Supervision of Financial Conglomerates – Remarks on Solvency Control and Alleged Double Gearing – *

by Dieter Hesberg and Walter Karten **

1. Introduction

Insurance and banking firms holding shares in firms of the other sector, esp. if reciprocally, are defined as financial conglomerates. Concerning this type of companies it is reported that the Basle Committee on Public Supervision of Banking (of the Bank for International Settlement [BIS]) as well as the Commission of the EC are intending to install a common supervision of financial conglomerates,¹ esp. founded on consolidated annual accounts.

In an economic point of view there are many implications. Therefore we shall discuss a few of those problems.²

2. Goals of public supervision of banking firms and insurance companies as declared in the directives of the EC

The wellknown goals of public supervision of banking firms and insurance companies may generally be described as consumer protection. That means first of all protection of creditors and policyholders.

It is wellknown too that both in the insurance sector and in the banking sector there are further objectives for regulation.

In the area of insurance from the German point of view these objectives have changed in the last ten years under the influence of the third-generation rules of the EC and the deregulation debate. Now the following supplementary purposes may be accepted,

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¹ Cf. the presentation by J.F. Mogg, Director General, DG XV, Internal Market and Financial Services, to the CEA Annual Common Market Committee Meeting, 30th September 1993, and the Proposal for a Council Directive (so-called *BCCI-Directive*) on amending several financial services directives to make supervision more effective, (93) 363 of 28 July 1993, OJ No. C 229/10, 25.8.1993.

² A survey on main aspects of the present supervision of financial conglomerates is given by CEA Info, special issue No. 1, July 1993.

- of establishing a system of free competition in the single market for insurance,
- of eliminating market failure because of asymmetric information on insurance markets.

In the banking sector further objectives have changed hardly. In all developed economies as well as in the EC, regulation of banks and financial firms aims at

- maintaining a workable banking system, esp. avoiding the loss of confidence in banks' reliability (e.g. in consequence of a run of depositors, or of the public rating of banks by rating agencies),
- supporting central bank policies, (in Germany the Bundesbank has to fulfil supervisory functions, too.),
- establishing a single market for banking and financial services in the EC.

One can say that the global importance of banking regulation is first of all determined by the connections of markets in modern economies, which may be characterized as an economic network. There is no doubt that insurance markets are linked with other markets in a similar way. But consequences for national economies of insurance market failure seem to be less important than those of a collapse of the banking system are.

3. General aspects of implementing a common supervision of financial conglomerates

For the reason of growing competition between banks and insurance companies but moreover because of the *financial services paradigm*, separate supervision of these financial institutions is supposed to be by-passed by the firms. They could have dealings where the roles are reversed, when transactions are supervised only for one part. Today the financial conglomerates are supervised by only one competent authority, either the one relating to banks or the other one relating to insurance companies.

More precisely, common supervision of financial conglomerates and financial holdings is focussed for mainly three reasons:³

- Anxiousness of distortions of competition on financial markets,
- Fear of powerful undertakings and conglomerates or of powerless supervision authorities respectively, i.e. specially lack of *transparency*,
- Anxiety of insufficiency of free capital resources of conglomerates in the case of not-independent, esp. cumulative risks.

3.1. Market organization in the case of supervision of conglomerates

The first topic seems to be not yet analysed fundamentally, but some aspects may be pointed out.

Competition on financial (banking and insurance) markets concerns both demand and supply.

Focussing the demand for financial services there are recognizable effects of market integration because of the linked demand for life insurance policies, for investment management, and for general strategies to protect properties, savings, deposits etc. The structure of financial services' markets is mostly determined by the process of saving and private investment in general. From the demanders' point of view financial services products are considered as partly complementary and partly substitute goods.

³ K.-W. Knauth and H.-J. Welzel, The Supervision of Financial Conglomerates, The Geneva Papers on Risk and Insurance Vol. 18, No. 67, 1993, pp. 139-143.

Focusing supply attempts have been made to combine distribution policies of insurance companies and of banks, and to build up special *financial services*. Other efforts aim at harmonizing product design with the products strategies to widen the product range. To realize those visions, co-operation between banks and insurance companies as well as shareholdings or reciprocal shareholdings respectively are discussed and practiced.

Questions of overriding importance concern market organization, esp. the rules of competition, if financial conglomerates are subject to common supervision. How can be ensured that competition is not distorted if suppliers with relations to other markets, e.g. an insurance company which holds shares of a bank, are supervised in another way than an insurer which has no shares but a co-operation agreement with a bank?

Each regulation concerning supervision of companies includes aspects to restrict free competition, which means *new barriers to entry* to financial markets. Each regulation includes the question how the regulation can be limited to the original subject. But present limits of supervision show evidently, too, that there may be a lack of transparency for the authorities because of the possibility to get round the special regulations for single sectors.

Another problem is whether a supervision is foreseen only for financial conglomerates or for other conglomerates, too, e.g. for holding companies without operative functions but with shares in industrial and financial services companies.

It will be necessary to integrate such a design of public supervision with the theory of market and the philosophy of deregulation. Well-known keywords are *market failure and asymmetric information on bank or insurance markets* (not on the markets for securities), asymmetric information owing to *concentration of capital* (this is a legal element in the German Act Against Restraints of Competition [Cartel Act]), and *transaction costs*. A necessary comparison corresponds to individual transaction costs of demand and supply on financial markets (*internal effects*) and collective transaction costs of the supervision authorities (*external effect*).

3.2. Transparency of financial conglomerates

The second topic is subject of present discussions. With regard to *transparency* a first step towards supervision of conglomerates or financial holdings not yet supervised is constituted by the new *shareholders's control* which is implemented by the third directives (non-life insurance and life assurance)⁴ as well as by the second directive (credit institutions):⁵ any natural or legal person who proposes to acquire or to dispose a qualifying holding in an insurance company or a credit institution is required to inform the competent authorities first which may oppose such plan within three months. The undertakings have to inform the authorities at least once a year about the shareholders' names possessing qualifying holdings and the sizes of such holdings.

A second step towards *transparency* will be the *BCCI-Directive* which will amend several financial services directives to make supervision of financial conglomerates more effec-

⁴ Cf. Council Directive 92/49 of 18 June 1992 (third non-life insurance Directive) art. 15, OJ No. L 228/10, 11.8.1992, resp. Council Directive 92/96 of 10 November 1992 (third life assurance Directive) art. 14, OJ No. L 360/9-10, 9.12.1992.

