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A CRITIQUE OF THE UK APPROACH TO THE SUPERVISION OF BUILDING SOCIETIES

by

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A Doctoral Thesis

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Abstract

The objectives were to evaluate the prudential supervision of UK building societies and to produce a blueprint for reform. The cases for and against regulation with particular reference to financial institutions and building societies were evaluated and the objectives of regulation were subsequently incorporated into a building society questionnaire. The supervision of societies since the Building Societies Act 1986 and five case studies were examined with respect to five objectives of supervision. A series of semi-structured interviews were conducted with members of the industry.

The theory and practice of questionnaire design as well as possible statistical techniques were examined. In requiring reasons behind the answers, an impact matrix approach was appropriate for the building society questionnaire and three weighted formulae were applied to the data in order to convert it into a suitable form for the application of the regime method. Correlation matrices were also used. A consumer survey used weighted formulae and correlation matrices.

A blueprint for reform was devised which included one supervisory agency for banks and building societies, the retention of mutuality (leading to mutual banks), a simplification of the capital adequacy rules, a lender of last resort, a minimum cash requirement, a rise in the wholesale limit to 50 per cent, more spot checks and an increase in the level of investor protection.

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CHAPTER 1: INTRODUCTION

The objectives of this research are to evaluate the prudential supervision of UK building societies and to produce a blueprint for reform.

The theoretical framework for the research is contained in Chapter 2, which evaluates the cases for and against regulation with particular reference to financial institutions and building societies. The objectives of regulation are subsequently incorporated into a building society questionnaire, questionnaire 1.

Chapter 3 analyses the supervision of building societies since the implementation of the Building Societies Act 1986 with respect to the five objectives of supervision, as outlined in Chapter 2. Five case studies are examined in Chapter 4 with respect to these five criteria.

Chapter 5 analyses the theory and practice of questionnaire design as the foundation for the construction of two questionnaires. A series of semi-structured interviews are to be found in Chapter 6 designed to: (i) elicit the views of key building society personnel, the Building Societies Association, the Building Societies Commission and HM Treasury on general and specific aspects of prudential supervision; and (ii) obtain the comments of the above building society staff on various drafts of a questionnaire to be sent to all societies.

Chapter 7 analyses the possible statistical techniques which may be applied to the questionnaire data and then examines in detail the actual methodology. Most of the emphasis is laid upon questionnaire 1 because it elicits the views of the industry, contains a much longer and far more complicated series of questions, relates objectives to techniques and therefore requires a more sophisticated and complex statistical analysis. On the other hand, questionnaire 2 is simpler and shorter.

In requiring reasons behind the answers, an impact matrix approach is appropriate for questionnaire 1 and three weighted formulae are applied to the data in order to convert it into a suitable form for the application of the regime method, chosen because it is uncluttered, elegant and tractable. Correlation matrices are also used.

The analysis of questionnaire 1, addressed to building societies, is carried out in Chapter 8 where societies are divided into smaller and larger institutions. An analysis of a consumer survey, questionnaire 2, forms the substance of Chapter 9 where a weighted formula and correlation matrices are used. The relationship between the questionnaires is explored in Chapter 10.

Chapter 11, the concluding chapter, contains a summary of the results from the questionnaires and a blueprint for reform, derived from earlier chapters.

CHAPTER 2: RATIONALE FOR PRUDENTIAL CONTROLS

2.1 Introduction

Financial institutions are subject to controls by governments for three principal reasons: firstly, monetary and macro-economic policy reasons connected with regulating the economy;[1] secondly, investor protection, which arises basically either from various forms of market failure[2] or the failure of a financial intermediary(ies); and therefore, thirdly, prudential regulation· defined by Sinkey (1979, p 27) as constituting the maintenance of the safety and stability of the banking (and financial) system or maintaining depositors' confidence in the system. As Sinkey says, bank failures due to severe contractions in money stock and credit are not the province of regulation and supervision and, consequently, this chapter and the research as a whole concentrates upon investor protection and prudential regulation.

A distinction is usually made in the literature between prudential regulation, which encompasses a combination of legal and administrative measures, and supervision which refers to the process of monitoring the operation of institutions, to ensure compliance with the regulations and the avoidance of imprudent behaviour (Gardener, 1986b, p 32; Llewellyn, 1986, p 9; and Swann, 1989, p 3). Such an apparently considered or rational approach to financial sector regulation can be misleading because, as Gowland

points out (1990, p 2), the reality is that of a pragmatic approach, where the major British and American regulatory legislation has always been in response to a scandal or a crisis.[3] Also, the ability to guarantee an absence of failures within the financial sector is neither a practical nor a desirable proposition. Regulation and investor protection may contribute to a moral hazard risk (Gunther & Robinson, 1990, p 6), a misallocation of resources, may deter potential entrants and may keep less efficient firms in business.[4] Sinkey (1979, p 27) thus states the overall goal of regulation to be one of limited failure prevention and this is confirmed by Corrigan, the President of the Federal Reserve Bank of New York (1992, p 7), and the Deputy Governor of the Bank of England (BOE), the latter saying that regulators "cannot reasonably be expected to guarantee 100% success in the area of consumer protection" (1992).

2.2 The Case for Regulation

2.2.1 Market Failure

Market failure may be divided into five broad overlapping classes designed to: (i) protect consumers from the excesses of monopolistic or oligopolistic power; (ii) reduce the element of excess competition; (iii) stimulate competition; (iv) address the problem of asymmetric information; and (v) decrease the consequences of externalities.[5] Three consequences of market failure are 'competition in stringency', the public interest theory and

systemic interest theory.

There is often concern that oligopolistic banks or building societies may abuse their dominant market position via, *inter alia*: excessive charges; a restriction in the range of services offered; and lower interest rates for investors and higher ones for borrowers than might apply, given a more competitive market place - resulting in 'supernormal' profits or economic 'rent' (Breyer, 1984, p 235). This is not a theoretical abstraction because banks and building societies have each operated interest rate cartels and consumers can frequently find themselves possessing weak or unequal bargaining power (p 237). The solution may be legislation, *eg* the 'best advice' principle following the Financial Services Act 1986.

The logic for intervention follows the industrial organisation (IO) model (Sinkey, 1989, pp 154-55) which postulates the following relationship:

structure → conduct → performance

where structure refers to the number of firms in the market,
conduct to their behaviour and
performance to the quantity and quality of products and services produced by firms in the market.

In other words, the implication of the IO model is that the greater the number of firms, the greater the competitive

intensity and the greater the chances of high quality goods and services at competitive prices. Whilst regulation may create or maintain a safe environment with limited competition, technological changes (Swann, 1989, p 17) can upset this regulatory equilibrium. For instance, electronic corporate treasury management was introduced by the American banks as a means of circumventing geographical restrictions. It is equally possible that there is too much rather than too little competition, *eg* an influx of new entrants attracted by the potential for supernormal profits. Prices may fall (Breyer, 1984, p 235), firms may leave the industry and prices could then rise to levels higher than before the influx.[6] In a financial context, the implication is that new arrivals may add substantially to the competitive environment so that the failure risk is increased, confidence dented and that particular market sector unsettled.

Excessive competition can additionally prevent the achievement of potential economies of scale (p 237) and this lack of rationalisation could be doubly important if the country is small and/or faces stiff international competition, a factor highlighted by the Governor of the Central Bank of Ireland (Doyle, 1988, p 54).

The main rationale behind increasing the level of competition, where little exists, is to attempt to boost the efficiency of an industry. Various commentators have divided efficiency into several classes. Productive efficiency is

represented by output and economies of scale. It is important that a misallocation of resources does not occur and allocative efficiency, with respect to the financial system, is defined by Hall as the extent to which savings gravitate towards outlets offering the highest risk-adjusted rates of return (1987a, p 1).[7] Operational efficiency is the extent to which real resources are consumed during the savings transfer process or resource costs are minimised for any given level of service provided, while dynamic efficiency illustrates the ability of the financial system to adapt, in an optimal fashion, to the changing needs of the users of financial services.[8]

A very practical problem is that investors may not possess sufficient information, skills or time to calculate a comprehensive and accurate risk assessment - hence a role for government intervention.[9] The existence of inadequate or asymmetric information,[10] whereby all the parties do not possess the same information (nor, in the real world, the same analytical competence) means that is reasonable to expect the regulators to be able to possess more information than investors and to be a better position to carry out the relevant analysis, although Miles (1990) disputes this, saying that it is not obvious that a central bank is necessarily in a better position. As Davis states (1993, p 50), rating agencies can obtain at least some of the information available to supervisors and the sanction of a downgrading offers a strong incentive for institutions to

provide such information.

Externalities are defined in what has become known as the Coase Theorem (Coase, 1960, p 1) as the actions of business firms which have harmful effects upon others.[11] Doyle (1988, p 54) stresses the dangers of contagion in banking, *eg* not only the depositors of the Bank of Credit and Commerce International (BCCI) being directly affected by collapse of the bank in 1991 but other depositors, especially local authorities (some of whom had placed substantial sums with the bank), reassessing other institutions and consequently moving funds to 'safer' institutions. This 'flight to quality' thus affected non-BCCI depositors and other banks and building societies, as evidenced by the subsequently revealed secret support operations by the Bank of England to keep certain other banks afloat (Atkinson, 1993; Brummer, 1993 and Whitebloom, 1993). A further example is the time of the Building Societies Commission (BSC) taken up in dealing with Abbey National's conversion procedure so that delays were caused in attending to the requirements of other societies.

Coase suggested that if transaction costs were not too large, then the free market could cure the externalities, but this implies that those causing the externalities are able and willing to negotiate with those affected. As Nakamura says (1993), private market solutions are likely to be inadequate and one could go further to suggest that, at times, it would be impossible to calculate certain

externalities such as contagion effects, by which time it might be too late for the initially healthy institutions - hence the case for regulation.

A frequently used argument against excessive regulation is where a country believes its financial institutions to be suffering a cost disadvantage *vis-à-vis* other countries because it operates a more intensive or extensive regulatory régime - 'competition in laxity'. However, the reverse may apply (*ie* an advantage) for small countries with financial institutions which have important business outlets abroad and which need to attract foreign investment. Maurice Doyle, Governor of the Central Bank of Ireland, said in 1988 (p 55) that it was essential for Ireland to develop a regulatory framework to the highest possible international standard. The fear was that a failure to do so would undermine the republic's ability to attract capital, develop the financial sector and to expand the sector's overseas operations,[12] *ie* a bank's nationality possibly providing it with an advantage if it signals comparative safety of deposits (Van Cayseele, 1992, p 75) - 'competition in stringency' (Gowland, 1990, p 34).

