are four main options available to a company that wishes to redenominate its equity:

  A) leave shares indefinitely with a par value of unrounded euro;

  B) convert the share par value rounding to the nearest cent;

  C) change the par value to a round number of euro and have a common nominal value;

  D) move to Non Par Value shares.

  These methods should be applied to avoid mismatching between the converted nominal capital and the total of converted par values.

  Examples of the different methods are given below:

A) Leave shares with an unrounded par value in euro

This method is to convert the share capital into euro at the fixed conversion rate (rounding up or down to the nearest cent) and then to divide by the number of issued shares keeping the share par value in euro unrounded.

This method would avoid mismatching between the converted nominal capital and the total of converted par values. No action would be needed on the part of the company apart from a shareholders' resolution. The shares could be rounded up on some future occasion when the company wishes to make a capitalization issue.

In order to avoid rounding errors it might be necessary to have shares with par value specified to several decimal places. At first sight that doesn't seem to have any implication.

However, unrounded par value might not be practicable as the number of decimals will need to be limited at least for reporting purposes (i.e. in the company's statutes). If a rounding takes place, it would result in a change in the total share capital which should require additional action on the part of the company.

B) convert the par value of each share into euro, rounding to the nearest cent

This method is to convert the share par value into euro by applying the fixed conversion rates and the rounding rules foreseen in the "235" EC Regulation, the nominal share capital being the sum of the par value of the shares in the issue.

If no specific action has been taken by a company at the end of the transitional period, shares par value will be deemed to be converted into euro according to this method.

As a result of this method the sum of the rounding ajustments on each individual share will alter the nominal share capital of the company, up or down.

In order to correct this mismatch, two options are available to a company:

i) increase the capital by a capitalization of reserves, or
ii) decrease the capital by a transfer to reserves.

Each of these options has different implications:

A capitalization of reserves would not be practicable for companies which do not have sufficient free reserves available.

A decrease of capital might not be permitted by national legislation or might require a special procedure (in UK Court approval would be necessary).

Changes to capital amounts might give rise to taxation effects for shareholders.

The amount of capital increase or decrease required will depend on the conversion rate and on the nominal value of the shares and their number. The effect will be greater for low value shares issued in large number.

C) Change the par value to a round number of euro in order to have a common par value of 1 euro (Renominalisation)

Following this method the share capital is converted into euro at the fixed conversion rates (rounding up or down to the nearest unit). The share capital is divided into shares with a par value of 1 euro each. In order to retain the original share of the shareholder in the share capital, the euro share capital and thus the number of shares will have to be adjusted accordingly.

This could be achieved either by a capital increase or a capital decrease.

The effect on capital will be even greater than for simple redenomination by rounding to the nearest cent.

A futher possibility of renominalisation would be trading in fractions keeping the share capital unchanged.

Trading in fractions would involve very high costs as it would require either that stock exchange mechanisms be modified, or that intermediaries trade in fractions to build whole shares. Moreover the fractions method would oblige shareholders to sell part of their holdings.

Renominalisation would change the number of shares issued by a company, thereby changing apparent share prices.

Given that the price of a share bears no relation to its nominal value, there seems to be no advantage in having a common par value across Europe. Moreover such harmonization would be very difficult to achieve given the differences in par values across Europe.

D) Move to Non Par Value shares

In a NPV system, shares are simply a fraction of the capital stock. NPV shares make the conversion to euro very easy. Once the company's articles have been modified to provide for NPV shares, indicating the share capital, the number of shares issued and the minimum issuing amount, no further action is required to convert to the euro.

With NPV shares there is no need for a physical exchange of share certificates, if any. The share prices can be lowered by simple splitting and there is no need for a capital increase or decrease.

Moving to NPV shares allows a company to avoid capital and cost intensive measures.

NPV shares are allowed by the second Community Company Law Directive[3], but in many countries the relevant national legislation has not yet been put in place. In the short term an amendment to national legislation would be required to allow the NPV solution to be implemented.

- SHARE CERTIFICATES

A legal requirement to replace share certificates as a consequence of redenomination would involve considerable work for Registrars and substantial costs for issuers.

If redenomination occurs in 2002 as a consequence of the "109 I(4)" Regulation no replacement of the share certificates will be needed, provided that redenomination is effected by applying the fixed conversion rate and the rounding rules defined in the "235" Regulation. In the case of renominalisation however, where the number of shares will change, it is likely that share certificate will have to be replaced.

Companies might take this opportunity to dematerialise their shares, where this is not yet the case.

EXAMPLES

The conversion of the share nominal value into euro by applying the fixed conversion factor would result in a nominal value expressed in euro with several decimals. The examples below illustrate the different effects according to the method used.