⁵ Cf. Second Council Directive of 15 December 1989 on the coordination of laws, regulations and administrative provisions relating to the taking up and pursuit of the business of credit institutions, 89/646, art. 11, OJ No. L 386/6-7, 30.12.1989.

tive. This proposal especially will regulate (1) the registered and the real head office of financial conglomerates to be located in the same member state, (2) an additional exchange of information between the (sectoral) supervisory authorities and other specified boards of the member states, (3) the compulsory auditors' immediate reporting about any relevant information on endangering the bank, or the insurance company respectively, to the supervisory authorities.⁶

By the way, it must be pointed out, too, that the similarity in regulation for banks and insurance companies just covers the existing distinctions. Especially the independence of risks is normal for firms in the insurance industry but it is not for banks, due to modern interlinked economy, business cycles etc., and especially to the wellknown effect of the *creation of credit* even for independent banks.

Naturally it may not be excluded that the asset risks of banks and insurers develop in the same direction. Today there are regulations for investment policies which are indeed similar; is it probable that regulations would fundamentally change? Of course it seems to be possible that supervision of investment policies on a consolidated basis may be more effective. But does it go with deregulation postulated for the financial sector, especially referring to the insurance industry? It is necessary to say that a common supervision will mostly be an addition of today's specialized activities; synergy effects will hardly arise.

3.3. *Adequacy of solvency*

Relating to the third topic the main problem of both supervising the single bank or insurance company and common supervision of financial conglomerates the appropriateness of solvency control is to be examined. On the one hand this has generally to be questioned, and it is a specified problem on the other hand if solvency control on a consolidated basis will be necessary, involving the effects of risk cumulation or risk balancing of a portfolio of insurance policies, of loans and deposits, or of securities in a conglomerate.

Related to this point the often asserted so-called *double gearing* of equity in a conglomerate (a group of companies or a holding company) is questioned. This topic is one of the most critical problems concerning the regulation of financial conglomerates in the EC.⁷ Therefore the question should be focused.

4. **General aspects of solvency control**

Both insurance undertakings and banks must prove sufficient capital resources to supervisory authorities. The fact can not be ignored that at first glance the measures for risk-bearing activities in banking and insurance firms as defined by solvency rules seem to be quite similar. But it should become clear that implicitly there are some considerable differences.

A very remarkable distinction is that annual solvency control of insurance undertakings by home country authorities in contrast to solvency control of banks refers to the single insurance undertaking. At the moment, there is no control of insurers on a consolidated basis. Solvency of an insurance group or a combine is not object of supervision by authorities, but it is in the case of banks.⁸

⁶ Cf. Proposal for a Council Directive (93) 368, art. 3-5.

⁷ Cf. J.F. Moog, loc. cit.

⁸ Cf. Council Directive 83/350 of 13 June 1983 on the supervision of credit institutions on a consolidated basis, OJ No. L 193, 18.7.1983; confirmed by the Council Directive 92/30 of 6 April 1992 on the supervision of credit institutions on a consolidated basis, OJ No. L 110, 28.4.1992, correction OJ No. L 280/54, 24.9.1992.

4.1. Insurance

Insurance companies have to possess technical reserves “of sufficient amount to meet their underwriting liabilities”⁹ (now harmonized by the Council Directive on the annual accounts and consolidated accounts of insurance undertakings of 19 December 1991) and a “supplementary reserve, to be known as the solvency margin”.¹⁰

For non-life insurance companies the solvency margin is determined on the basis either of the annual amount of premiums (*first result = premium basis*), or of the average of claims for a reference period (*second result = claims basis*).

Mostly the reference period covers the past three years. Only if undertakings essentially underwrite one or more of the risks of storm, hail, frost, the last seven years have to be taken.

The premium basis as well as the claims basis are not ratios but amounts of required capital. Precisely the solvency margin is represented by the higher of the two results to which the equity capital and similar reserves of the insurance undertaking shall correspond.

The first result (*premium basis*) shall be calculated by dividing the premiums or contributions into two portions and multiplying these portions by definite percentages. 18% of the first portion of premiums extending up to 10 million units of account (ECU since 1981) and 16% of the second comprising the excess shall be added. The sum shall be multiplied by the ratio between the amount of claims after reinsurance and the gross amount of claims, each in the last financial year; this ratio may not be less than 50%.

The calculation of the second result (*claims basis*) is constructed likewise. The average of claims paid and included in provisions for outstanding claims for the reference period shall be divided into two portions too, but the dividing line and the percentages to weight the portions are others: 26% of the first portion of claims extending up to 7 million units of account (ECU since 1981) and 23% of the second comprising the excess shall be added. The sum shall be multiplied as described above by the *ratio of claims after reinsurance to claims before reinsurance*; this ratio may just again not be less than 50%.

It is obvious that this construction of the solvency margin takes into consideration only the actuarial *underwriting risk* of a non-life insurer. Other risks are disregarded, neither the risk of fluctuating earnings on assets held for provisions (*asset risk*) nor the risk of rising costs of management (*general business risk*). In addition there is no reason to assume that all non-underwriting risks are exactly proportional to the underwriting risks. Therefore the solvency margin in non-life insurance must be categorized as a quite rough estimation for risk and necessary capital. There is no precise measuring of risk. But these aspects well-known are not to be criticized here once more.

For life insurance undertakings the construction of solvency requirements is a more differentiated one. Due to the specified types of life insurance treaties there are some different estimations for risks.¹¹

In traditional life insurance as endowment insurance or term insurance, as well as annuities, the solvency margin shall be obtained by adding amounts which correspond to *asset risks* (first result) and *actuarial risks* (second result).

⁹ First Council Directive 73/239 of 24 July 1973 on the coordination of laws, regulations and administrative provisions relating to the taking-up and pursuit of the business of direct insurance other than life insurance, Introduction, OJ No. L 228/4, 16.8.1973.

¹⁰ Ibidem; for the following details see art. 16.

¹¹ For further details see First Council Directive 79/267 of 5 March 1979 on the coordination of laws, regulations and administrative provisions relating to the taking-up and pursuit of the business of direct life assurance, art. 19, OJ No. L 63/10-11, 13.3.1979.

The first result is defined as 4% of the mathematical reserves, related to direct business gross of reinsurance, multiplied by the ratio, for the last financial year, of the mathematical reserves net of reinsurance cessions to the gross mathematical reserves; that ratio may not be less than 85%.

The second result is defined as 0.3% of the capital at risk (if non-negative), underwritten by the undertaking, multiplied by the ratio, for the last financial year, of the capital risk retained to the capital at risk gross of reinsurance; that ratio may not be less than 50%. Complicated details may be disregarded.

For assurance linked to investment funds the calculation is similar to the described one before.

For supplementary insurance, e.g. insurance against personal injury including incapacity for employment, insurance against death resulting from an accident and insurance against disability resulting from an accident or sickness, if underwritten in addition to life insurance, the amount of requested capital shall be calculated like the first result (*premium basis*) in non-life insurance.