The public interest theory, a well documented field,[13] states that regulation is supplied in response to a demand from the public (or should be supplied) for relief from inequitable or inefficient market practices (Gardener, 1986b, p 30).[14] This can be extended to include the consequences of the failure of a financial institution - the

prevention of welfare losses arising from bank 'runs' being the *raison d'être* of bank supervision (Hall, 1991a, p 198) or what Llewellyn terms the catastrophe element from the consumers' point of view (1986, p 13). The classic sufferer is the proverbial widow or orphan (Gowland, 1990, p 50) or the 'naive poor' (Gardener & Molyneux, 1988, p 52). Similarly, Hall (1989, p 117) stresses the protection of the small or less financially sophisticated investor against fraud[15] or the 'sleaze factor' (Gowland, 1990, p 5) on the one hand or managerial ineptitude on the other (Capie & Wood, 1991, p xxi).[16]

The public interest argument can be criticised on several grounds. It is a negation of the concept of market forces and may result in economic distortions. It may equally lead to an atmosphere of paternalism (Breyer, 1984, p 238) and moral hazard (Deputy Governor, 1992), where the government claims to know better than the individual what the latter wants or needs and only the government can reach a rational or 'correct' decision, which the consumer cannot or may not be in a position to make.

Stigler (1971 and 1975) and Posner (1984) have been two of the chief critics of public interest theory[17] and Posner identifies the frequent simplistic (implicit) assumption that regulation is virtually costless (p 241) emphasising the lack of empirical evidence to link regulation to the presence of external economies or diseconomies or to monopolistic market structure. The intractable nature of

many of the tasks assigned to regulation raises the thorny question of how to translate the theory into law and into practice, since the theory may answer the question 'Why?' but not 'How?'[18] As Kling says (1988, p 199), the theory assumes that an appropriate governmental authority can, without difficulty, determine and pursue the public interest.[19]

The externalities issue additionally leads us to the systemic interest theory. While the collapse of businesses, even large ones, in the industrial and commercial companies sector may give cause for concern, failure within the financial sector can trigger disproportionate effects by comparison, whether we consider banks or building societies. For example, the failure of financial intermediaries, even when initially on an apparently small scale, can precipitate a form of contagion (Gardener, 1991, p 110)[20] or a ripple/domino effect (Sinkey, 1989, p 153), both inside and outside that particular class of institution, because financial institutions rely predominantly upon public confidence and trust (Dale, 1992, p 5; and Doyle, 1988, p 54)[21] for their continued existence and, once this faith is in some way undermined, a 'run' on the institution may result, such as that experienced by the Southdown Building Society in 1991.[22]

The threat of a quickly spreading initial 'infection' usually tends to persuade building societies to mount a rescue operation along the lines of the standby financial

support from the Woolwich in the Southdown case or the earlier bail outs of the Wakefield, Grays and New Cross building societies.[23] Such a response, usually with encouragement from the authorities (though not in the Southdown instance), can stem from a sense of self-preservation rather than from an act of public spiritedness.

The externalities in the financial sector are risks (see above) and Maurice Doyle, the Governor of the Central Bank of Ireland, has highlighted the increased systemic risk during a period of rapid financial innovation (1988, p 55)[24]. Hence, there is a case for protecting the integrity of the financial system - the so-called systemic interest (Llewellyn, 1986, pp 10-11) or stability objective (Sinkey, 1989, p 153). The systemic interest or stability argument is often expressed in terms of a public good (Gowland, 1990, pp 44-45 and 49; and Kinsella, 1988, p 7) where everyone may benefit directly or indirectly from a stable smooth-running financial system, an essential requirement for the success of an economy because financial institutions provide liquidity and solvency whilst bringing together surplus and deficit financial units (Revell, 1975).[25]

2.2.2 Ethical or Social Regulation and Institutionalist Theory

Market failure and externalities bring us firmly into the area of social regulation, *eg* the problems of pollution or

contagion for consumers. Benston (1991, pp 228-29) uses the expression "ethical precepts" and cites banks providing 'life line' services for the poor.[26] A desire to promote home ownership in the UK led to tax concessions being afforded to building societies for many years. As Benston says, while it could be desirable to remove regulation in order to promote competition, it may be difficult to identify which course is more appropriate.

Fraud, unethical business practices and externalities give rise to social and ethical considerations, which have been formalised in the Institutionalist Theory of Regulation (Kling, 1988 and Tool, 1990).[27] This considers the economic system to be an expression of the broader social system and focuses on the evolution of economic institutions in response to the changing nature of society and its technological development. The analysis is extended beyond efficiency and market efficiency issues to embrace a range of ethical issues. The theory argues that if a society becomes large or fragmented, then a process of replacing implicit regulation with explicit regulation begins, *ie* the arrangements become more formalised or institutionalised. People then start to behave legally rather than ethically and interest groups develop, especially when new technology and the greater availability of and access to information lower the transaction costs of mobilising such groups (Kling, 1988, pp 202 and 207). The direction of regulation therefore becomes a function of the relative strengths of

producer and consumer interest groups.[28] Various coalition theories have consequently been developed and their implications for regulation are considered in section 2.3.2. The implications of the power of producer groups are embodied in capture theory (section 2.3.1).

2.2.3 Contestable Markets Theory and Free Banking

Baumol has put forward the **Contestable Markets Theory** (1982), where he defines a contestable market as one into which entry is absolutely free and exit is absolutely costless (p 3). The crucial point of originality is that the pressures of potential competition (from new entrants) compel firms, even under oligopoly, to act as if they were subject to perfect competition, *ie* the contestable market is therefore vulnerable to 'hit-and-run' entry (pp 2 and 4; and Davies & Davies, 1984, pp 44-45).

The costless entry and exit assumption is fundamental and technology[29] may assist in this respect, *eg* the pioneering of home banking by the medium-sized regional Nottingham Building Society (Jarman, 1987, p 2). Real world entry does involve costs and the theory makes the key assumption of the absence of sunk or irrecoverable costs. In other words, if there are entry costs which can be recouped on exit, for instance via a sale or a transfer to another industry, then the theory holds (Button, 1985, p 25; Button & Swann, 1989b, pp 15-16; and Davies & Davies, 1984, p 42). It is important, Llewellyn maintains (1986, p 12), not to forget that exit can cause externalities. For example, the systemic interest

can be affected by significant or frequent entry/exit causing instabilities (Button & Swann, 1989b, p 329), usually unwelcome in the financial sector.[30]

The theory does, however, provide a useful approximation of and explanation why firms may act as if more competition existed. If the assumption of ease of entry and exit holds, the range of the traditional adverse effects of monopolies and oligopolies - such as, for our purposes, low deposit rates, high lending rates or restricted consumer choice - may not apply. Thus, the public interest argument in favour of controls is weakened and the theory of Contestable Markets supports the case for fewer or minimal controls, self-regulation and deregulation.

Free or *laissez-faire* banking also favours minimal[31] regulation and may be defined as a banking sector which satisfies three conditions: (i) a competitive note issue; (ii) low legal barriers to entry; and (iii) no central control of reserves (Schuler, 1992, p 8). The principal examples of free banking were in the nineteenth century and, according to Dowd (1992, pp 3-4), there is little historical evidence to suggest that free competition tends to destabilise the banking system. Failures appeared generally to have been limited and not contagious. Moreover, given the absence of a lender of last resort (LLR) or government-sponsored liability insurance, banks had to be careful in their lending policies, *ie* reducing moral hazard. Despite the apparent stability on balance of free banking,

it was a combination of banking crises and the desire of governments to control the note issue that led to its decline (Schuler, 1992).

While Contestable Markets Theory and free banking support the case for little or minimal regulation, the financial sector is characterised by licensing systems (Van Cayseele, 1992, p 76) and by other factors such as the ability of lenders to undercut each other selectively with reference to the borrowers' credit ratings. Thus, it may be difficult to apply either theory to the financial sector and Baumol concedes the general problem of matching the former theory to the real world (1982, p 2). Finally, as failures and problems continue, the pressure increases for more not less regulation.[32]

2.2.4 Regulation and the Financial System

Having examined the general arguments for regulation, let us now add the special role of the financial system. The nature of financial services means that they usually fall into the category of credence goods, whose quality can only be established after purchase and then can never be fully established (Llewellyn, 1986, p 10; and Quinn, 1992, p 61). Consumers taking out 'with profits' endowment policies have no guarantee that there will be any bonus, let alone its size. Investors receiving advice from financial advisors cannot be sure how accurate the advice will prove to be. A depositor cannot be certain that when he/she writes out a cheque, assuming there are sufficient funds in the account,

that the bank or building society will itself have the necessary funds to make the payment. Additionally, borrowers may be subject to 'unfair' loan conditions and are often given protection, *eg* the previously very strict US usury laws applicable in some states.

Personal and corporate customers rely upon the existence of an efficient, safe and speedy collection and payments system (Corrigan, 1990b, p 4).[33] In addition, the credit decisions of the banking sector remain the most important element in determining how a society's savings are deployed and such decisions therefore determine which businesses and industries receive credit and which do not (pp 4-5). Any interruption in these processes could seriously jeopardise the ability of the financial system to satisfy the public good concept, as single or multiple bank failures could cause borrowers to seek credit elsewhere on more expensive terms.

Financial intermediaries, especially deposit-takers such as banks (Kinsella, 1988, p 6), are the ideal place for the perpetration of fraud and the Grays and the Wakefield are prime examples in the building society sector.[34] Penalties for insider dealing , an instance of asymmetric information, are now enshrined in UK law (Hall, 1991a, p 168; and Miles, 1990 and 1992) and 'Chinese walls' or 'fire walls' have had to be created to separate different sections of a financial institution where there is a danger of a conflict of

interest (Maycock, 1986, p 78).[35]

However, the success of the financial sector is primarily a function of confidence[36] and its stability is central to the promotion of economic growth. Increased deregulation, innovation and globalisation can be determining factors and there is a danger of the emergence of 'competition in laxity'.

Rybczynski (1985, p 35) has classified the functions of a financial system into five main areas:

(i) the provision and management of a payments mechanism for current and capital transactions;
(ii) facilities to collect and invest long-term savings;
(iii) facilities enabling savers to purchase directly marketable securities (typically medium- or long-term), comprising debt and risk capital;
(iv) facilities for the sale and purchase of short-term financial instruments; and
(v) facilities offering hedging opportunities.