Company's share capital: 250,000,000 (expressed in national denomination "ND")

divided into 50,000,000 shares with a par value of 5 ND

assuming a conversion rate of 1.95591

[3] Second Council Directive N° 77/91/EEC of 13 December 1976 on coordination of safeguards which, for the protection of the interests of members and others, are required by Member States of companies within the meaning of the second paragraph of Article 58 of the Treaty, in respect of the formation of public limited liability companies and the maintenance and alteration of their capital, with a view to making such safeguards equivalent. O.J. N° L 026 30/01/1977 P.0001

Example 1 : Option A "unrounded par value"

Share capital in euro: 250,000,000/1.95591 = 127,817,742.13

Share nominal value in euro: 127,847,742.13/50,000,000 = 2.5563548426

Example 2: Option B "Share nominal value rounded to nearest cent"

Share nominal value in euro: 5 / 1.95591 ≙ 2.556354842503⇒(rounded to the nearest cent) = 2.56

Share capital : 2.56 x 50,000,000 = 128,000,000 euro

Capital increase required = 182,257.87 euro

Example 3: Option C "Renominalisation into shares with a nominal value of 1 euro

share capital: 250,000,000/1.95591= 127,817,742 (rounded to the nearest unit)

divided into 127,817,742 shares of 1 euro

previous share nominal value 5 ND = 2.56 euro

i)capital increase option

the shareholder will receive 3 one-euro shares for each 5 ND share held

total share capital = 150,000,000 euro

capital increase required:22,182,258 euro (17.35 %)

ii) capital reduction option

the shareholder will receive 2 one-euro shares for each 5 ND share held:

total share capital 100,000,000

capital reduction required: 27,817,742 euro (21.76%)

Example 4: Option D "Non Par Value shares"

share capital 250,000,000 ND represented by 50,000,000 shares

each share represents 1/50,000,000 of the share capital

after conversion:

share capital = 127,817,742.13 euro

each share still represents 1/50,000,000 of the capital

CONCLUSION

Redenomination of shares is a company decision which is not linked to the operations of the markets. There is therefore no need for immediate redenomination.

If a company wishes to redenominate its shares, several solutions might be convenient.

As a result of the fixed conversion rates it will not be possible to avoid rounding errors even if share par values are expressed with several decimal figures.

The capital increase solution could also be attractive for some issuers and could be easily implemented by having a prior authorization given by an AGM (as authorized by the Second Company Law Directive).

The easiest solution would be to move to NPV. In countries where NPV shares are not yet introduced, the necessary legislation should be prepared as soon as possible.

A suggestion has been made that there should be legislative measures at national level which might facilitate the process (for example by authorizing redenomination by a resolution of the Board of Directors).

Such a derogation might however, be interpreted as imposing the use of the euro on shareholders therefore breaking the principles stated in "109 l(4)" Regulation.

Although it might appear difficult to achieve, given the large number of issuers and the differences in share values, harmonization of redenomination techniques would bring considerable advantages for market participants. On the one hand costs could be reduced and on the other hand, clarity and transparency would be increased in particular for investors.

Particular attention should be paid to hybrid instruments such as preference share and interest bearing shares, for which the nominal value is more important and which would involve similar problems to those of redenominating bonds.

2.2.3. *Market conventions*

In general there seems to be very little case for harmonization of market conventions in equity markets. The general attitude of Stock Exchanges is to avoid any change in market conventions which is not strictly necessary for the changeover.

Trading in round lots

The size of a round lot varies according to the price of the share. There appears to be very little to gain by looking for international harmonization of the size of round lots. Keeping unchanged conventions will contribute to continuity.

Convention of tick sizes

New conventions should be defined for securities quoted in euro. The possibility of a standard scale of tick sizes to be used by all exchanges could be studied.

Thresholds

New threshold amounts will have to be fixed at convenient equivalent amounts rather than directly converted at the official exchange rates.

Settlement

An efficient settlement of securities is a pre-condition for efficient markets. Domestic settlement systems are called to improve their efficiency. However

desirable a standard settlement period could be it appears improbable that it will be achieved in a near future.

For some countries, moving to a standard settlement period (as T+3)would require extensive changes to their settlement periods. Others would be reluctant as they are already considering same day gross settlement.

This is, however, an issue on which further work is required.

2.3. *Other areas of concern*

2.3.1. *Historical data*

Some exchanges provide historical price series as part of their service to their members and customers. This involves making adjustments for rights issues, capitalisation issues, consolidation and other corporate events which affected the share price in technical ways.

It seems perfectly possible to ensure continuity of this kind of information by restating historical series of prices in euro using the conversion rates.

Particular problems might arise when restating historical series involving several participating currencies.