18% of premiums extending up to 10 million ECU and 16% of the portion comprising the excess shall be added and multiplied by the ratio, in respect of the last financial year, of the claims after reinsurance and the gross amount of claims; that ratio may not be less than 50%.

Evidently the construction of the solvency margin in life insurance takes the asset risks into account, too. But there is no precise measuring of risk either.

Though it is to be said that the criteria for solvency in insurance – premiums or claims for risky business volume, mathematical reserves for assets, capital at risk for liabilities – correspond vaguely to different types of risk. But the simple way to compress the different types of risk by addition of several results should be called into question: Relations between different and especially independent risks are not only non-additive but complex.

Both non-life insurers and life insurers have to notice that they are able to prove a guarantee fund. One third of the solvency margin shall constitute this fund which may not be less than fixed amounts according to the operated insurance line (different amounts in non-life insurance, 800 000 ECU in life insurance).¹²

One implication of this graduation is that the solvency margin does not represent the minimum of capital reserves to be valued as absolutely necessary. But in consequence of the realization of the single market and the home country principle for supervision, the measures taken by the supervisory authority when free assets fall below the minimum guarantee fund are just a bit stricter now than those being possible if free assets are smaller than the solvency margin. Concerning the latter, the authority “in exceptional circumstances” may restrict or prohibit the free disposal of the insurer’s assets, as it can do as well when the assets do not cover the solvency margin.¹³

Another implication of the guarantee fund – for life insurers only – relates to the various types of capital being accepted as elements to fit the conditions of the so-called *free capital* (*free of any foreseeable liabilities*).¹⁴ At least 50% of the minimum guarantee fund must consist of so-called *explicit capital*, which means capital elements appearing in the

¹² Cf. Directive 73/239 (non-life) art. 17, Directive 79/267 (life) art. 20.

¹³ Cf. Directive 73/239 (non-life) art. 20 (2) and (3), amended by Directive 92/49 (third non-life insurance Directive) art. 13, resp. Directive (life) 79/267 art. 24 (2) and (3), amended by Directive 92/96 (third life assurance Directive) art. 12.

¹⁴ Directive 79/267 (life) art. 18 (2) point 1, amended by Directive 92/96 (third life assurance Directive) art. 25.

balance sheet. *Implicit capital*, as hidden reserves and future profits (see the items below), may only cover less than 50% of the minimum fund.¹⁵

Generally the catalogue of *free assets* contains items on the liabilities side:¹⁶

- the paid-up share capital or the effective initial fund of a mutual insurance undertaking plus any member's account meeting specified criteria,
- one-half of the share or the initial fund which is not yet paid up, once the part of paid-up capital reaches 25% of the nominal capital or the fund,
- statutory and free reserves,
- any profits brought forward,
- in the case of non-life mutuals any claims against its members by way of a call for supplementary contribution; the maximum is on the one hand 50% of the difference between the maximum contributions and the contributions actually called in, on the other hand 50% of the solvency margin,
- under specified conditions any hidden reserves arising out of the undervaluation of assets, as long as they are “not of an exceptional nature”,¹⁷
- under specified conditions 25% of cumulative preferential share capital and subordinated loan capital up to 50% of the solvency margin; general condition is a binding agreement that the subordinated loans or preferential capital rank after the claims of all other creditors; additional conditions for the loans are: full payment, original maturity at least five years if the maturity is fixed, repayment of loans without fixed maturity only subject to five years' notice;
- securities with no specified maturity date and other instruments fulfilling special conditions, “including (other) cumulative preferential shares..., up to 50% of the margin for the total of such securities and the subordinated loan capital”¹⁸ mentioned before, under similarly specified conditions.

Additional elements of the solvency margin of life insurers can be in particular:¹⁹

- profit reserves appearing in the balance sheet; it must be possible to use them to cover any losses, and they are not to be available for distribution to policyholders;
- upon application and with agreement of the home country supervising authority 50% of the insurer's future profits; in this context future profits are defined as the estimated annual profit (average of the profits made in the last five years) multiplied by a factor representing the average residual time of maturity; this factor may not exceed 10.

The requirement that the solvency margin shall correspond to assets free of any foreseeable liabilities is specified e.g. in Germany by means of a deduction of some intangible items on the assets side, e.g. capitalized initial capital expenditure and start-up costs, and of a loss brought forward. But obviously there is no specified legal basis for any rules concerning the choice of the assets which are not needed for coverage for the technical provisions.²⁰

¹⁵ Cf. Directive 79/267 (life) art. 20 (1).

¹⁶ Cf. Directive 73/239 (non-life) art. 16, amended by Directive 92/49 (third non-life insurance Directive) art. 24, resp. Directive 79/267 (life) art. 18, amended by Directive 92/96 (third life assurance Directive) art. 25.

¹⁷ Directive 92/49 (third non-life insurance Directive) art. 64, 6th item.

¹⁸ Ibidem.

¹⁹ Cf. Directive 79/267 (life) art. 18 (2) and (3), amended by Directive 92/96 (third life assurance Directive) art. 25.

²⁰ Cf. Directive 73/239 (non-life) art. 18 (1), amended by Directive 92/49 (third non-life insurance Directive) art. 26, resp. Directive 79/267 (life) art. 21, amended by Directive 92/96 (third life assurance Directive) art. 27.

At this time a deduction of shares in other insurance companies is e.g. formally requested by the German Supervisory Office for Insurance Companies (BAV), but this regulation is not yet executed. The authority and some authors argue that shares in other insurance undertakings would result in double gearing of equity capital which in consequence would not be free of risk, esp. of foreseeable liabilities. It is to be shown that this argument does not consider the balance of portfolio of independent risks.

Comprising the previous, the catalogue of capital elements could roughly be divided into hard core equity capital on the one hand and supplementary capital on the other hand, corresponding not only to the described measures of authorities but also relating to their quality to cover losses.

4.2. Banks (credit and investment institutions)

Different types of banks in the banking systems of the singular member states of the EC and in the USA are wellknown. Especially the strict separation of commercial and investment banking in contrast to the German system of all-round banks (universal banking system) makes it necessary to define clearly what should be understood by *credit institutions*.

4.2.1. Capital requirements

(1) Credit institutions

The definition given by the EC is a restricted one: “‘credit institution’ means an undertaking whose business is to receive deposits or other repayable funds from the public and to grant credits for its own account.”²¹ This conception focuses strictly on commercial banking. The consequence is that solvency regulation for banking firms only refer to risks of traditional credit and deposit business. Banker’s usual view on this kind of risk is orientated towards the balance sheet, especially towards the risky assets, though there are further risks of transformation relating to duration and interest rates of assets and liabilities. Therefore the measure of solvency for credit institutions, the so-called *solvency ratio*, only refers to the assets side, and all risks have to be expressed as assets multiplied by factors corresponding to the supposed values of different risks. Because nowadays off-balance-sheet business becomes more important the ratio weights off-balance-sheet items exposed to credit risk likewise.