The first three, dealing with savings and their uses, are the core functions and the remaining two are complementary.[37] Rybczynski's first two functions have been traditionally fulfilled by banks and are often called the payments (or liquidity) and savings assets roles (Gardener, 1986e, p 59; and Scott, 1991, p 501). Banks are major credit sources for the personal and corporate sector, they are

involved in management of asset portfolios (assuming a risk-sharing function), some are stock exchange market-makers, many employ hedging techniques and they routinely make significant use of the wholesale money markets. They may fulfil most or all of these roles in some countries, although one often finds more specialist intermediaries performing some of the roles, such as: (i) insurance companies operating as long-run savings vehicles; (ii) unit trusts and investment trusts as a means of diversifying an investment portfolio; and (iii) brokers acting as financial advisors and as a channel to the securities markets. In all these cases the problem of asymmetric information may arise between the financial intermediary and the customer. Bank or building society 'runs' and sudden sales of units to unit trusts or a surge in the selling of the shares of investment trusts may generate externalities and social costs. Thus there is a case for regulation.

Some of the rationale for the regulation of building societies may be derived from bank regulation in that societies have payments (or liquidity) and savings assets roles, although in somewhat different ways and without a large direct impact upon the corporate sector, which a bank failure might precipitate. Only a handful offer share-dealing facilities for customers, despite being involved in fields such as insurance, personal pensions and estate agency. They can, of course, engage in hedging

transactions but not on behalf of customers, *ie* they are required to have relevant underlying commercial reasons and are not allowed to speculate or trade like banks. The traditional rationale for the supervision of building societies, according to Hall (1991a, p 172), has had its roots in social policy, providing a safe savings vehicle and a source of mortgage finance.[38] Social and political considerations remain in practice the principal determinants of building society legislation[39] and there is therefore a convenient link with Institutional Theory.

2.3 The Cost of Regulation

Various arguments have developed to support the case against regulation, but these do not constitute the whole case because for many commentators the choice is not between some regulation and no regulation. Instead, the debate centres on the appropriate balance of intervention and market forces, *ie* to decide whether there is under- or over-regulation (*eg* Cooke, 1992, p 15; and Corrigan, 1990a, p 176). Another issue is that of attempting to ensure that regulation is not required to perform too many functions, *eg* social roles (Llewellyn, 1986, p 74). A complication is that there may be a difference between the stated and actual goals (Stigler, 1975, p 140) and, in many countries, once regulation is in use it becomes difficult to remove and almost self-perpetuating (Gardener, 1986e, p 50; and Kinsella, 1988, p 10). Finally, there is the problem of overlapping or

a multiplicity of regulatory agencies, *eg* the USA.

2.3.1 Regulatory Capture or Capture Theory

Some suggest that regulation, rather than acting in the interests of the general public or the system as a whole, might be taken over or 'captured' by the regulated institutions - regulatory capture or capture theory.[40] The central thesis of the originator, Stigler (1971; and 1975, p 114) was that regulation may become acquired by the industry and so become designed and operated for its benefit. Kling refers to this as "an air of pessimism" (1988, pp 199-200). While much empirical work has been carried out, it tends to relate to areas such as transport and not to financial services (Capie & Wood, 1991, p xiii). However, Scott (1991, p 504) applies it to the financial sector and there are instances where it might appear to operate in practice. For example, Self-Regulatory Organisations (SROs) are almost by definition prone to capture (Pawley *et al*, 1991, p 249) and even the BSC has relied on staff seconded from building societies. Another instance is the speed with which the Building Societies Association (BSA) was able to persuade the Treasury to increase the wholesale funding limit[41] and the speed of change with respect to Schedule 8.

The theory comes from the US environment and its practice of political appointees, who may come from the regulated industry and/or expect subsequent jobs in the industry. They may, as a result, have a vested interest in not 'rocking the

boat'. Benston (1991, p 229) goes further and suggests that regulation is imposed to redistribute wealth to those with political power.

A Marxist version of capture theory (Posner, 1984, p 233) states that big business controls the institutions of society, including regulation, and therefore capitalists must control regulation. Posner, though, distances himself from this and stresses that a great deal of regulation may, on the contrary, help small business or non-business groups, *eg* farmers, pharmacists and barbers. Also, general capture theory does not explain why it seems that consumer groups may not be readily able to 'capture' the regulators. (The answer may lie with cost, time and organisation - see 2.2.2 and 2.3.2.) Stigler's riposte (1975, p 137) is that it is not a matter of special interests or the public interest. Instead, each group attempts to maximise its own utility function.[42]

Irrespective of capture theory, Kinsella (1988, p 8) suggests that regulated firms may become used to a particular form of regulation, adapt to it and follow an 'easy life' syndrome. Notwithstanding the above, Stigler's solution (1975, p 132) is to change the political support for regulatory agencies and to reward agency members on a basis unrelated to their services to the industry.

2.3.2 Coalition Theories and the Regulatory Dialectic

Capture or self-interest theory (Posner, 1984, pp 244-45; and Stigler, 1975, p 139) has been developed by Pelzman

(1976) into a theory of the optimum size of effective political coalitions. Hirsleifer (1976, pp 241-42) has criticised Pelzman since he fails to include the regulators themselves as an interest group. More fundamentally, Pelzman's identification of the regulator with the elected politician is too radical a simplification and a distinction needs to be drawn between a civil servant, who has permanent tenure and stands to gain by an expansion of the regulatory agency, and the independent commissioner who is normally appointed for a fixed term and has other business interests. Finally, Pelzman, does not allow for competition between regulators - 'competition in laxity'.

Spiller's approach (1990) has been to develop a multiple-principals agency theory of regulation, based on a three-player model - Congress, the interest group (the industry) and the regulator. His data from the Interstate Commerce Commission (ICC), the Civil Aeronautics Board (CAB) and the Federal Communications Commission (FCC) shows that patronage appointments and younger regulators were more likely to obtain a regulated industry job and that interest groups can exert influence, indirectly, through the electoral connection and, directly, by trying to influence the regulators - *ie* support for regulatory capture theory and similar results to those of Pelzman (1976), neatly summarised in his sub-title 'Let Them Be Bribed'.

A more general view of much of the above material is contained in the regulatory dialectic or struggle model

(Kane, 1981, pp 355 and 358-59; Llewellyn & Drake, 1988b, p 122; and Sinkey, 1989, p 160 *ff*), based on Hegel's concept of the dialectic, which examines the interplay or on-going battle between the regulators and the regulated, as each tries to outwit or outguess the other.[43] The regulators attempt to plug the loopholes (so-called 'loophole mining' - Kane, 1981, pp 355 and 358-59) while the regulated, motivated by profit maximisation (or, in the previously traditional building society environment, growth, etc), are spurred into financial innovation. To the extent that regulation may trigger innovation Sinkey says (1989, p 160) that the regulatory dialectic may be viewed as a theory of financial innovation - or circumventory innovation (Baer & Pavel, 1988; and Breyer, 1984).[44] Another factor which may emerge is the time lag before the regulator identifies a loophole and initiates corrective action[45] - a criticism which may be levelled at the Bank of England over the BCCI affair. Moreover, the regulator may purposely act slowly, non-feasance, which has one special sub-category 'taking forever to act' (Stigler, 1975, p 172). This is explained by Kane (1981, p 361) in that the political system is far more forgiving of excessive delay than it is of hasty and ill-considered action.

2.3.3 Regulatory Failure

Regulation may be intended, *inter alia*, to cope with the excesses of market failure, but it may be ineffective or may actually cause various side effects, with the invisible hand

or impersonal nature of the market being subject to interference. (Breyer, 1984, p 235). Financial regulation normally involves entry restrictions entailing start-up costs and delays and, though designed for prudential reasons, can deter potential entrants and thereby result in the construction of a protective wall around the incumbent institutions. The consequences will tend to be a reduction in competition and an easier or less risky life, causing higher profits which are more likely to be sustainable in the long-run (Capie & Wood, 1991, p xvi). Gardener takes this line further and identifies the resultant possibilities for cross-subsidisation and unfair competition being generated in another part of the financial sector (1986e, pp 50 and 53).

It is therefore possible that regulation could contribute to a misallocation of resources, thereby lowering efficiency (Hall, 1987a, p 155). There may also be an associated loss of economic welfare (Gowland, 1990, p 24) where there is an incentive for market players to restrict output and consumer choice.

Regulation can lead to major distortions where there are constraints on the permissible activities of financial organisations.[46] Institutions may not be permitted to diversify their assets as they would wish (Llewellyn, 1988a, p 6) and so one effect of regulation can be, perversely, to increase overall risk (Smith, 1987, p 35).[47] This leads Benston to term regulation as potentially destabilising

(1991, p 226).[48] Activity restrictions clearly impact significantly upon the planning process, where the institution needs to monitor the relative growth of different types of business in order to ensure compliance with the relevant ratios. Additionally, institutions which expect legislative changes will then have to forecast their likely content and implementation date(s).

Inflexible or out of date regulations may prohibit certain newer activities (not envisaged at the time the rules were constructed) - *eg* the creation of new types of financial instruments - and there can be often substantial regulatory lags before the regulators catch up (Kane, 1981, pp 355 and 358-59; and Pelzman, 1976, p 227).[49] Innovation may be deterred - hence the argument for deregulation (Mikdashi, 1990b, p 252) - and, according to Gardener (1986b, p 29), financial intermediaries may end up satisfying the supervisors rather than the market.

In contrast, Baer & Pavel (1988) and others[50] argue that circumventory innovation[51] may occur (see section 2.3.2), as ways around the regulations are actively pursued and exploited, *eg* the prohibition on unsecured lending by building societies prior to the 1986 Act forcing societies to link with banks in order to provide cheque books and cheque guarantee cards for their customers (Jarman, 1987, p 2). An alternative approach is a change of regulator, such as the Abbey's conversion into a bank in 1989, or the creation of hybrid institutions outside the net of controls,

eg the Household Mortgage Corporation and National Home Loans.[52]

A major drawback to regulation can be that of costs, especially important when there is competition in laxity or a lack of domestic or international competitive neutrality. The authorities have to devise, operate and update a system of controls, while the financial institutions may be subject to direct costs, such as an annual licence or deposit insurance fee, and indirect costs,[53] such as a distortion in the types of activities undertaken arising from a disparity in capital requirements[54] or the cost of providing information to the supervisors (Doyle, 1988, p 54).[55] The preceding costs may be summarised in the expression 'regulatory taxes' (Baer, 1988, p 2).