2.3.2. *Stock market indices*

It is of major importance that indices are not disrupted, given the large volume of index-linked derivatives.

What is important for continuity of indices is that the underlying company composition and the value of the equities stays the same following the changeover.

Given that the value of equities is not linked to their denomination, and that the rules for making changes to the company composition are based on relative market capitalisation, there is no need for existing indices to be affected by changes in the denomination of shares.

3 The derivative markets

The successful resolution of issues raised by the start of Stage Three of EMU for the market in privately negotiated derivative transactions is crucial to the creation of a broad, liquid, deep and transparent market for the euro.

The scope of activity covered by the swaps and privately negotiated derivatives market is extremely broad, ranging from interest rate, currency, equity and other swaps, to options and other derivatives. It is therefore not surprising that the transitional issues relevant to the derivatives markets mirror those of the underlying markets to which they relate. For example, the same issues that arise in the context of public and private bonds, the money markets, equities, equity indices, foreign exchange and futures markets, are of direct relevance to the associated sectors of the OTC derivatives markets.

3.1 *characteristics of existing EU derivatives markets*

Swaps and other privately-negotiated derivative transactions are now widely used by corporates, financial institutions, pension funds, governments, governmental bodies and investment funds as an essential tool to manage currency, interest rate and other financial risks to which their day to day activities expose them. The size and breadth of European derivatives markets together with their innovative approach to facilitating complex financial structures means that Europe is a leading centre for this type of business. The EU's continued status as a leading centre for the world's financial community relies upon the existence of a flourishing derivatives market. It is therefore essential that any potential obstacles created by EMU should be overcome and that problematic issues should be resolved as early as possible to maintain confidence and create certainty among market participants.

3.2 principal concerns regarding the introduction of the euro

The overriding concern faced by participants in the derivatives markets is continuity of contract. The complex nature and maturity of certain derivatives transactions means that they are more likely than other types of financial contracts to be subject to claims based on legal doctrines of frustration or impossibility. Although continuity of contract is beyond the scope of this report, it is worth noting that the adoption of the two Council Regulations on the introduction of the euro (under Articles 109l(4) and 235 of the Treaty) will help to ensure a firm legal basis for the start of the Third Stage.

As noted above, most of the technical issues relevant to the derivatives markets are not peculiar to those markets and, in fact, mirror the issues already considered in relation to the underlying markets. However, it is clear that any measures taken to resolve those issues for the underlying markets should be paralleled in the derivatives markets. It is important to recognise, for example, the close links which exist between a transaction in the cash market and an associated hedging transaction. Clearly the protection provided by the hedge against movements in the underlying market should not be disrupted by the occurrence of EMU. Equally, it is important to ensure that the matching of cash flows between the hedge and the related cash market contract should continue: any danger of a mismatch in cash flows should be avoided.

When considering the impact of EMU on derivatives, the markets should therefore take care to:

- ensure legal continuity of both the underlying contract and the hedging contract;
- achieve transparency and clarity in relation to the conventions used to calculate payment amounts and to determine payment days; and
- ensure that changes made to the underlying contract by way of conversion, redenomination, or the adoption of new price sources, are accurately paralleled in the related derivatives transaction(s).

3.3 technical issues

Since many of the technical issues for the derivatives markets rely on the same analysis used in considering the cash markets, this section of the report is brief.

3.3.1. redenomination

From the perspective of participants in the derivatives markets, the preferred method of redenomination of debt would be one which achieves the highest degree of accuracy. Accuracy in the redenomination process would help to limit possible cash flow mismatches between a redenominated bond and a hedge which was in existence prior to redenomination.

The method of redenomination which seems likely to give the most exact result is the "bottom-up" approach. As a means of limiting cash flow mismatches, this approach is likely to find favour within the derivatives markets.

A method of redenomination involving an offer of conversion would also be acceptable.

As noted earlier in this report, there is unlikely to be a single common approach to redenomination. Market participants would, however, prefer to see a minimal number of alternative methods used. The additional resources and systems modifications required to deal with more than two or three methods of redenomination would impose an unwelcome and unnecessary burden.

Again, as noted elsewhere in this report, care should be taken to ensure that, whichever method of redenomination is used, it is carried out with due regard to the legal rights of bondholders.

3.3.2. market conventions

The harmonisation of market conventions is an object which is supported by participants in the derivatives markets, including the International Swaps and Derivatives Association, Inc. ("ISDA"). Although financial institutions dealing in swaps could be able to cope, as now, with the existence of different conventions in the bond markets, the benefits of harmonised conventions for the euro, in terms of creating a broad, liquid and transparent market, are clear, as are the difficulties of retaining a diversified approach: increasing the scope for inconsistencies and potential disputes.