The *solvency ratio* includes the own funds in the numerator and the risk-adjusted assets and off-balance-sheet items in the denominator.²² The ratio may not be less than 8%; the member states are allowed to prescribe higher minimum ratios.²³ To give an insight in the complexity of the provisions they are outlined in broad terms as far as possible. But indeed the impression depends on the sum of details.

The weighting of assets is differentiated twice. The first classification refers to the sort of claims, shareholdings etc., the second to debtors and debtor countries (“Zone A” com-

²¹ First Council Directive 77/780 of 12 December 1977 on the coordination of laws, regulations and administrative relating to the taking up and pursuit of the business of credit institutions, art. 1, OJ No. L 322/31, 17.12.1977.

²² Cf. Council Directive 89/647 of 18 December 1989 on a solvency ratio for credit institutions, art. 4, 5, OJ No. L 386/16, 30.12.1989.

²³ Cf. Directive 89/647 art. 10.

prises the member states of the EC, all other members of the OECD, and those countries which have concluded special lending arrangements with the IMF, “Zone B” comprises the rest).²⁴

Four degrees of credit risk (as percentage weightings [Zero, 20%, 50%, 100%]) are to be applied to the various categories of asset items. In the following some main items are cited:²⁵

Zero weighting

- cash in hand and equivalent terms,
- claims on Zone A central governments and central banks as well as claims on the EC,
- claims carrying the explicit guarantees of Zone A central governments and central banks,
- claims directly on Zone B central governments and central banks or carrying the explicit guarantees of Zone B central governments and central banks.

20% weighting

- asset items constituting claims on the European Investment Bank, claims on multilateral development banks, and claims carrying the explicit guarantees of those banks,
- claims directly of Zone A regional governments or local authorities or carrying the explicit guarantees of Zone A regional governments or local authorities,
- assets items constituting claims on Zone A credit institutions which does not constitute own funds of such institutions,
- assets items carrying the explicit guarantees of Zone A credit institutions,
- claims with a maturity of one year or less on Zone B credit institutions,
- claims with a maturity of one year or less carrying the explicit guarantees of Zone B credit institutions;

50% weighting

- loans fully and completely secured by mortgages on residential property,
- prepayments and accrued income; the weighting shall correspond to the counterparty if it is possible to determine the party in accordance with the directive on annual accounts of banks.²⁶

100% weighting

- claims on Zone B central governments and central banks except if they are denominated and funded in the national currency of the borrower,
- claims on Zone B regional governments or local authorities,
- claims with a maturity of more than one year on Zone B credit institutions,
- claims on the Zone A or Zone B non-bank sectors,
- tangible assets,²⁷
- holdings of share, participations and other components of the own funds of other credit institutions if they are not deducted from the own funds of the lending institutions,
- all other assets, if not deducted from own funds.

As mentioned above, a lot of traditional off-balance-sheet items are to be grouped in a first step according to four risk groups²⁸ which are to be weighted with the percentages applied to the assets described:

²⁴ Cf. Directive 89/647 art. 2 (1).

²⁵ Cf. Directive 89/647 art. 6.

²⁶ Council Directive 86/635 of 8 December 1986 on the annual accounts and consolidated accounts of banks and other financial institutions, OJ No. L 372/1, 31.12.1986.

²⁷ Cf. the list in Directive 86/635 art. 4 (10).

²⁸ See Directive 89/647 annex I.

Full risk (100% weighting)

- guarantees having the character of credit substitutes,
- acceptance,
- irrevocable standby letters of credit having the character of credit substitutes,
- asset sale and repurchase agreements defined as typical,²⁹
- assets purchased under outright forward purchase agreements,
- the unpaid portion of partly-paid shares and securities;

Medium risk (50% weighting)

- documentary credits issued and confirmed,
- warranties and indemnities (including tender, performance, customs and tax bonds) and guarantees not having the character of credit substitutes,
- asset sale and repurchase agreements defined as untypical,³⁰
- irrevocable standby letters of credit not having the character of credit substitutes,
- undrawn credit facilities (agreements to lend, purchase securities, provide guarantees or acceptance facilities) with an original maturity of more than one year,
- note issuance facilities (NIFs) and revolving underwriting facilities (RUFs);

Medium/low risk (20% weighting)

- specified documentary credits and other items also carrying medium/low risk;

Low risk (zero weighting)

- undrawn credit facilities with an original maturity of up to and including one year or which may be cancelled unconditionally at any time without notice,
- other items also carrying low risk.

The second step is to multiply the adjusted off-balance-sheet values by the weightings attributable to the risks of the relevant counterparties in accordance with the weightings of the assets as described above (first list).

Besides these traditional types of off-balance-sheet business innovative derivative instruments must be taken into consideration.³¹ Two types of those off-balance-sheet contracts are distinguished: *interest-rate contracts* (as single-currency interest rate swaps, basis swaps, forward-rate agreements, interest-rate futures, interest-rate options purchased) and *foreign-exchange contracts* (as cross-currency interest-rate swaps, forward foreign-exchange contracts, currency futures, currency options purchased).

To evaluate the risks associated with those transactions, one out of two prescribed methods may be chosen.

Method 1 (*marking to market approach*) refers to the residual maturity as well as the current market values of contracts; it aims at weighting a sum of *current replacement cost* (in the event of counterparty default) and *potential future credit exposure* by risk factors of the relevant counterparties as described above (50% [instead of 100%], 50%, 20%, 0%).

Method 2 (*original exposure approach*) takes into account only the original maturity and aims at weighting the *original risk exposure* by risk factors in the same way.

To obtain the figure for potential future credit exposure and the *original risk exposure* respectively, the notional principal amounts are to be multiplied by specified percentages (0,5% to 5% in accordance to maturity and type of contract).

²⁹ Cf. Directive 86/635 on the annual accounts of banks, art. 12 (1) and (2).

³⁰ Cf. Directive 86/635 on the annual accounts of banks, art. 12 (3) and (5).

³¹ Cf. Directive 89/647 art. 5 (3) and 6 (3) as well as annex II and III.

(2) *Investment firms*

Investment business of credit institutions and investment firms lead to competition with one another. Both deal with similar risks, especially the risks of tradebook business. To provide a complementary framework for the supervision of the risks of investment firms, special directives have been developed.³² The provisions are to be applied to investment firms – generally juristic persons engaged in business of investment services for a third party³³ – as well as to banks, excluding those for which the trading book business normally does not exceed neither 5% of their total business nor ECU 15 million, and never exceeds 6% or ECU 20 million respectively.³⁴ The own funds required refer to the differentiated risks in the business of those firms.