As the Deputy Governor of the Bank of England wrote in 1984 (p 48), "there may grow up the belief that either the authorities will not allow institutions to fail, or that if they fail the depositors or policy holders will be 'bailed out'" - the moral hazard risk.[56] To the extent that this belief exists, both intermediaries and investors may be tempted to engage in higher risk (and return) activities - confident in the apparent existence of a 'safety net'. There is therefore a danger that consumers may neglect the *caveat emptor* principle (Stigler, 1975, p 181) and there may be an additional, not necessarily correct, belief that larger institutions always safer - a dangerous assumption, *eg* BCCI. The existence of deposit insurance may then exacerbate the

moral hazard problem by encouraging excessive risk-taking by depositors or institutions. As Gunther and Robinson have stated, there is consequently a "tradeoff or continuum of sorts" between moral hazard and depositor safety (1990, p 6). One reaction to this has been assessing an intermediary's premium in relation to risk.

The Federal Deposit Insurance Corporation (FDIC)'s 1986 proposals involved a combination of measures of performance via a risk index and the examiner's judgements via CAMEL ratings to determine whether a standard or above standard premium should be imposed (Sinkey, 1989, pp 622-26).[57] Another approach is to apply the Black & Scholes option pricing model to the determination of deposit insurance premia, since it can be argued that deposit insurance is analogous to a 'put' option and can therefore be valued using standard option pricing techniques (Carisano, 1992, pp 111-18). Whichever approach is selected, the difficulty of measuring risks *ex ante* remains. Incidentally, it could be argued (Sinkey, 1989, p 622) that a standard deposit insurance premium is already implicitly risk-related because the riskier institutions will be subject to the implicit cost of regulatory interference.

One flaw in the regulation of financial institutions is that of allowing an insolvent institution to remain open - forbearance (Baer, 1990, p 2).[58] This can encourage excessive risk-taking and the likelihood of fraud (Nakamura, 1990 , p 20-21), but US supervisors have increasingly tended

to succumb to the temptation of forbearance with reference to both banks and S & Ls during and since the 1980s (Fahey, 1987) and the considerable discretion afforded to regulators has tended to encourage the practice (Jones & King, 1992, p 69). The authorities may be concerned about the possibility of a 'domino' effect (and the systemic interest or the public interest), *eg* Continental Illinois in 1984 (Sinkey, 1989, p 153), when the cost of saving one of the top ten banks was considered to outweigh the likelihood of eventually having to rescue "hundreds" of others. Such an apparent 'too big to fail' policy is still with us and has been identified *inter alia* by Randall (1990, pp 63 and 66-67). A forbearance policy has also been applied to those US banks which have suffered because of Third World debt or domestic agricultural debt (Smith, 1987).

However, Corrigan (1991, p 7) says that the semantics of 'too big to fail' are often misleading because there have been cases in the US and elsewhere, where decisions were taken to protect broad classes of investors or depositors, when the banking institution at risk of failure was in fact quite small. Corrigan also refers to the very real threat of systemic risk and states there have been "a few close calls" (p 8). In other words, limiting forbearance can be a costly exercise.

Thus Nakamura states (1990, p 16) that there are two intertwined objectives of bank closures: firstly, to protect a deposit insurance fund and to keep down the deposit

insurance premia; and, secondly, to promote the efficiency of banking. Randall (1990, p 74) reinforces the former point, arguing that the authorities should not hesitate in restricting entry into banking by non-bank firms in order to avoid broadening the safety net. With respect to efficiency, Mikdashi (1990b, p 254) says that the closure of a loss-making bank is a "natural sanction of a free market." The consequences of seizure and closure of a problem institution, which remains potentially viable, are fairly serious (Randall, 1990, p 68) and therefore this understandable reluctance to act tends to turn into a temptation to support the institution whilst an assessment is made.[59] Such forbearance falls into Nakamura's threefold classification of closure (1990, p 16):

(i) efficient closure, which aims to close inefficient banks which jeopardise the deposit insurance fund;
(ii) general forbearance (as above) to give banks as much time as possible to return to health; and
(iii) quick closure, which seeks solely to protect the deposit insurance fund.

The latter class seems especially inappropriate for UK deposit-takers, since there is no standing fund for building societies and UK banks have not been subject to the failure rate and shocks of their US counterparts. Forbearance is often criticised (Davies & McManus, 1991; and Thompson,

1987) and even back in 1982 Baumol called it "perverse" (p 14). For example, according to Nakamura (1990, p 17), there has been general agreement that there was too much forbearance in the United States during the 1980s.[60]

Simonson (1992) is concerned about the delays in closure having knock on effects, thus adding to the eventual cost of remedies and raising deposit insurance premia. Also, as Kane stresses (1987), the 'dead' or 'zombie' institutions impose monetary and social costs by remaining in business and constitute an unfair drain on the profits of their healthy brethren.[61]

The Federal Deposit Insurance Corporation Improvement Act 1991 (FDICIA) is a comprehensive reappraisal of regulation[62] and encompasses new supervisory, examination and audit standards (Booth, 1993). It limits discretion and therefore forbearance in that it compels regulators to intervene when a bank's capital falls below certain levels - a detailed 'tripwire' instruction (*Economist*, 1992; Gasteyer, 1992 and Parry, 1992). This then raises the question of how to assign banks to various risk classes (Jones & King, 1992) and Gilbert (1992) queries the accuracy of the classification system.

The principal problem in the United States is that the claims on the deposit insurance fund have fostered forbearance.[63] One solution could be co-insurance, *ie* not offering full cover, and this is favoured by Kaufman (1987), Nakamura (1990, p 23) and Randall (1990, p 69). An

alternative, followed by FDICIA, is risk-based deposit insurance premia.

2.4 Conclusions

There seem to be several strong, sometimes overlapping, arguments in favour of prudential regulation and supervision and the case for less or minimal intervention largely rests upon either the ineffectiveness of regulation,[64] its costs and distortions or the view that these matters are best left to market forces or at least competitive neutrality. When considering the financial sector and building societies, a number of factors emerge and it is proposed to incorporate the principal objectives of regulation and some of their potential weaknesses, such as constraints or a lack of flexibility on the activities of an institution, into the following framework:

Table 2.1 Objectives of Regulation

Literature Survey Chapter 2	Building Society Survey Question 1
public interest	safety for investors
systemic interest	stability of the industry
competitive neutrality	level playing field
cost-effectiveness	cost-effectiveness
flexibility	flexibility

A series of interviews with building society personnel (see Chapter 6) revealed that the use of the correct technical terms for the first three objectives would not be understood or would be open to misinterpretation - hence, on the one hand, the use of simplicity and clarity and, on the other hand, the difference between the two columns, particularly with the public interest narrowed down to safety.

CHAPTER 3: THE BUILDING SOCIETIES ACT 1986

3.1 Introduction

"It has been a characteristic of the history of building society regulation that safeguards and powers have been added piecemeal to the framework set by the original Building Societies Act 1874 as the more notable failures showed them to be necessary." (HMSO, 1980, para 1247)

The above statement from the Wilson Report exemplifies the unstructured approach to prudential supervision in the UK and several additional factors emerged in the 1980s: (i) the disintegration of the building society cartel; (ii) the banks being freed from monetary policy constraints; (iii) moves towards fiscal neutrality; and (iv) pressure for competitive neutrality and wider powers for building societies.

The result was the Building Societies Act of 1986, which is basically designed to construct an overall framework within which building societies are allowed to operate and, therefore, much of the day-to-day supervisory detail and revisions are covered by secondary legislation[1] and Prudential Notes (Appendix 3.1).[2]

Supervision will be examined with reference to the objectives of regulation as outlined in Table 2.1, *ie*

(i) public interest[3] - narrowed to 'safety for investors';

(ii) systemic interest;

(iii) competitive neutrality;

(iv) cost-effectiveness; and

(v) flexibility.

3.2 Authorisation

Section 9(1) of the Act requires societies to be authorised before they can raise funds or borrow money[4]. The minimum qualifying capital was set at £100,000. The matter of key personnel in a society can be infinitely more important and the rules are consequently, tougher and far more precise than under the previous règime. The BSC can remove a director or other officers of the society, obtain information and documents from the society and possesses quite extensive powers in order to protect investors and to control the likelihood and extent of institutional failure. For instance, if it is concerned about a society's conduct of business, it can impose conditions on the current authorisation of a society or it can require a society to apply for renewal of its authorisation, where there is concern about the investments of members and depositors - as happened with the Peckham (BSC, 1989, p 22).[5]

The minimum capital of £100,000 is a seemingly very low figure, given the typical mortgage size and the dependence of savers upon a society, but it is designed to encourage small institutions and avoid the creation of a barrier to entry. Safety for investors as well as the systemic interest would probably be better served by a significantly higher figure in order to reduce the vulnerability of a

society to losses on the loan portfolio and to reinforce confidence in the institution, *eg* at least the ECU5m (approximately £3.5m) stipulated in an EC Directive.[6]

The rules concerning key personnel assist in protecting the public interest, where it is clearly impractical for investors to be able to exert the degree of influence and control open to the BSC. This is also relevant for cases involving fraud or managerial problems, *eg* the New Cross (Registry of Friendly Societies, 1984). The supervisors may, furthermore, be in a position to identify possible conflicts of interest. If any of the preceding concerns are significant, then there may be systemic implications, *eg* the Southdown Building Society;[7] and BCCI and the secret support operations by the Bank of England to keep certain other banks afloat (Atkinson, 1993 and Brummer, 1993).