The discussion section 1.4 of this report on the possible application of new conventions to redenominated debt is of particular relevance to the derivative markets. To avoid mismatches between the conventions applicable to a redenominated bond and an existing hedging transaction, the old national conventions should be retained in respect of the bond.

One method by which new conventions could be applied to redenominated debt, but which would cause minimum disruption, would be to make express contractual provision in the terms of the bond. Sufficient contractual flexibility both to redenominate and to adapt applicable conventions could be introduced into bonds issued in national currencies before the start of Stage

Three. This would, of course, require associated hedging arrangements to include the same degree of flexibility on terms which exactly paralleled those of the underlying bond.

Another way to maintain consistency between redenominated bonds and hedging transactions would be to redenominate by means of the conversion offer approach. If existing national currency bonds were exchanged for euro denominated bonds subject to new conventions, associated swaps could be replaced at the same time.

Specific recommendations for harmonised market conventions are included in a joint statement published by among others, ISDA. ISDA's recommendations, which are in line with those recommended by this report, are based on a consultative process among its member institutions and other interested parties.

3.3.3. *price sources*

The implications of EMU for price sources in general are dealt with separately in a section below. Derivative transactions rely upon the existence of published price information. This is therefore an area of particular concern for the derivative markets.

Typically, an interest rate swap document using ISDA standard form documentation refers to a price or rate displayed on a screen. For example the floating rate leg of a swap may call for an amount to be payable by reference to French franc LIBOR as displayed on Telerate page 3740 as of 11:00 a.m. London time, on a particular day. If, due to EMU, French franc LIBOR were no longer to be displayed on Telerate page 3740, the 1991 ISDA Definitions would enable the relevant calculation to be made by reference to a rate appearing on an alternative screen page, provided the alternative page displays a comparable rate and is a replacement for page 3740. Failing this, the calculation agent for the relevant transaction would be required to obtain quotations from a number of reference banks.

The exact details of how price sources will alter or develop during the transition to the euro are therefore important for transactions involving "in" domestic currency units and documented using ISDA definitions. To enable appropriate steps to be taken to ensure that continuity is maintained for these transactions decisions have to be taken and published as soon as possible by the current price source sponsors. Once it is known how sponsors intend to proceed the screen providers will be able to liaise with their customers in developing appropriate replacement screens as necessary, and subsequent systems and documentation amendments can be made.

4 Other market features

4.1 price sources

The introduction of the euro raises the possibility that some or all price sources for participating national currency units could cease to exist, perhaps replaced by euro rates. Moreover, it is conceivable that some national price source panels might cease to function. Again these panels might be replaced by euro-area panels. Price sources are a key element of a number of financial contracts and the exact terms governing their application will vary depending on the instrument in question. Thus these possible developments raise legal and systems issues that must be addressed with urgency. If price sources are to disappear or change then market participants must have sufficient time to prepare to ensure that the continuity of contracts is maintained.

Therefore, it is of critical importance that price source sponsors quickly state which national price sources will continue in existence after the start of Stage Three and how those prices will be generated. It is equally important for there to be clarity in what new euro price sources will be created.

The introduction of the euro has two possible implications for price sources. A particular price source is no longer available. The panel providing the defunct national price sources decides not to produce a replacement rate for euro. For example, a swap may currently have a floating rate determined by reference to FRF PIBOR. Assuming the FRF is replaced by the euro will a FRF rate continue to be quoted and will the PIBOR panel of banks continue to quote a rate but for euro?

The principle of the continuity of contracts would appear to argue that existing price sources are retained. Also the proposed Council Regulation for the euro, based on Article 109l(4) of the Treaty, states that, "acts to be performed under legal instruments stipulating the use of or denominated in a national currency unit shall be performed in that currency unit". On the other hand, there is no prohibition on moving to the use of the euro, and it is clear that the money markets will switch to the euro at the start of Stage Three; moreover, there will be only one currency, the euro. It would therefore appear, on balance, to make sense for panels to cease quoting national currency rates and to move to euro rates.

Ultimately it will be for the price sponsors to decide whether to switch to euro rates. In many cases the price sponsors are central banks, but several rates are sponsored by associations, such as the BBA for LIBOR and the GBA/ZKA for FIBOR. The key requirement, regardless of who sponsors the rate, is for a quick, transparent decision to be made. If rates are to change then screen service providers will require time to propose how the new rates are to be presented and to reach agreement on the new format with their clients.