Tradebook in the meaning of the Directive mainly consists of

- (1) the firm's proprietary positions in financial instruments, positions in financial instruments arising from matched principal broking, and positions taken in order to hedge other elements of the trading book,
- (2) the exposures due to the unsettled transactions, the exposures due to purchase agreements and securities lending as well as to repurchase agreements and securities-borrowing transactions.³⁵

The essential risks focused are *market risks* including *position risks*, *counterparty/settlement risks* and *large exposure risks*.

The capital requirements corresponding to the *position risk* are based on net positions (excess of an institution's long [short] positions over its short [long] positions) in the same asset and contract (equities, debt issues, futures, options etc.).³⁶ The weighting of those net positions subtly differentiates between traded debt instruments, equities, and underwriting of debt and equity instruments on the one hand, *specific risks* and *general risks* on the other hand. The second distinction is made between the risk of a price change due to factors related to the issuer of the instrument and the risk due to general effects as a change in the level of interest rates or a broad equity-market movement.

Relating to the *specific risk* of e.g. debt instruments, the undertaking has to

- (1) assign its net positions to differentiated categories of issuer's standing (*central government items* referring to the *Zero Weighting*,³⁷ *qualifying items* referring to the *20% Weighting*,³⁸ *other items* the bank's standard weighting of 8% is assigned to),
- (2) assign the net positions of *qualifying items* to categories of residual maturities (up to six months,

³² Cf. Council Directive 93/6 of 15 March 1993 on the capital adequacy of investment firms and credit institutions, OJ No. L 141/1, 11.6.1993.

³³ For details see Council Directive 93/22 of 10 May 1993 on investment services in the security field, art. 1 and art 2, OJ No. L 141/31-33, 11.6.1993.

³⁴ Cf. Directive 93/6 art. 4 (6).

³⁵ Cf. Directive 93/6 art. 2 clause 6.

³⁶ For details see Directive 93/6, annex I.

³⁷ Long and short positions in the assets referred to in Directive 89/647 art. 6 (1) (a) and art. 7, see above.

³⁸ Long and short positions in the assets referred to in Directive 89/647 art. 6 (1) (b), see above, and positions in debt instruments issued by investment firms or by recognized third-country investment firms.

over six and up to two years, over two years) and multiply these groups by defined weightings (0,25%, 1,00%, 1,60%).

To calculate the capital requirement relating to the *general risk*, one out of two methods is allowed.

Method 1 is based on the maturity of each position, that means, all positions shall be weighted in an even more differentiated procedure by factors referring to maturity. The requirements shall be computed as a sum of different percentages of the matched weighted positions assigned in several distinguished groups of maturity (maturity bands and (3) zones, i.e. groups of maturity bands).

Method 2 is based on a duration approach. With regard to fixed-rate debt instruments e.g., the market value of each instrument shall be taken and thence its yield to maturity shall be computed which is necessary for calculating the modified duration³⁹ (of each instrument). The duration-weighted position for each instrument is then obtained by multiplying its market price by the duration and by an assumed interest-rate change, the latter related to four distinguished zones of duration. At last the requirements shall be computed as a sum of different percentages of the matched duration-weighted positions either assigned to the duration-zones or between the zones, and 100% for the residual unmatched duration-weighted positions between different zones.

The calculation of the capital requirement corresponding to equities and underwriting of debt and equity instruments is differentiated in a similar but easier way and may be disregarded here, same to the required capital to the settlement/delivery risk, and the counterparty risk.

The computation of required capital corresponding to foreign exchange risks refers to net open position in each currency. All positions have to be converted and aggregated to the total of the net short and net long positions; the higher of the totals shall be the overall net foreign-exchange position. If the amount exceeds 2% of the total own funds of the firm, the excess must be weighted by 8% to take the foreign-exchange risk into account.

4.2.2. Catalogue of items accepted as own funds

Provisions relating to own funds of credit institutions and investment firms are approximately the same.⁴⁰ The catalogue of recognized items for banks seems to be quite similar to that for insurers. As mentioned above, items are distinguished between hard core equity capital, the so-called *original own funds*, on the one hand, and supporting capital, *additional own funds*, on the other.

To identify the differences between the relevant provisions for banking and insurance firms the main items for banks may be listed,⁴¹ too:

- the paid-up share capital (plus share premium accounts), excluding cumulative preferential shares, statutory and free reserves, fixed-term cumulative preferential shares and subordinated loan capital under detailed conditions;
relating to these items there is no essential deviation from provisions for insurance companies;
- *revaluation reserves* referred to in Article 33 of Directive 78/660 (on annual accounts), *special funds for general banking risks* within the meaning of Article 38 of Directive 86/635 comparable with special statutory or free reserves, *value adjustments* within the meaning of Article 37 (2) of Directive 86/635 which may be regarded as hidden reserves referring to specified items (claims and equities); except for hidden reserves these items are special own funds for banks but *not for insurers*;

³⁹ For calculation a formula is set out in Directive 93/6 annex I par 26.

⁴⁰ Cf. Council Directive 89/299 of 17 April 1989 on the own funds of credit institutions, OJ No. L 124/16, 5.5.1989, and Directive 93/6, annex V.

⁴¹ Cf. Directive 89/299, art. 2.

- other items having characteristics (free availability to cover normal banking risks, disclosure in internal accounting records, verification of the amounts by independent auditors, supervision by competent authorities) and securities of indeterminate duration fulfilling special conditions,⁴² the possibility for the member states to allow these soft capital items can be regarded as a blanket clause for *additional own funds*; there is a similar clause in the provisions for insurance companies, too.⁴³

The maximum amount of *additional own funds* is limited referring to the original own funds: the total of *revaluation reserves, value adjustments, other items, fixed-term cumulative preferential shares and subordinated loans* are not allowed to exceed the maximum of 100% of the *original own funds*, i.e. paid-up share capital and reserves minus own shares held by a credit institution, intangible assets and material losses of the current financial year.⁴⁴

Because of the principle that the supervision of credit institutions and of investment firms including a bank shall be based on consolidated data, a deduction of shares in other credit institutions is not necessary any longer; although insurance undertakings are regarded as financial institutions, shares of insurance companies held by banks must not be included neither in the consolidated exposure of own funds nor in the general limits for banks to acquire shareholdings (for their own account).