The public can be greatly served by the removal of directors for reasons of incompetence or fraud and the criteria of prudent management, laid down in section 45(3) of the Act, spell out the functions which key personnel are required to fulfil.[8] 'Domino' or 'ripple' effect considerations are also relevant and one suspects that intervention, whether overt or covert, usually tends to involve a combination of safety for investors and the systemic interest. Indeed, Boléat feels that the Peckham case illustrates the success of the supervisory system[9] when the Commission "rightly" acts in secret, because of the likely adverse effect on

investor confidence.[10]

The EC minimum capital requirement affords an element of competitive neutrality between institutions and between member states.[11] While it is probable that there is nowadays far more attention given to the human factor in the regulation of the financial sector, *eg* the Financial Services Act, there remain marked differences in the detailed application between sectors and hence an unlevel playing field. Assessing the running of a financial institution is both costly and essentially a matter of subjective judgement. There also seemed at one time to be a growing inclination for intervention by the BSC and the BOE - more competitive neutrality[12] - but the latter now appears more reluctant to intervene.[13]

The imposition of entry restrictions is relatively easy and cheap to administer, although the danger of discouraging potential entrants may contribute to market failure, with the efficiency and quality of services being impaired. Some cost implications for a society lie in the internal monitoring or assessment, possible executive 'head-hunting' with respect to newer activities[14] and staff training programmes. The gains may arise in the preparation of detailed and justified plans and a resultant increased efficiency. Costs are also incurred by the Commission, in terms of time and direct investigation costs but there are, additionally, indirect costs upon the societies who need to

plan to satisfy the supervisor rather than the market.
With respect to flexibility the BSC can always demand a higher (*de facto*) minimum capital requirement if it is considered appropriate and this can create uncertainty on the part of potential entrants. Freedom or flexibility may suffer because of the personnel rules, but the scope for advice and intervention from the supervisor may be a virtue (the former being welcomed by the Commission). On the other hand, much flexibility can be lost as institutions attempt to anticipate the reactions of the BSC, the latter whose lack of flexibility can be illustrated in its inability (on its own) to enforce the winding-up of a society.[15] It must instead petition the court and the New Cross delays illustrate the supervisor's impotence in this respect.

3.3 Activity Restrictions

There are four principal aspects of activity restrictions: (i) geography; (ii) commercial assets; (ii) financial services; and (iv) the Schedule 8 Review.[16] With reference to geography, societies are empowered to lend directly in the Channel Islands, the Isle of Man and Gibraltar.[17] The (then) Registry indicated that the intention was not to bring in regulations to permit direct operation in the European Community and this is still the case "for the foreseeable future" (BSA, 1990, p 7), despite section 18 of the Act and the Second Directive.

Commercial assets represent total assets less the sum of liquid and fixed assets, and are divided into three classes with limits being placed on Class 2 and 3 assets (See Table 3.1). Class 1 assets are those secured on first mortgages to owner-occupiers of residential property. Class 2 is composed of non-Class 1 assets (*eg* loans to corporate bodies), while Class 3 equals unsecured lending, property and land ownership, investment in estate agencies and insurance brokers, etc and other subsidiary activities.[18]

Financial services or investment business must be carried out exclusively by authorised institutions and, rather surprisingly, the Financial Services Act (FSA) did not create a super-agency. Instead, powers are delegated to a designated body, basically the Securities and Investments Board (SIB) which can 'sub-contract' the power to a number of trade associations, known as self-regulatory organisations (SROs).[19] Drafting errors and BSA lobbying resulted in a Review of Schedule 8 of the Building Societies Act 1986[20], involving the Treasury and the Commission, and its conclusions (*EPR*, February 1988) led to a gradual extension of powers[21] into fund management, equity stakes in life and general insurance companies and a wider range of banking and housing services, *eg* stockbroking (PN 1988/3).[22] A series of proposals emerged in 1994 in the form of the Deregulation and Contracting Out Bill and a Treasury Review (HMT 1994a and 1994b).[23] The latter included proposals for unsecured loans to businesses, for societies to own their

own general insurance companies and even the possibility of full banking status.[24]

Overseas operations enable diversification of activities and assets and so may contribute to a reduction in the overall risk, according to portfolio theory.[25] For instance, business in the Isle of Man and the Channel Islands is likely to be conducted in sterling and will tend to attract a wider customer base. It could then be suggested that excessive constraints on overseas operations may mitigate against risk reduction. This argument is, however, weakened by the extent to which there may be higher, possibly unknown, risks[26] and a prime example is that a building society must stand 100 per cent behind its subsidiaries,[27] so that an investor in the Channel Islands has an effective 100 per cent unlimited deposit insurance protection in contrast to a mere 90 per cent of the first £20,000 on the mainland.

The commercial asset classes have been framed with credit and management risk in mind as well as the 'primary purpose' rule of the 1986 Act and are, by definition, designed to limit diversification. While one can appreciate the need to restrain potentially unbridled expansion in order to ensure safety for investors and to protect the systemic interest,[28] categorising assets into three groups is a rather crude process, compared to the rather more sophisticated classification of the former calculus (Appendix 3.4).

Table 3.1 Increases in Class 2 & 3 Limits

Class	Maximum %			
	1986 Act	Jan 1990	Jan 1991	Jan 1993
2	10	17.5	20	25
3	of which:			
	5	7.5	10	15

Source: Compiled from *Economic Progress Report*, February 1988, No 184, p 11

Despite the changes described in Table 3.1, the Class 2 and 3 ratios do have the effect of tying societies to the housing market, particularly mortgages, and the opportunity to diversify (risk) *à la* portfolio theory might be a way to avoid an over-concentration of risk.[29] One facet of protecting investors was catered for by the 'best advice' principle, which applies to independent financial intermediaries but not to introducers or tied agents, the latter being linked to one particular organisation and offering products from that source only. A wider range of services and higher Class 2 and 3 ratios have been implemented in the public interest, although the increase in the unsecured lending limit to £10,000 and subsequently to £25,000 illustrates the arbitrary nature of such restrictions.[30] The 1994 proposals[31] will enable a greater

freedom and diversification, especially if full banking status were to be achieved.

The geographical issue demonstrates a blatant lack of competitive neutrality between building societies and banks and in comparison with other EC financial institutions. Moreover, such restrictions impair the ability of an institution to diversify and, according to portfolio theory, could render risk greater than might otherwise be the case.[32] Building societies may lose customers to banks and foreign institutions offering a wider spread of services.[33] The asset ratios applied to building societies do not apply to banks, which have an enormous freedom over diversification and this unlevel playing field keeps the societies under the tight reins of the BSC and additionally interferes with potential profitability.

Not only do the asset limits affect the flexibility of a society, but its planning process must involve an assessment of whether and when the rules might be changed.[34] The societies have only a very limited flexibility with respect to the commercial asset ratios[35] leading to circumventory innovation. For example, when house prices increase, a Class 3 (unsecured) loan could be reclassified as a secured (Class 1) loan,[36] *ie* the ability to respond flexibly to changing circumstances becoming impaired when faced with, what Hall terms, these "detailed balance sheet regulations" (1987d, p 26).

Regulation should possess the virtue of simplicity according to Llewellyn (1988, p 6) and this is clearly not the case.[37] There is, admittedly, greater flexibility since the Schedule 8 Review[38], but the opportunity for further changes within the existing legislation has been exhausted (Drake, 1989, p 109). Consequently, further diversification would require primary legislation, *eg* the Deregulation Bill, or a change of industry, *ie* conversion to banking status or the full banking status suggested in the second stage of the Treasury Review (1994b).

3.4 Capital

Prudential Note 1987/1 (para 2.3) contains three principal reasons why building societies need capital:

(i) to maintain the institution as a viable going concern, able to overcome expected or unexpected difficulties, including a squeeze on margins and a loss on assets;

(ii) to secure the ability of a building society to repay its investors; and

(iii) to maintain public confidence.

Various commentators (Boléat, 1987a; Carroll, 1988; Drake, 1989 and Llewellyn & Drake, 1987) have suggested additional reasons[39] including:

(i) increased competition;

(ii) extra credit risk because of unsecured lending and a fall in lending standards;

(iii) a heightened earnings volatility;

(iv) an increased reliance upon the wholesale money markets;

(v) the vulnerability of a closer relationship with the rest of the financial system; and

(vi) the need to finance the basic infrastructure and fixed assets of the business.

Capital has traditionally stemmed from retained profits, although deferred shares issued before 1987 up to £75,000 and 'new' deferred shares up to £250,000 can also be counted.[40] This is now supplemented subject to certain conditions[41] by the availability of subordinated debt, which may be defined as debt which is fully subordinated to claims on the society of other creditors and shareholders in the event of a winding up, and permanent interest-bearing shares (PIBS)[42] or 'mutual shares', which are transferable fixed or variable rate shares somewhat similar to banks' preference shares.[43]

The 'public measure' of capital[44] is published in the annual accounts and dismissed by Llewellyn & Drake as "largely cosmetic" (1987, p 28), because no account is taken of differences in risk within a society. The more important unpublished 'operational measure' takes account of these risks and was contained in the calculus,[45] which ran until the end of 1993, and the solvency ratio, which began in 1993.

By attributing a capital requirement to each specific group of assets or activities,[46] the calculus represented a

systematic attempt to link capital to risk[47] and so should have provided an extra cushion for safety and the systemic interest. However, a society may be tempted to restrict its growth to those activities with lower capital requirements, resulting in a limited product range for the consumer. Additionally, this complex, cumbersome and inflexible approach merely constitutes a ranking of mainly credit risk rather an absolute measure of risk[48] and it is therefore questionable whether the calculus included the appropriate categories[49] of risk, whether the capital requirement attached thereto is appropriate and whether at least a 0.5 per cent differential over the minimum[50] in determining the target level is also appropriate.

Furthermore, the Commission's Discussion Paper conceded that, for institutions with an efficiently diversified portfolio of assets, the overall requirement for capital would be less than the sum of the weighted specific components. This meant that it was "legitimate to lower the capital requirement to reflect diversification whereas, in fact, a premium is added to arrive at the DC" (Llewellyn & Drake, 1987, p 44).[51] It appeared that the need to provide safety for investors was being overwhelmed by an over-cautious approach, dominated by the systemic interest. There were marked dissimilarities in the capital adequacy of banks and building societies with different systems being used. The risk asset ratio (RAR) system applicable to the societies' main rivals, the banks, involves each category of

assets being assigned a risk asset weight (RAW). The weight for each asset held by a bank is multiplied by the amount of each asset held to produce a measure of the total weighted assets. The risk asset ratio (Llewellyn & Drake, 1987, p 22) equals:

$$\frac{\text{Adjusted Net Capital}}{\text{Total Weighted Assets}} \qquad (3.1)$$

In order to compare a bank's RAR with a building society's MAC, Drake (1988) uses the following formula:

$$\text{Capital to Assets Ratio (CAR)} = \frac{(\text{Risk Weighted Assets\%}) \times \text{RAR}_{t}\%}{100} \qquad (3.2)$$

where t = target

Table 3.2 Possible Target Risk Asset Ratios and Implied Capital Asset Ratios under the Basle Accord

Target Risk Assets Ratio (RAR_t) %	Implied Capital to Assets Ratio (CAR) %
8	4.0
10	5.1
12	6.1

Source: Drake, Leigh, *Conversion to PLC Status for Building Societies*, Loughborough University Banking Centre, Research Paper No 53, 1988, p 13

Llewellyn & Drake suggested that: "Overall, the capital ratio of building societies is lower than for banks" (1987, p 56). This is, however, subsequently modified, since the precise composition of the calculation is vital and they point out that bank loans are not generally differentiated for capital purposes. In contrast, PN 1987/1 applied different capital requirements to different classes of loans and PNs 1990/1 and 1991/1 further sub-divided Class 1 advances, *eg* equity and low start mortgages, because of the BSC's concerns about risk and arrears.