It is possible that price sponsors decide to cease quoting any rates, national currency or euro. There is a strong possibility that a number of national price source panels will be wound up and new panels will emerge providing rates for all or part of the euro area. Such an initiative, called EURIBOR, has already been proposed. To ensure confidence in any new euro area rate the methodology for the selection of the panel that would set the rate must be transparent and credible. Whilst it is clearly a competitive matter whether one or more euro rates should be available, and currently there are competing price sources for specific rates, it

cannot be automatically assumed that a national prices source will be succeeded by a euro-area source rate.

In terms of published rates, several outcomes can be envisaged if pricing panels disappear. The screen provider might refer the user to a substitute euro rate, displayed on a different screen. The existing reference screen might be revised to display a euro-area rate, such as EURIBOR. The screen might still display the old national rate (PIBOR etc) but the rates might actually be euro ones, provided by a new price source panel. Whichever route is selected, again the key requirement is for an early decision. Screen providers face a significant challenge. They might need to provide additional screen pages because, for example, a switch from national currency rates to euro ones may involve the need to change market conventions. For instance, the Belgian Franc money market rates are currently quoted on an Act/365 basis whereas the most likely convention for euro is Act/360. Thus if existing contracts are to be governed by existing conventions it will be necessary for screen providers to make provision for quotations based on market conventions for both old national currency units and euro.

4.2 Issuing procedures for sovereign debt

There is concern that the presence of national debt offices and the ECB debt in the same section of the curve could confuse monetary policy signals to the market. This could be particularly dangerous in the early stages of the transition to the euro when the learning curve will be particularly steep. Increased co-ordination, formal or informal, between sovereign issuers could enhance liquidity, transparency and predictability in the markets. In addition, the pre-announcement of auction calendars would help. However, issuers and some market operators disagree arguing that issue policy is a matter for free competition and should be kept separate from monetary policy.

The harmonisation of syndication and tender procedures is not required by monetary union. However, the introduction of the euro will highlight the existence of regulatory barriers to a true single market in this area. The introduction of the euro should be taken as an opportunity to remove the requirement that primary dealers have to be located in the country of the issuer. Regulatory requirements enforcing institutional investors, such as insurance companies, to hold specific government and domestic currency assets will no longer be justifiable on the grounds of foreign exchange risk in the euro area.

4.3 ratings: sovereign debt

It is contended by some that membership of the euro-area could result in an adjustment for some sovereign credit ratings. This is based on the argument that euro denominated debt should be treated as foreign currency debt because individual participating countries will not be able to monetise their euro debt, having transferred monetary sovereignty to the ECB. It is also argued that there is uncertainty about the efficiency of the fiscal policy rules to be applied in Stage Three of EMU

Against this it has been argued that membership of EMU will strengthen fiscal policy in terms of discipline and credibility. It therefore seems counter intuitive

that a country that meets the Treaty criteria could end up with a lower credit rating than a "pre-in" country still in the process of making necessary fiscal adjustments for domestic currency denominated debt. It should also be noted that monetary financing of debt is already not available to Member States. Another important factor is the continuing ability of participating countries to levy tax. Fiscal policy remains firmly a national competence. There is no "federal" taxing institution within the euro area. Comparisons with regions of federal states, for example the US or Canada, fail to take this difference into account.

The cost of raising debt for an individual country is unlikely to be significantly changed by a small adjustment in its credit rating, given the importance of other factors, such as liquidity and the efficiency the country's primary dealer system.

4.4 ratings: corporate debt

The EU will probably be rated AAA and thus corporates will no longer be potentially capped by the credit rating of the country in which they are located. In general, however, corporate ratings are unlikely to change significantly because of EMU. Broadly, EMU should have a positive effect on corporate ratings as the main benefits of the single currency will immediately flow to the corporate sector. Over time investors may look to diversify their portfolio by the acquisition of corporate issued by companies located in other participating countries. Thus credit ratings will become increasingly important in a larger market in which name recognition may be low.

The proposal by the EMI to include non-sovereign debt in the pool of eligible assets, for open market operations of the ECB, based in part on credit standing raises the question of how to assure consistency of ratings across the euro area.

4.5 benchmarks

The benchmarks for national currencies are provided by the debt issues of the respective governments since these are recognised by the market as the best proxy for the risk free rate of return. For the euro such an approach will not be possible because no one country will have complete control over the euro. For the foreseeable future there will be no one euro-area issuer of appropriate status (i.e. no "federal" issuer of debt). In this situation other proxies will have to be identified.

While it is not foreseen at present that a euro-area wide official issuing calendar will be put in place, informal co-ordination of major sovereign issues seems to be a likely result of EMU. Potential benchmark issuers will need to present new-issue calendars with regular issues, scheduled well in advance, to obtain the markets support. This may result in certain countries introducing changes to increase the efficiency of existing issue procedures. The degree of change will be determined by the extent to which such features are seen to be crucial for benchmark status.