4.3. Comparative review

Characterizing the methods to measure the risks in both sectors banking and insurance, the following should be pointed out:

- The *solvency margin* of insurance undertakings represents a rather global approach.
- The *solvency ratio* of financial institutions is a rather detailed and complicated aggregation of differentiated components.
- It has to be pointed out, too, that the procedure to calculate the *solvency ratio* is similar to the *risk-based capital* approach (RBC) the *National Association of Insurance Commissioners* (NAIC) has developed in the USA. The RBC-standards e.g. for casualty and property insurance based on four categories of risk to which different percentages for weighting capital requirements are assigned: *asset risk, credit risk, underwriting risk* and *growth risk*. Disregarding further details it has to be outlined that there seems to be a tendency to implement more differentiated solvency rules than the EC provisions are.
- Therefore it could be feared that a future competition of both systems for solvency control will result in an approach to the formally more differentiated solvency ratio.
- In fact both methods do not measure the risks exactly but only in an analogous way. Premiums or claims, liabilities or assets respectively, just represent figures set out to risk, but these figures cannot express the underlying real risks directly.

⁴² Cf. Directive 89/299, art. 3.

⁴³ Cf. Directive 92/96 (third life) art. 25, amending art. 18 of Directive 79/67, par 1: “In particular the following shall be included...” as well as the sixth item (securities with no specified maturity...).

⁴⁴ A further limitation refers to the commitments of the members of credit institutions and the preferential shares mentioned before of which the total may not exceed a maximum of 50% of the share capital and reserves minus the deductions referred to. For details see Directive 89/299 art. 6.

- The valuation of these risks, e.g. the transmission from balance sheet items to risk, is a matter of subjectivity, of course. The sophisticated weightings mostly represent subjective judgements as well which are founded on political compromise.
- Therefore the described provisions expressed by numerals do not aim at the same quantities of risk. Calculating the same capital requirements does not necessarily respond to the same degree of reliability, or risk respectively. That is the reason why several amounts of capital, or capital requirements respectively, worked out as described above cannot be simply added up.
- Therefore it will not be possible either to combine the quantities of risk of both sectors as a simple addition.

5. Aspects of the alleged double gearing in the case of financial conglomerates

5.1. Basic effects of shareholding

At first sight it seems self-evident that in the case of stock investments among companies of a financial conglomerate equity is used twice or more to support two or more separate insurance or bank operations. Therefore consolidated equity is recommended to measure the solvency of such a conglomerate. Consolidation of equity in the EC solvency regulation right now is applied to banks but not to insurance companies – and that makes sense.

But wordings like “using equity twice” or “double gearing” are meaningless. We have to ask whether they meet the problem. The purpose of equity is to create solvency, i.e. a risk bearing capacity. It has to carry uncertain losses to such an extent that ruin probability is less than any critical margin. The question therefore is how risk bearing capacity is affected by forming financial conglomerates.

As credit granting capacity of banks traditionally is measured as a multiple of equity, consolidating prevents the creation of so-called credit pyramids by establishing subsidiary banks. As the maximum volume of all credits granted by a bank and its subsidiaries as well as the maximum amount of premiums written (net of reinsurance) by a non-life insurer in principle is a multiple of the equity capital, it is very easy to show this effect:

For example, a bank/insurer I with equity X_i has reached its credit/underwriting capacity $a \cdot X_i$. Is there any chance of a further expansion if there is no possibility for an increase in capital? The solution is quite simple: Company I forms a subsidiary S with an equity capital of X_s . This creates an additional credit/underwriting capacity of $a \cdot X_s$ without any additional cash flow from outside. The simplified annual statements show the effect:

(I) Assets	Liabilities
Shares in S = X_s	Equity = X_i
Other assets = $X_i - X_s$	
X_i	X_i

(S) Assets	Liabilities
All assets = X_s	Equity = X_s
X_s	X_s

This effect can of course be intensified if S again forms a subsidiary, etc.

Even simpler and more obvious is the effect in the case of reciprocal shareholding because not even any transfer of assets is necessary. The following simplified annual statements of the companies I and II may illustrate the effect:

Original situation :

(I) Assets	Liabilities
Assets = 100	$X_I = 100$

(II) Assets	Liabilities
Assets = 100	$X_{II} = 100$

After the exchange of stock, 50% of each, the situation shows up as follows:

(I) Assets	Liabilities
Shares in II: $1/2 \cdot X_{II} = 100$ Other assets = 100	$X_I = 200$
200	200

(S) Assets	Liabilities
Shares in I: $1/2 \cdot X_I = 100$ Other assets = 100	$X_{II} = 100$
200	200

It seems that the “capacity” has doubled. But these oversimplified examples represent, in a nutshell, the problem.

5.2. Application to insurance companies

5.2.1. Model focusing the growth of the equity capital

It is tempting to transfer the credit pyramid problem and the concept of consolidated equity capital straight to combines of insurance companies and their underwriting risk – but that means jumping into conclusions and at least overshoots the mark. It can be shown that only in the case of insurance companies with considerable positively correlated risk or with a high rate of reciprocal shareholding it may be justified to reduce balance sheet equity for solvency control.

We don't know to what extent forming credit pyramids may be a realistic strategy for banks, but we cannot see any comparable case in the real insurance world where increasing premium amounts lead to the foundation of a subsidiary as shown in our example.

But this remote possibility is the primary inducement to call for the elimination of “double gearing” of equity in insurance solvency control. For example it is the actual basis for Mudrack⁴⁵ criticizing the remarks of Knauth and Welzel.⁴⁶ They hold an opposite position according to our following considerations.

⁴⁵ O. Mudrack, Zur Mehrfachbelegung der Eigenmittel in Finanzkonglomeraten, Zeitschrift für das gesamte Kreditwesen, 46th year (1993), pp. 560-563. Moreover, he criticizes that the solvency margin in general is too low. But that is a matter of political decision. On the other hand, he does not recognize the essential effects on the structure of risks in a group of companies.

⁴⁶ K.-W. Knauth and H.-J. Welzel, loc. cit.; see also: K.-W. Knauth and H.-J. Welzel, Finanzkonglomerate im Aufsichtsvisier, Zeitschrift für das gesamte Kreditwesen, 46th year (1993), pp. 30-32.

Solvency control on the basis of consolidated capital means that shares in other insurance companies would have to be deducted from equity capital of the parent company. In fact these shares are affected by the ruin risk of the subsidiary. But for what reason is this thought to be something else than other risky assets, e.g. shares in a brewery or cotton mill? There are no riskless assets at all, and for solvency control they are valued according to accepted accounting principles. Moreover, shares are not at all comparable to those intangible items like loss carried forward, which have to be deducted from free assets.

Naturally there would be a special danger when underwriting losses always or often are incidentally accompanied by losses on the assets side (e.g. as a consequence of losses in the insurance subsidiary causing a devaluation of the shares). This however cannot be the normal case for insurance companies underwriting different lines or for banks and insurers.