Societies were even required to hold capital against liquid assets, whilst the banks were not subject to such a requirement - contributing to pressure to lower societies'

liquidity ratios.[52] Building societies therefore tended to be disadvantaged but this apparent lack of competitive neutrality was reduced by the Basle Accord of 1988 with its agreed minimum of 8 per cent, although countries can choose a higher (*de facto*) minimum, if they wish.[53] The risk weighting system, contained in the Accord, is based upon that adopted by: the BOE; the European Commission's Solvency Ratio Draft Directive (1988, Article 9); and PNs 1992/1, 1993/1 and 1993/4. The target minimum ratio of capital to weighted risk assets is 8 per cent, of which the core capital element must be at least 4 per cent, which had to be attained by the end of 1992.

The exclusive use of the solvency ratio or RAR régime by the Building Societies Commission from 1994[54] should have little effect upon safety for investors and the systemic interest, because this system is still attempting to relate risk and capital, albeit by a different route.

The basic categories and risk weights are the same. The special capital requirement for liquid assets is replaced by a proxy interest rate risk with a 10 per cent weighting to allow for interest rate mismatch. The only substantial lack of a level playing field is that the Commission will continue the distinction between certain categories of Class 1 lending.[55] The BSC sets a threshold ratio and the BOE sets a target ratio. It appears that the BSC will have a wider range of threshold ratios, but these ratios are generally determined by the nature of each institution and the

associated risk so that higher risk institutions will, other things being equal, have a higher required ratio[56]. Cost-effectiveness should be assisted by the introduction of a simpler and cheaper system than the old calculus. Fewer asset groups should mean greater flexibility and a reduced the cost of data collection and assessment. In addition, the capital implications of growth should be easier to assess and diminish the discriminatory treatment of assets,[57] with the exception of Class 1 lending.

3.5 Liquidity

Building societies need liquidity for a variety of reasons and PN 1987/3 suggests three:

(i) maturity mismatch, *eg* long-term mortgages financed largely by short-term liabilities;

(ii) the nature and mix of the business of a society, *eg* retail/wholesale funding, commercial asset ratios and the resulting cash flows; and

(iii) cash flow imbalances, some of which may be difficult to quantify accurately.

Gap and duration management can assist in determining the need for liquidity and treasury management.[58] Gap management,[59] a maturity-matching strategy, is the most common approach in asset/liability planning (Myers, 1985, p 5) and focuses upon controlling the "gap" between a financial institution's rate-sensitive assets and its rate-sensitive liabilities, where a rate-sensitive instrument is one which can mature or be priced upwards or downwards within the next ninety days (Sinkey, 1989, p 369). Interest rate movements cause a repricing of items such as Treasury Bills, CDs and loans. In other words, a schedule of the timing of the repricing of assets and liabilities is constructed and the funds gap is measured thus:

$$\text{Gap} = \text{RSA} - \text{RSL} \qquad (3.3)$$

where RSA = Rate-sensitive Assets and

RSL = Rate-sensitive Liabilities

A zero gap (*ie* RSA = RSL) denotes that the institution has matched the maturity of its assets and liabilities.[60] The three possible scenarios are depicted in Table 3.3 and the objective therefore is to achieve a zero gap or for the Gap Ratio to equal 1, where:

$$\text{Gap Ratio} = \frac{\text{RSA}}{\text{RSL}} \qquad (3.4)$$

Table 3.3 Gap Management Terminology

Gap	Book	Funding	Price
-ve	Short book	Short funded	Liabilities repricing before assets (LRBA)
0	Matched book	Match funded	Neutral
+ve	Long book	Long funded	Assets repricing before liabilities (ARBL)

Source: Sinkey, Joseph F Jr, *Commercial Bank Management in the Financial Services Industry*, Macmillan, New York and London, 3rd edition, 1989, p 369.

There are several criticisms of gap management.[61] Firstly, a zero gap does not eliminate interest rate risk and liquidity needs because there is a lack of perfect synchronisation in timing and proportions between shifts in asset and liabilities rates, *eg* rate shifts on CDs, mortgages and unsecured loans.[62] Secondly, it cannot be assumed in the real world that all assets and liabilities being repriced in a rising rate environment will be repriced at higher rates. Thirdly, gap management theory assumes that a zero gap ensures stable earnings. Experience shows, if anything, the opposite relationship and the consequence is that gap management should be viewed as a tool rather than a foundation for liquidity and treasury management,

The straightforward approach to maturity in gap management can be misleading, because it does not take into account the timing of both coupon (interest) and principal repayments. In contrast, duration analysis uses a more comprehensive measure of maturity (Ritter & Silber, 1991, pp 488-91), which is the effective (or weighted average) maturity or the effective time to repricing such that:[63]

$$W(i) = \frac{PV(i)}{P} \qquad (3.5)$$

where i = time period

PV = present value

V = value or price of the security and

W = the fraction or weight of PV contributed by a cashflow

$$D = [1 \times W(1)] + [2 \times W(2)] + [3 \times W(3)] + \ldots + [n \times W(n)] \qquad (3.6)$$

where D = duration and

n = number of cashflows

Duration analysis is more complex than maturity or gap management, but is much more realistic and closely approximates to a cash flow analysis based on a source and uses financial statement.[64]

Section 21(3) of the Building Societies Act indicates a maximum liquidity ratio of one third of total assets, but no minimum is specified in section 21(1), merely "such a proportion...as will at all times enable the society to meet its liabilities." The type of liquid assets is determined by statutory instrument.[65]

Investors who place funds with a building society face the ever-present problem of being unable to test the withdrawal capability at the time of depositing money. Safety for investors is further undermined by the lack of a lender of last resort (LLR) to underwrite a potential lack of

liquidity and by an absence of classifying liquid assets by maturity, which would ensure a hard core of very short-term or immediately realisable assets. Access to standby facilities[66] will not always be available and an LLR facility could prove highly useful in times of severe crisis, *eg* the run on the Southdown in 1991, instead of relying on *ad hoc* guarantees or rescues. A deposit insurance scheme[67] should also assist safety by affording some measure of protection against institutional failure.

The prescribed list of liquid assets does not distinguish between deposits and CDs of different banks,[68] unwise in the light of the collapse of BCCI in 1991 or the run on the Southdown shortly afterwards. The systemic (and safety) issue might be better served if there were a minimum cash requirement.[69] Certainly a substantial benefit can be realised by the BSC requirement for a society to construct a formal written statement of its liquidity policy.[70] Whilst one can concede the need for an upper limit to prevent a society contravening the 'primary purpose' rule and exposing itself to the possibility of a fall in the value of marketable securities (*eg* the New Cross) or charges of speculation, sections 21(5) and 21(6) enable the Commission to permit a society to breach the maximum.

There is a marked lack of competitive neutrality *vis á vis* banks, *eg* the former capital requirement for liquid assets which may persuade a society to reduce its liquidity. The BSC's liquidity rules entail costs in having funds

effectively permanently tied up in relatively low-yielding assets,[71] but are a fundamental means of ensuring that a society can generally meet its obligations to its investors. (Hedging instruments offer an alternative.) Individual banks must possess general liquidity, sufficient to meet any short fall in cash inflow, whether expected or otherwise. The Bank of England thus employs a different system - a cash flow or mismatch approach[72] - which, while monitored by the Commission, is not the core of the building society liquidity system.[73]

Societies do have a degree of flexibility in rearranging the composition of their liquidity and have a target range for their liquidity. Bolèat *et al* (1986, p 68) dismiss the liquidity requirements as an irrelevance, since societies have generally tended to keep an excess over whatever minimum was required.[74] Thus, a better approach might be to have an LLR facility.[75]

3.6 Treasury Risk Management

Treasury risk management, which goes hand in hand with liquidity and thus gap and duration management,[76] is composed of two elements: funding and hedging. The sources of finance or funding may, in turn, be divided into two parts. Retail funds - or savings 'coming across the counter' - have traditionally constituted the backbone of any building society, although PN 1987/2 (para 15) warns of the dangers of an over-reliance on large single

holdings of retail funds. The wholesale markets[77] appear to be an attractive source of lower cost finance, despite Llewellyn & Drake (1988a, p 6) suggesting that a 'natural structure' may emerge with retail rates below LIBOR.[78] Also, wholesale funding is a means of evening out the (temporary) fluctuations in inflows (Phillips, 1993).

The safety and mutuality principles are protected by the wholesale funding limit of 40 per cent, which restricts the dangers of an over-concentration on the (at times) volatile wholesale money markets.[79] As the Bank of England said in its evidence to the Wilson Committee (HMSO, 1980) the rollover of deposits cannot be assumed to occur (*BEQB*, 1978, p 232, para 22) and so there can be an associated systemic interest. The regulations do not apply to banks (a lack of competitive neutrality), may increase the overall cost of funds and restrict a society's ability to change its funding as it might wish. It must be conceded that the 1994 proposal to increase the wholesale limit to 50 per cent should reduce at least some of the above criticisms.[80]

If a building society takes out a floating rate loan, unmatched by floating rate assets whose rate is determined by the same benchmark, it is exposed to the risk of an increase in the interest rate. There may be interest rate or currency mismatching and hedging provides protection by exchanging fixed rate commitments for variable ones (or vice-versa) or by guaranteeing a pre-determined exchange rate, *eg*[81] swaps, futures and options.[82] The recent dramatic

rise of fixed rate mortgages[83] has caused a significant increase in hedging according to Harry Walsh, the Deputy Chairman of the BSC (1993).

Swaps represent agreements between two parties to exchange or 'swap' interest rate or currency payments for a predetermined period of time. For example, a building society may be negotiating a fixed rate loan at an advantageous rate but may remain unmatched, while an oil company, also unmatched, may be about to launch a floating rate bond issue at a relatively low premium over LIBOR (London Interbank Offered Rate). Each may wish to reduce its interest rate exposure via a swap transaction.

Under various PNs[84] swaps must be effected to reduce a potential loss, *ie* not for speculation. PN 1986/3 warned that a swap agreement could lapse prematurely, thereby leaving the society in a mis-matched position and re-establishing a matched position could prove costly. The Commission also identifies counterparty risk (PN 1989/3, para 2.5) and says that a society should ensure the possession of knowledge and experience to identify and assess the implications for capital and liquidity.