It is also worth noting that supra-national AAA issuers with sufficient issuing volume could compete with sovereign issuers for benchmark status. The EIB has repeatedly indicated its ambitions in this respect. It is perhaps unlikely that an individual supra-national issuer might become the sole benchmark issuer for the

euro but it is conceivable that in the case of different issuers fulfilling the benchmark role for certain particular ranges of the maturity range (e.g. due to a lack of issuing activity in certain maturity ranges by some Member States) then one or more of those issuers might not be sovereigns.

4.6 *repos*

The EMI has set out its proposals for the official repo market. The intention is to provide a single instrument delivering identical economic effect in all countries participating in the euro.

Eligible counterparties will be selected on a uniform basis. The precise procedure has yet to be finalised. Eligibility of assets for collateral will be based on a two-tier system. Tier I will consist of assets that fulfil euro area-wide eligibility criteria specified by the ECB. Tier II assets will be specified by the NCBs under guidelines from the NCB, and will be of particular importance to national markets. Though individual NCBs will select Tier II assets such assets will be eligible throughout the euro-area, not only in the country of the relevant NCB.

Market participants are particularly keen to avoid the overly aggressive use of initial margin/haircut in the official repo market as this would be an unnecessary restriction on the development of the market. Margining of ESCB financing transactions is of utmost importance for the efficiency of the capital markets. There are three main reasons:

- the higher the efficiency of margining agreements the higher the transparency of money market rates as signals of monetary policy,
- more efficient margining agreements allow those institutions that rely on central bank liquidity provisions to manage their balance sheets and their working capital much more efficiently,
- the ESCB, with its own practices, will inevitably set the standards for the whole of the European capital markets. The adoption of inefficient practices will inevitably imply a less efficient European capital market.

The objective of margins is to ensure counterparties remain fully collateralised throughout the term of a transaction. Thus the lender always holds collateral of value equal to the loan. The borrower posts collateral that never exceeds the value of the loan. This general objective is met through the use of symmetric daily marking-to-market of the collateral. If the collateral has fallen in value the borrower is required to provide additional collateral to ensure the lender remains fully collateralised. Similarly, should the collateral rise in value the borrower may require the lender to return a portion of the collateral. This returned collateral might then, for example, be employed to provide additional collateral to another counterparty with whom the borrower has engaged in an offsetting trade.

Currently in the industry there are two kinds of margins, initial margin and variation margin. The level of initial margin should be determined primarily by the credit standing of the counterparty and the term of the repo (because the longer the period the greater the risk of default). Market risk, which remains borne by the initial owner of the securities not the buyer, should be fully covered

by variation margin. In the repo markets, in general, initial margin is seen as an inheritance from the past, and is being discarded because variation margin based on daily symmetric marking-to-market is far more efficient. Differences in credit risks are reflect in the repo rate, that is the rate of return earned by the supplier of cash. However, if the ECB's official repo operations are undertaken on the basis of a single repo rate then any differences in sovereign credit ratings could not be reflected in the repo rate and would have to be reflected in different initial margins. If these differences were ignored then there would be a danger that counterparties would tend to deliver the cheapest possible collateral.

Examples for variation margining for repos

- A central bank lends ECU 100mn to a counterparty and receives the French OAT 10% Feb 26 2001. The trade is executed for value Feb 24 1999. The bond is trading at 119.10 in the cash market. Accrued interest is 9.946 points (364 days) so the all-in price is 129.046. Thus the repo counterparty would need to deliver 77.492 mn of the OAT 10% Feb 26 2001 for the central bank to be fully collateralised.

Two days later the bond will pay its coupon (of ECU 7,749,200) which, under the terms of the repo agreement, the central bank is obliged to pay to the repo counterparty as a manufactured dividend. The central bank would now be under-collateralised by almost 10% without the provision of additional collateral.

- The price of a bond could fall, say, 10 points over the course of ten trading days. If a counterparty has no obligation to increase the collateral the central bank would quickly become under-collateralised.

- A repo counterparty lends ECU 100mn of collateral to a central bank versus cash and then the market rallies over the following ten trading days. The collateral increases in value to ECU 110mn. If the counterparty has an offsetting matched book transaction the ECU 10mn will be required as additional collateral.

To prevent unnecessary transactions exposure the counterparties generally agree a margin trigger level, such that market movements in the value of the collateral that are below such trigger levels do not initiate variation margining.

The example above illustrates the importance of symmetric variation margins, even in the situation where the cash lender is the highest possible credit, with zero default risk. There are two reasons why symmetric margining is essential.

- Asymmetric margining biases the economics of the transactions in favour of the cash lender. This would result in bias in money market rates and reduce transparency.