As outlined before, the EC-solvency margin is not an adequate risk measure – neither for banks nor insurers – but only a rough but easily controllable indication of the size of risk; therefore we have to go back to the basic risk effects within a group of companies. Both solvency systems for banks and insurers are highly sophisticated but very imperfect and cannot be taken for truth. They are rather suitable for their special purpose but they should not be transposed from insurance to banks or vice versa. The prevailing risks like credit and interest risks on the one side and underwriting risks on the other side differ to such an extent and gave reason for so different solvency measures that only the analysis of the basic risk interrelations can help us to draw conclusions.

Consequently, in order to examine the effects of stock investments among insurers we have to determine the repercussions of risks on related companies – and that along the capital and return flows within the group. In order to allow a separate analysis of risk effects in an insurance combine, we developed a model of capital interrelations in a group of companies. To reduce complexity we use a model of only two insurance companies⁴⁷ connected by capital interrelations (Figure 1). The following premises are given:

- Identity of valuation within the group: This means that the value of the shares carried in the statement of the parent company is equivalent to the interest in the real equity capital of the subsidiary (i.e. including hidden reserves). Profits and losses increase or decrease the equity capital immediately and by the full amount.
- Undisturbed flow of capital: This means that all capital and return flows occur without time lag and without any leakages according to the coefficients of participation, i.e. stock ownership.

The effect is that the interdependence of risk which is of interest in this context follows these capital flows.

⁴⁷ For the general case see W. Karten, Do shares in other insurance companies reduce the solvency margin of an insurer?, H. Loubergé (Ed.), *Risk, Information and Insurance, Essays in the memory of Kark H. Borch*, Boston etc. 1990, pp. 257-267; P. Braeß and W. Karten, *Kapital- und Gewinnströme bei verflochtenen Kapitalgesellschaften*, *Zeitschrift für die gesamte Versicherungswissenschaft* 56. Bd. (1967), pp. 261-313.

FIG.1: Capital structure in a group of two companies

We define :

- $(x_i, i = 1,2)$ vector of the total equity capital of the insurers;
- $(y_i, i = 1,2)$ vector of the original equity capital of the insurance companies invested in other assets than shares;
- $b_{ij} (i = 1,2; j = 1,2)$ “coefficients of participation”, with b_{ij} designating the share of the equity capital of insurer j owned by insurer i ;
- $b_{ai} (i = 1,2)$ shares of equity held by outside shareholders;
- $(g_i, i = 1,2)$ vector of the original returns produced in the company itself;
- $(h_i, i = 1,2)$ vector of the total returns including the transferred returns from shares.

We get the total equity capital as a sum of the asset values of the investment in shares in other insurers and the original equity capital:

$$(1) \quad \begin{aligned} x_1 &= b_{12} \cdot x_2 + y_1 \\ x_2 &= b_{21} \cdot x_1 + y_2 \end{aligned}$$

From this it follows that:

$$(2) \quad \begin{aligned} x_1 &= \frac{1}{1 - b_{12} \cdot b_{21}} \cdot (y_1 + b_{12} \cdot y_2) \\ x_2 &= \frac{1}{1 - b_{12} \cdot b_{21}} \cdot (y_2 + b_{21} \cdot y_1) \end{aligned}$$

In the same way, the relation between original and total returns can be shown:

$$(3) \quad \begin{aligned} h_1 &= b_{12} \cdot h_2 + g_1 \\ h_2 &= b_{21} \cdot h_1 + g_2 \end{aligned}$$

$$(4) \quad \begin{aligned} h_1 &= \frac{1}{1 - b_{12} \cdot b_{21}} \cdot (g_1 + b_{12} \cdot g_2) \\ h_2 &= \frac{1}{1 - b_{12} \cdot b_{21}} \cdot (g_2 + b_{21} \cdot g_1) \end{aligned}$$

The change in the equity capital situation due to returns is shown by the following equation, where $(\hat{x}_1, \hat{x}_2)$ is the vector of the new equity capital after returns:

$$(5) \quad \begin{aligned} \hat{x}_1 &= x_1 + h_1 = \frac{1}{1 - b_{12} \cdot b_{21}} \cdot (y_1 + g_1 + b_{12} (y_2 + g_2)) \\ \hat{x}_2 &= x_2 + h_2 = \frac{1}{1 - b_{12} \cdot b_{21}} \cdot (y_2 + g_2 + b_{21} (y_1 + g_1)) \end{aligned}$$

$1/(1 - b_{12} \cdot b_{21})$ reflects the puffing-up effect of the equity and the returns through reciprocal shareholding.

From (5), it is evident who within the group finally gets the original profits resp. who finally has to carry incurred losses with the consequence of a reduction in equity capital.

5.2.2. Effects on solvency depending on different types of risk

If we measure – like the EC-Solvency regulations do – the solvency by the amount of “free assets”, then these represent the maximum loss (“critical loss”) which a single insurance company can carry just to the point of being ruined. As in a group of companies the unconsolidated equity is possibly not equal to the critical loss, it is necessary to determine the tolerable critical loss as a measure for the security of the company.

We have to distinguish between *independent and parallel risks as two cases*:

(1) Independent risks

In this case, the returns g_1 and g_2 are stochastically independent and shares are nothing else than any other asset item whose realization value is also more or less uncertain. It can be taken for granted that the risk of realization is already reflected by the statement value. In the case of independence the risk affecting the value of the shares held in another insurance company, which is even itself protected by solvency regulations, is not extraordinary and nothing else but the risks of other assets. Following this, the critical loss for company 1 (for company 2 by analogy, as below in [8]-[14]) can be determined as:

$$(6) \quad g_{1(min)} = \{g_1 \mid \hat{x}_1 = 0 \wedge g_2 = 0\}$$

The condition $g_2 = 0$ is in the logic of this kind of regulation. In reality, g_1 and g_2 are independent stochastic variables, normally with a positive expected value. Of course, there is a certain probability that g_1 and g_2 may happen to be negative in the same period, but that is negligible and corresponds to the possibility of the positive effect of risk compensation if g_1 and g_2 have opposite signs.

To give a slight impression of the effect on solvency it is supposed that the stipulated solvency margin represents a given maximum ruin probability Ψ which should be very small (e.g. .01). Then it follows that the probability of an independent occurrence of the critical losses in company 1 and company 2 in the same period is approximately $\Psi_1 \cdot \Psi_2$, which is extremely small compared to Ψ .

From (5) and (6) it follows:

$$(7) \quad \begin{aligned} g_{1(min)} &= -(y_1 + b_{12} \cdot y_2) = -x_1 \cdot (1 - b_{12} \cdot b_{21}) \\ g_{2(min)} &= -(y_2 + b_{21} \cdot y_1) = -x_2 \cdot (1 - b_{12} \cdot b_{21}) \end{aligned}$$

Interpreting this result we have to distinguish between two sub-cases of practical relevance:

- (α) Simply related group structure
which means that there are clear relations of subordination between parent company and subsidiary; in our case this means:

$$b_{12} \text{ or } b_{21} = 0.$$

- (β) Interrelated group structure with feed-back
in the case of two companies this is reciprocal shareholding:

$$b_{12}, b_{21} > 0.$$

In case (α) it follows that:

$$(8) \quad g_{1(min), (\alpha)} = -\hat{x}_1$$

This means that each company is provided with a solvency margin to the amount of the equity capital shown in the statement, including those parts invested in shares of insurance companies. A reduction by the book value of this share is not indicated. Situation (α) is certainly the normal case.