A futures contract may be defined as "a contract to buy or sell a quantity of a good at a specified future date for a fixed price" (Breen, 1988, p 10). It is possible to 'lock in' to a borrowing or lending rate (or exchange rate) today, instead of waiting. Such contracts are marketable or negotiable instruments traded, for example, on the London

International Financial Futures Exchange (LIFFE). An initial margin (or deposit) is required and an uncertainty arises because, as the quoted prices fluctuate daily, the value of each day's gain (or loss) - the variation margin - is added to (or subtracted from) the initial margin, *ie* cash receipts or a request for extra deposits will result.

Futures are issued and traded in standardised blocks and lack the flexibility of the forward foreign exchange markets, where the exact amount can be obtained. Also, futures lack the range of contracts available in the latter market and do not eliminate the funding risk, but offer the option of selling the contract in the market place, if the underlying commercial reason behind the contract disappears.

Options contracts provide the holder with the right (but not the obligation in contrast to futures) to purchase ('call') or sell ('put') a pre-determined amount of foreign currency or debt instrument (*eg* gilts). Options are similar to futures and are also subject to margin requirements. The supreme advantage arises if the underlying commercial rationale behind the contract fails, with the maximum loss being the premium paid for the contract and the liability for the initial/variation margins.

The Hammersmith & Fulham case,[85] where it was held that the local authority acted *ultra vires* when entering into swaps agreements, also raises safety and systemic issues and demonstrates the potential settlement or counterparty risk[86] for a society employing hedging techniques[87] - hence the

detailed regulations in the PNs.[88]

The hedging regulations do not apply to banks - a clear case of an unlevel playing field - and this carries implications for profits when we consider that regular trading, arbitrage or speculation by a building society is not permitted.[89] There must consequently be a specific or general underlying commercial contract(s) or reason(s) for entering into swaps, options and futures territory[90] and, anyway, a society must possess a minimum £100m of commercial assets in order to be allowed to hedge.[91]

3.7 Reporting

The reporting requirements exist to provide information for the Commission and society members. The BSC receives information via regular returns from societies[92] and also by inspections.[93] The Annual Accounts, the Annual Business Statement, a Directors' Report, a Summary Financial Statement[94] and an Auditors' Report must be produced for members.

In theory the accounting data passed to members should enable them to decide how they wish the business to be run. Care must still be exercised in order to verify the accuracy of information produced, *eg* the Grays case which raises serious questions about the quality of auditing.[95] Such information should enable the interests of society members and part of the safety element to be protected. However, this assumes the expertise and time to digest and analyse

the data, an absence of asymmetric information and that the Annual General Meeting is a suitable and practical forum through which to influence board policy. It is unlikely that all three assumptions will hold. Also, society members exclude depositors and other creditors. One purpose of the collection of information by the Commission is to enable the supervisor to protect investors, particularly given a lack of appropriate expertise by the latter and the problem of asymmetric information.

A prime function of reporting is to assist the BSC in preserving the systemic interest and peer group comparisons via a database (BSA, 1991a, p 105) should continue to enable the early identification of a markedly out of line society, especially if the society is medium or large and there are systemic implications, *eg* the Town & Country in 1991. Reporting to members is hardly likely to assist the systemic interest.

In terms of competitive neutrality for members, the accounting data requirements of section 72 are of a fairly standard nature,[96] but a failure to satisfy any of the prudent management criteria[97] is treated as "a failure on the part of a society's directors prudently to conduct the affairs of the society" - section 45(7) going beyond the requirements of banking legislation or the Financial Services Act 1986 and a clear example of an unlevel playing field.

The Commission's reporting requirements tend to be far more extensive than those applicable to its predecessor, the Registry of Friendly Societies, or the BOE and this is particularly the case when a society is planning new activities. There is a cost to the societies in providing data and in discussing matters with the Commission but, since much of the information should be of assistance for internal planning purposes, the extra costs of collection and collation should not be significant.[98]

There is little flexibility with reference to providing information to members because of very tightly drawn rules and a society's flexibility may be impaired because auditors are permitted to breach the principle of confidentiality and pass information to the Commission under section 82(8), *eg* where there is a danger of imminent financial collapse (PN 1986/1, para 15). Following the Bingham Report (on BCCI - HMSO, 1992) the government decided to impose a statutory obligation upon auditors to report authorisation criteria[99] to the supervisor. Incidentally, the Banking Act 1987 provides for an exchange of confidential information between the Bank of England and the Commission (BSC, 1987, p 21). Finally, the BSC can instruct a society to change its policy, *eg* the Peckham (BSC, 1990).

3.8 Management and Systems

This section relates to the system of internal control within a building society and consists of rules or

guidelines governing *inter alia*: directors, management information systems and human resources. The basic requirements are laid down in the prudent management criteria of section 45(3), which refers to integrity and professional skills. The Prudential Note on Systems (1987/4) fills in much of the detail and emphasises the importance of a society possessing a clearly defined and documented organisational structure. Management information systems must contain appropriate and accurate information with reference to key areas such as capital, liquidity, treasury management, balance sheet ratios and profits.

In order to protect customers it is important that building society personnel are readily aware of their own power and the lines of authority. For instance, if an employee uncovers, say, fraud apparently perpetrated by a superior, then an alternative reporting route becomes necessary.

When the Commission approves and monitors the management and systems procedures for an institution, this can serve not only the safety interest of investors but also the systemic interest as potential problems can be identified at an early stage. The BSC is in a position through the application of PN 1987/4 to assess both the management structure and calibre[100] and this is reinforced by the use of meetings and inspections.

As indicated in earlier sections, the Building Societies Commission is rather more interventionist and comprehensive in its approach than, say, the Bank of England, partly a

reflection of its interpretation of the legislation on the one hand and the construction and application of Prudential Notes on the other.

Cost-effectiveness may be aided as institutions are forced to devise and justify a systematic network of controls, forecasts and contingency plans,[101] *eg* the need for backup computer facilities[102] in the case of computer failure[103]. Incidentally, the anti-money laundering regulations[104] may produce benefits by reducing the likelihood of a society being defrauded (Piper, 1991, p 9).

One drawback is the lack of flexibility, given a requirement for a fully documented management and systems procedure, and there is the possibility of this becoming unduly restrictive, out of date or difficult to amend.

3.9 Investor Protection

Investor protection is composed of two broad types: (i) a compensation scheme, eg the Building Societies Investor Protection Fund (BSIPF) and the scheme covered by the Financial Services Act 1986; and (ii) an ombudsman scheme.

An ombudsman scheme is by definition in the public interest in that it is designed to provide an arbitrator and compensation, where appropriate. Investor protection under the FSA also falls into this category, whereas the BSIPF is designed to satisfy safety for investors and the systemic interest. It could be argued that 90 per cent of the first £20,000 is insufficient cover because of inflation since the

figures were last amended and the increased era of uncertainty.[105] The mere existence of such a scheme should make it highly unlikely that it will ever need to be used. It is important to remember that deposit insurance may contribute to moral hazard risk, possibly causing an increase rather than a decrease in the likelihood of failure. Ombudsman schemes are created for the individual, not the systemic interest.

The BSIPF demonstrates a lack of competitive neutrality in that it is not a standing scheme, like the banks' scheme. Instead, section 26(10) of the Act allows for a call on a society's resources, on an *ad hoc* basis, of up to 0.3 per cent of the society's share and deposit base, *ie* there is no annual levy such as that imposed upon banks. Should it become necessary the problem society can engage in temporary borrowing and section 31 permits two or more societies to provide a voluntary deposit protection scheme. The relevant ratio in the banking sector is 75 per cent not 90 per cent,[106] with investors being more aware of the disparity following the BCCI case.[107] With respect to the ombudsman scheme the limit is the same as the banks' although there has been criticism of the ombudsman's terms of reference, *eg* valuation surveys and pre-completion complaints.[108]

The cost-effectiveness debate hinges on the public and systemic interest. The BSIPF has not been used and mergers (with or without assistance from other societies) have been the favoured solution for troubled institutions. In other

words, some suggest that the fund will never be used, *eg* Boléat (1987). The BSIPF's administrative costs are negligible (see BSC Annual Reports), while the ombudsman scheme has been criticised for (especially) the initial lack of publicity (Office of the Building Societies Ombudsman, 1988, p 5). The 1988-89 Report (pp 4 & 22) suggested an improvement in the position, supported by an escalation in complaints and the subsequent announcement of a second ombudsman.

Finally, flexibility exists for building societies, given the absence of a standing fund and the provision to exceed the 0.3 per cent call if necessary. There is a lack of flexibility for the ombudsman scheme with its rigid terms of reference. An improvement for both schemes would be a regular, preferably annual, review of the upper limits of both schemes and the percentage cover for the BSIPF.

3.10 Mergers

The Commission is keen to examine, firstly, whether members are in favour of a merger and, secondly, the resultant soundness of the new financial intermediary. The voting regulations, outlined in the Act and the associated Guidance Note, demand a Special Resolution (minimum 75 per cent vote of qualifying shareholders voting) and a borrowing members' resolution (minimum 50 per cent of qualifying members voting).[109]

The voting requirements tend to act in the interest of safety for investors by permitting members to express their views on a proposed merger.[110] This does assume that members can appreciate the full financial implications of their vote[111] and, if we include the systemic interest as well, it is important to realise that the resultant long-run soundness of the merged body is usually ignored by members though not by the BSC, since it has become almost standard practice for a bonus to be paid to members of the smaller society in order to 'bribe' them to produce a favourable vote.

'Rescue' mergers can save a weak society (Lilley, 1988, p 15), while the Guidance Note (BSC & Registry, 1987, para 2.1) cautions that a merger between two weak or over-extended societies may produce an even weaker one. This is particularly poignant, given the number of 'shotgun marriages' in early 1990s, *eg* the separate cases of the Leamington Spa and the Town & Country.[112] Loss provisions on Class 2 lending forced the Lancastrian to merge in 1992 with the Northern Rock (*MFG*, 1992b).[113]

Banking and insurance mergers are generally easier to achieve, although for banks this is not so if a foreign institution is involved. There is also the possibility of an investigation by the by the office of Fair Trading (OFT) or the Monopolies & Mergers Commission (MMC), something which has not been applied to building societies.[114]

The cost is mainly imposed on societies in terms of the voting regulations and the planning process. It would be very difficult for the BSC to refuse a merger if the voting requirements had been satisfied. Indeed, a merger will usually be expected to generate substantial benefits, frequently reflected in economies of scale and an overall lower risk (plus a reduced need for capital), *eg* Peter Lilley, former Economic Secretary to the Treasury, citing diversification in respect of mergers with a plc (1988, p 15). Finally, there is little flexibility, given the voting position.