- Asymmetric margins actually increase the credit risk of the cash borrower (as shown by the third example above). Most market participants have matched positions in their securities portfolio. Asymmetry in their collateral exposure increases the volatility of cash flows thus increasing the risk of default.

There are situations in which the application of symmetric marking-to-market will not significantly reduce risk exposure to the underlying collateral. The typical case is the absence of reliable prices for the collateral, for example when the collateral is not actively traded in a liquid market. This may potentially be the case for some assets included in Tier II. In this situation the application of the less efficient initial margin in conjunction with symmetric marking-to-market might represent a satisfactory solution.

4.7 reserve requirements

The EMI has published details of the possible use of reserve requirements as an instrument of monetary policy. This preparatory work is required by the Treaty but the decision on the use of reserve requirements will be taken by the ECB. The effectiveness of reserve requirements is outside the scope of this report; however, it is important to acknowledge the significant concerns market participants have raised concerning the effects of the imposition of reserve requirements.

In particular their concern is focused on the additional costs reserve requirements would impose on certain financial transactions in euro. There is a danger of dislocation of the new euro markets and activity being driven offshore. This view is a result of a keen awareness of the past experience of the dislocation impact of derivatives: reserves have, for example, been influential in causing DEM money market and repo activity to relocate outside Germany. Financial activity is by nature highly mobile. Financial participants can quickly restructure business to avoid additional costs, and any who did not would be subject to competitive disadvantage.

There is a very large consensus among market participants that the imposition of reserve requirements might undermine the development of a unified financial market in euro.

While the strong industry preference, across all markets and all countries, is that reserve requirements should not be imposed, if they were to be employed then there are mechanisms that would reduce the adverse impact. Specifically, the reserves might be set at zero or be fully remunerated. Either would alleviate the dislocation impact; however, it is important to note that the fine margins for some markets would mean that reserves that are only partially remunerated would still distort prices sufficiently as to provide an incentive to relocate activity.

Finally, as a further technical matter, it should be noted that in order for market participants to make the necessary system preparations for reserve requirements it is important that the exact scope and structure of such requirements are decided as quickly as possible. Markets expect therefore the ECB to announce as soon as possible after it is established, in 1998, a fully detailed implementation plan.

4.8 regulation, restrictions and taxation

Regardless of the level of harmonisation achieved in terms of market conventions and practices there will still be distortions resulting from differences in national tax regimes and regulatory rules that place restrictions on trading and investment.

Harmonisation in this area appears difficult to achieve in the short term, but the introduction of the euro will increase the awareness level of such distortions as:

- distortions reflecting national tax regimes

- different levels of investor protection

- national restrictions on trading and investment, such as restrictions on the kinds of assets pension funds can invest in

In each of these three cases, the Commission is proposing action to reduce distortions. In order to remove tax distortions, the Commission's Action Plan for the Single Market asks Member States to confirm the priority of working towards agreement on a tax package designed to achieve a balance between their interests, which will include:

- a code of conduct designed to tackle harmful tax competition, which causes difficulties for every Member State;

- measures to eliminate distortions to the taxation of capital income, notably to ensure effective taxation of cross-border savings, while preserving the competitiveness of European financial markets;

- measures designed to eliminate withholding tax on interest payments between companies, which form part of long-standing efforts to remove disincentives to cross-border economic activity (double taxation).

In the case of investor protection, there is an existing structure of harmonised minimum rules, leaving some margin for national interpretation, notably on the meaning of 'the general good' as applied to the protection of investors.

In the case of restrictions on trading and investment, the Commission Green Paper on 'Financing Retirement in the Single Market' notes that the prudential supervision of the investment of pension and life assurance assets has the effect of keeping a large share of these assets in domestic government bonds. It argues for a common approach based on prudent man principle. This would remove the need for most of the quantitative restrictions, while currency matching requirements in particular will be made obsolete within the euro area by the introduction of the single currency.

The market for mortgage credit (mortgage bonds are the largest instrument on the European capital markets after government securities) is particularly restricted by differing regulatory requirements. These will be accentuated when what has hitherto been the main obstacle to cross-border funding - the currency difference - disappears. A complete review of the regulatory situation for these instruments is therefore appropriate.

4.9 Other issues

There are a number of issues that will need further examination. Although some of them like conversion rates and settlement systems have been briefly considered, further analyses would be required.

On conversion rates, the basic concern is to ensure a smooth transition and therefore it would be best to find a market friendly solution that used the markets rather than opposed them. Markets would need certainty that no volatility can occur at the end of the process because they would not be able to hedge. In order

to increase market stability, it is important to avoid the risk of markets guessing what will be the rule for fixing the conversion rates. It should therefore be clear that continuity is ensured and that political fixing is excluded. It is essential to maintain certainty on the legal framework and in particular that the one-to-one conversion from ECU to euro be retained.