In case (β) there is an obvious puffing-up effect. As a result, x_1 (the shown equity capital) expresses a fictitious solvency. So equation (7) (third term),

$$(9) \quad g_{1(min), (\beta)} = -x_1 \cdot (1 - b_{12} \cdot b_{21})$$

shows that the statement equity x_1 has to be adjusted by a factor < 1 .

On the other hand, it can also be seen from the second term of equation (7) that the solvency is always higher than the original equity capital because the other company partially carries the losses:

$$(10) \quad x_1 > |g_{1(min), (\beta)}| > y_1$$

Aside from the puffing-up effect there is also a risk-spreading effect which works positively for the solvency. Therefore, a reduction of "free assets" to the amount of the consolidated equity capital cannot be justified.

(2) Parallel risks

In this case it is assumed that the risks of the different companies belonging to the group are positively correlated which means that a loss in company 1 raises the probability for an original (e.g. underwriting) loss in company 2. This leads to a coincidence of underwriting and asset losses caused by the share holding of company 1 in company 2 (the case of negatively correlated risks is practically irrelevant).

To simplify matters, we assume a complete parallelism (coefficient of correlation $\rho = +1$). If the correlation is weaker ($0 < \rho < 1$), the following results have to be adjusted. This means that in case of a deduction from the value of shares found out to be necessary for matters of solvency control this result has to be modified, too: The possible deduction can then be reduced.

When calculating the critical loss $g_{I(min)}$ which determines the solvency of company 1, in (6) the condition $g_2 = 0$ must be changed.

If we assume a coincidental loss $g_2 = -y_2$ ⁴⁸ (case $[\gamma]$), it is obvious that for

$$(11) \quad g_{I(min),(\gamma)} = \{g_I \mid x_I = 0 \wedge g_2 = -y_2\}$$

it holds:

$$(12) \quad g_{I(min),(\gamma)} = -y_I$$

This means that in the unrealistic case of a complete parallelism ($\rho = +1$) of these losses – but just in this case – the solvency is equivalent to nothing more than the original resp. consolidated equity capital, i.e. the equity capital after deduction of the shares in companies of the group.

It can be shown easily that for “dependent losses” smaller than y_2 [(case (δ))] the effect on company 1 is weaker which means that $|g_{I(min),(\delta)}| > y_I$.

The situation of a capital interrelation with a feed back needs no separate consideration. From (7) it is immediately clear that the correcting factor for the elimination of the puffing-up effect can here be taken accordingly.

As a result it should be kept in mind:

- A complete reduction of the equity capital or “free assets” by shares in companies of the group should only be considered in the totally unrealistic case of a complete dependence of all risks with a coefficient of correlation of $\rho = +1$ (case $[\gamma]$).
- A partial reduction by the value of shares amounting to the difference of the corresponding critical loss

$$(13) \quad |g_{I(min),(\alpha)}| - |g_{I(min),(\beta)}|$$

and

$$(14) \quad |g_{I(min),(\alpha)}| - |g_{I(min),(\delta)}|$$

is justified if and only if a reciprocal interrelation or any other feed-back exists (case $[\beta]$) or if positively correlated risks threaten the insurance companies in the group (case $[\delta]$).

Both effects may occur also at the same time.

Finally, it has to be pointed out that occasional reductions should not be made insofar as the value of the shares in the annual statement of company 1 is smaller than its portion of the effective equity capital of company 2 and vice versa.

Last but not least the critical final question has to be answered:

Do parallel risks exist, and if this is the case, how often do they appear and how strongly correlated are they?

⁴⁸ This can be interpreted such that the total portfolios of company 1 and company 2 imply parallel risks with a strict correlation. It might also be thought of as $g_2 < -y_2$.

The simple case of two insurers participating in the same portfolio by a quota share reinsurance agreement is possible, but rare and only concerning small parts of the business. But cases where similar risks in the same region are insured should be considered as well as non-underwriting influences like those caused by business cycles or from mismanagement in a holding company. In general, however, the parallelisms seem to be less frequent in practice than in the belief of the supervisory authority.

5.3. *Consequences to financial conglomerates*

“Double gearing” is a misleading notion for stock investments among insurers or between banks and insurance companies, because no danger of parallel risks arises except in very special cases, which can be better controlled by different means. Investing equity into another insurance company – as we have shown – does not reduce solvency in the normal case of independent risks; there is no reduction of risk bearing capacity, if some of the assets of an insurance company are changed into shares of another insurer underwriting different lines or of a bank.

Every special case other than concerning independent risk and the simply related group structure (case [α] as it is specified above) can be controlled in a better way by special regulations than by needlessly overstated solvency margins. The transparency rules in the proposed *BCCI-Directive*⁴⁹ may help to supervise exaggerated or undesirable financial transfers within a conglomerate.

The remarkable differences between banks and insurance companies in this concern are:

- There is no danger of combined liability between different insurance companies or banks and insurers;
- The risk of economic cycles with parallel risks for the whole industry is by far smaller for insurers compared with banks.
- The credit and interest risks of the asset side has got an essential impact on equity for banks. With regard to insurers the impact is mainly due to the underwriting risks on the liability side of the balance sheet, while their investment risk or asset risk resp. is regulated by special stipulations.⁵⁰

5. **Conclusions**

- The problem really exists.
- A lot of aspects are not yet fundamentally analysed.
- Existing technical provisions let believe that a summation of them would be the most simple method to solve the problem, especially to get over the fear of dark and mighty conglomerates.
- Solvency control based on consolidated equity capital is not appropriate to take the risk situation of a holding of banking and insurance companies into account.
- In contrast to the results the prophecy on the behaviour of politicians is that they will implement the supervision of conglomerates on a consolidated basis nevertheless. It seems to be the simplest solution. And they know that scientists do not offer any covers, or guarantees respectively, as reinsurers and banks do.

⁴⁹ Cf. Proposal for a Council Directive (93) 368, art. 2, 4 and 5.

⁵⁰ Mudrack e.g. stresses the special danger that insurance companies may invest substantial parts of their assets as credits into banks they are linked with. That could actually cause parallel risks, but avoiding this is directly a matter of investment regulation of insurance companies. It is not a problem of solvency control. Cf. O. Mudrack, loc. cit., p. 562.