Markets consider that it would be a risk to leave the market to play without any additional guidance. Indeed, market rates of the last business day could have moved away from the long-term equilibrium level around which they would have been stable for two years, thus not reflecting economic fundamentals. Credibility would be the central question regarding the pre-announcement of conversion rates. If conversion rates were to be announced, the announced rates should be considered as reflecting economic fundamentals.

On settlement systems, there is a need to further examine technical issues i.e. the handling of redenominated securities (decimals, different redenomination techniques), settlement in different currencies and cross-border settlement.

Investors protection is another issue which requires more in depth examination. Investors protection is considered as one of the key factors of an efficient financial market. Moreover, it is a key factor for the international attractiveness of the market.

V. GLOSSARY

Actual/Actual: a day count convention for the accrual of interest in which the calculation of interest is made based on actual number of days over which the interest is accrued and the actual number of days in the year. This is the preferred method for the bond market.

Actual/360: a day count convention for the accrual of interest in which the calculation of interest is made based on actual number of days over which the interest is accrued and a 360-day year. This is the method proposed for the ESCB's money market operations.

Business day for the euro: any day on which it is possible to trade, settle and make payments in euro.

Central securities depository (CSD): a facility for holding securities and processing security transactions by book entry.

Collateral: an asset pledge by a borrower to a lender for the duration of the loan. Generally, the amount of collateral held is calculated so that at no time is the lender exposed to market risk. If the borrower defaults then the collateral can be disposed of to pay off the loan.

Coupon frequency: how often over a year the issuer promises to pay interest on a debt security (annually or semi-annually). Practice varies from country to country.

Day count convention: the method for determining the number of days used to calculate the accrual of interest (see Actual/Actual and Actual/360 above).

Dematerialised securities: securities that are held in non-paper form usually as electronic entries on a computerised accounting system.

Euro area: the geographical area comprising of the Member States that have adopted the euro as their currency in accordance with the Treaty.

Haircut: used in the securities industry to calculate the value of a security as collateral. The haircut varies according to the type of security, the market risk attached to it and the amount of time to maturity.

Initial margin: amount of cash or eligible securities that has to be deposited before entering into a margining transaction.

Issuer: legal entity which has the power to issue and distribute a security.

Liquidity: the ability to buy or sell an asset quickly and without affecting the market value of the asset (i.e. to be able to convert to cash quickly).

Marking-to-market: increasing or decreasing the price of a security in line with movements in the market value of the security.

Non Par Value Shares: shares which represent a fraction of the issued capital and do not have a nominal value. NPV shares are allowed by the second EC Company Law Directive and are widely used in Belgium and Luxembourg and in the US.

Prudent man principle: a standard adopted by many authorities to guide those responsible for taking investment decisions on the behalf of others. In essence the decision taker is expected to act with discretion as a prudent man or woman would, that is to avoid speculative investment, to seek reasonable financial return and to preserve capital.

Real-time gross settlement system: a gross settlement system in which processing and settlement operations take place continuously in real time.

Redenomination: the change of the unit in which the amount of outstanding debt or equity is stated from a national currency unit to the euro unit, with no alteration of any other term.

Renominalisation: the change in the nominal value of a bond or a share.

Repurchase agreement (repo): agreement between a seller and a buyer in which the seller agrees to repurchase the sold security at a fixed price on an agreed date or over a specified period of time.

Round lots size: the number of shares which can be traded and for which a price is given on an Exchange. The size of round lots is specific to each security and depends on the share price.

Tap stock: is an issue of stock which has identical features to an outstanding normal issue. The tap stock is thus completely fungible with the original outstanding issue. Tap stock issues are generally smaller than normal issues, and are aimed to respond to pockets of demand in the market for a particular stock.

TARGET (Trans-European Automated Real-time Gross settlement Express Transfer system): a payment system consisting of one real-time gross settlement (RTGS) system in each of the Member States. The national RTGS systems will be interconnected through the Interlinking mechanism so as to allow same-day cross-border transfers throughout the euro area. RTGS systems of "pre-in" Member States may also be connected to TARGET, provided they can process the euro.

Tick sizes convention: rounding method of a share price for quotation purposes. Different tick sizes may apply to different ranges of prices.

Variation margin: amount of cash or eligible securities that has to be deposited by the borrower to ensure that the counterparties remain fully collateralised throughout the term of a transaction. The amount of variation margin is determined by symmetric marking-to-market the collateral.

VI. ANNEX

LIST OF EXPERTS [1]

Consultative Group on the Impact of the Introduction of the Euro on Capital Markets

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