3.11 Conversion

Gerald Watson, the then BSC deputy chairman, put forward two principal reasons (1988) for conversion into a company (effectively a bank): avoiding the constraints of the Act and raising more capital.[115] The regulations call for a 20 per cent turnout of shareholders (with a 75 per cent majority in favour) and a majority of borrowers in favour when the transfer is to a company specifically created for this purpose *eg* Abbey National. The alternative is to transfer to an existing company[116] where, in addition to the borrowing members' resolution and the shareholders' special resolution, the special resolution itself must be passed by not less than 50 per cent of borrowers or by shareholders representing not less than 90 per cent of the total value of

shares.[117]

As with mergers, the conversion voting regulations assist the safety factor for investors but we should consider the fact that the possibility of free shares may confuse the issue for some members, who may be tempted to opt for certain short-run gains. There is a possible conflict of interest[118] in that a company rather than a mutual organisation may be expected to offer higher remuneration to the board, the chairman and the top executives.

The extent to which the systemic interest may be affected can be difficult to determine. A new and inexperienced bank may unsettle other banks and the remaining building societies may suffer a loss of status if significant numbers of large or medium societies convert. Furthermore, there may be a disturbing element of speculation as investors chase rumours about which society may convert, in the hunt for free shares. The systemic interest is protected by approval being required from both the BSC and the BOE.

Societies unhappy about the generally unlevel playing field, compared to banks, can always circumvent the problem by converting into banks or by linking up with banks.[119] In 1994 Lloyds Bank proposed a takeover of the Cheltenham & Gloucester Building Society (C & G) and this was to involve the distribution of a bonus. The BSC considered this illegal and won the case in the High Court. The result was uncertainty in the period prior to the case and subsequently the C & G had to revise the terms of the offer.[120] One other

consequence of the affair is a proposal in the Treasury Review (1994b) requiring boards to inform members of any non-confidential takeover offers from outside the sector, as currently applies to merger offers from other societies.

The rules can therefore be complicated, may lack legal certainty and their cost-effectiveness is difficult to quantify, despite the fact that the Abbey's and C & G's experience does illustrate the time needed for planning by both the society, its financial and legal advisors, and the supervisor.[121] Voting is costly and time-consuming and problems can arise if there is public disagreement between board members, between different factions of members or between the members and the board, *eg* Abbey Members Against Floatation (AMAF). A 'run' on the society becomes a distinct possibility, since dissenters may vote with their feet. As with the rules on mergers, there is a lack of flexibility in the voting requirements.

3.12 Conclusions

There are often major differences in the ability of the various supervisory techniques to satisfy the five objectives or criteria. Safety for investors and the systemic interest are often inter-related, although for the supervisor the latter is perhaps the more important factor. There remains a distinct lack of competitive neutrality, *eg* wholesale funding, and while the cost-effectiveness is generally good, there have been problems over the reporting

burden, the complexity of the capital adequacy requirements and the cost of the comprehensive documentation required by the Commission. A significant amount of flexibility exists, especially when the BSC invites consultation before newer activities are commenced or significantly expanded, although some areas such as voting and the BSIPF offer little room for manoeuvre.

CHAPTER 4: CASE STUDIES

4.1 Introduction

There were three notable instances of building societies encountering major financial difficulties in the period immediately before the Building Societies Act 1986. Several have also experienced difficulties since the Act, especially since 1990 and two of these have been selected.[1] Each case will be examined with reference to the objectives of supervision as outlined in Table 2.1.

4.2 Wakefield Building Society

In the course of the audit of the society's accounts in 1976, a major fraud was uncovered, which had been perpetrated by the general manager and which inadequate auditing had allowed to remain undetected for a long time (Boléat, 1986, p 147). The amount involved, whilst substantial (£630,000), was well covered by the reserves. However, the fear of adverse publicity and the possibility of withdrawals led to the Halifax agreeing to take a transfer of engagements from the Wakefield.

Given the small size of the society, there would seem to be little or no danger of the systemic interest becoming seriously impaired. Instead, there was a real possibility of the public interest being undermined by the announcement of such a large fraud, which could have caused investors to become concerned for the safety of their funds and triggered

a 'run' on the institution.[2]

The usual reaction in such situations is for societies to close ranks and for one society to 'volunteer' to take the troubled institution in hand, normally with financial assistance or guarantees from other building societies. The situation is not so cut and dried with UK banks, *eg* intervention to establish a 'lifeboat' in the 1970s and to rescue JMB in the 1980s, but refraining from intervention with British & Commonwealth and BCCI. Size and/or importance seem to be the determining elements in the banking sector so that there is sometimes competitive neutrality and sometimes a lack of competitive neutrality.

With respect to the Wakefield Building Society the institution was 'saved', its investors protected and the reserves of the society more than covered the losses - hence a high degree of cost-effectiveness. The building society industry and its supervisors generally seem to follow an *ad hoc* intervention policy and while this entails flexibility, it does mean that there can be a potential lack of consistency.[3]

4.3 Grays Building Society

The Grays affair also concerns fraud but on a far greater scale and stretching back at least forty years. The attitude of the BSA was decidedly unhelpful to the Registry[4] and despite the letter from the Registry to all societies following the Wakefield affair,[5] the fraud did not come to

light until March 1978.[6] The deficiencies amounted to approximately £2m plus £5m (for loss of interest) out of a total assets figure of £11m. A rescue operation was arranged with the Woolwich receiving support from BSA members and taking over the Grays.[7]

At first sight it would appear that with a small society there is little or no systemic interest problem, but this could be misleading because the Grays case came to light only two years after the Wakefield scandal and savers might have started to become worried about societies in general. Also, the scale of the fraud meant that safety considerations for investors were also prominent. There is, as with the Wakefield, a lack of competitive neutrality because such *ad hoc* collective rescues are not standard practice in the UK banking sector.[8]

With respect to cost-effectiveness, the Woolwich was compensated by other BSA members for taking on the liabilities of the Grays and the associated 'hole' in its assets. The amounts involved were minuscule compared to the assets of the Woolwich or the industry as a whole and the consequence was that the stability of the industry was maintained and, once again, investors in the problem society did not lose.[9] The flexibility criterion is satisfied as the solution is the same as for the Wakefield.

4.4 New Cross Building Society

The Registrar of Friendly Societies had already expressed his general concern about excessive growth by societies in his submission to the Wilson Committee, when he suggested that a society attracting additional funds by offering a significantly higher rate of interest would only be able to make use of them by making advances on riskier types of property (HMSO, 1980, para 1251). It is thus ironic that the New Cross encountered difficulties, *inter alia*, because of such growth.[10]

The Registrar had become concerned about the society's past, present and particularly future operations and made two Orders in August 1983 which revoked trustee status and prohibited the acceptance of further investments from the public (Registry of Friendly Societies, 1984, p (iii)). His worries focused upon the society's swiftly deteriorating financial position, *eg* mortgage arrears,[11] and he felt it necessary to step in, neither because of fraud nor only because of what the society had done so far but because of what it planned to do or might do - *ie* what could be termed preventative intervention.[12] The Registry foresaw increasing difficulties for he society, but there are substantial dangers[13] of excessive intervention where the supervisor is trying to forecast failure or what a society might do because such predictions[14] could be over-pessimistic, leading to unnecessary intervention. A transfer of

engagements to the Woolwich took place in 1984.

The matter of the systemic interest is clearer here than in the two previous examples, as the society was about fortieth in size and the legal battle being waged by the society was held *in camera*. Safety for investors was also considered important, *eg* investments lodged after 12 December 1983 being placed with the court.[15]

The case again demonstrates the activation of a collective guarantee scheme to 'bail out' a troubled institution and therefore constitutes an (occasionally) unlevel playing field.[16] With respect to cost-effectiveness the industry benefits by removing a potential domino effect upon other societies, especially important given the size of the society. Flexibility in such a situation is vital, but it is questionable whether *ad hoc* arrangements will always be practical.

4.5 Southdown Building Society

The Southdown Building Society was created in 1990 by the merger of the Eastbourne Mutual and Sussex County societies and was the thirtieth largest society. Subsequently, six branches were closed and rumours, believed to have been started by a disgruntled former employee, suggested in August 1991 that the society was in difficulties, attributable to the BCCI collapse.[17] The society declared the rumours to be without foundation and the BSC stated that it knew of no justifiable reason for the 'run'. The

Commission asked the Woolwich to provide standby facilities[18] and the 'run' quickly petered out. The almost trebling of the society's bad debt provisions in 1991, the expected announcement of a loss and the after effects of the loss of investor confidence were the background to the announcement in November 1991 of a merger with the Leeds Permanent.[19]

When the thirtieth largest society suffers from unfounded rumours and experiences a 'run', then the systemic interest is clearly involved. The spate of withdrawals could continue, increase or spread to other institutions. The need to provide for safety for investors was also present, but systemic considerations were paramount.

It was interesting that the intervention of the BSC in persuading the Woolwich to offer standby facilities was sufficient to stem the beginnings of a classic 'run'. This is less likely in other sectors of the financial system and thus competitive neutrality *vis-à-vis* other financial institutions does not apply. The cost-effectiveness element is also high in that a denial and the announcement of standby facilities seemed to solve the problem. However, this is a little misleading because of the subsequent merger with the Leeds, despite the latter denying it was a rescue.[20] Flexibility still holds in that a quick short- and long-run solution was found.[21]

4.6 Town & Country Building Society

The Town & Country was the fifteenth largest building society and its problems came to a head in November 1991 when it appeared to be set for a loss of £10m with bad debts of £40m. The society was experiencing difficulties because of competition and a severe downturn in the housing market. It was unusual in avoiding mortgage indemnity insurance, but it had the highest free capital ratio of the top twenty societies at £146m on assets of £2.2b. Even so, the Commission intervened to arrange a standby facility from the five largest societies. The society, however, refused a takeover offer from the Halifax, preferring a merger with a society with which it had a long standing relationship, the Woolwich. Two weeks later the forecast loss rose to £42m.[22] Like the Southdown case, the systemic argument holds given the larger size of the society. Additionally, one can suspect that the BSC intervention stemmed from the extent to which a quick upwards adjustment in the losses could reasonably be expected (or known) and that there may have been other bad news on the horizon, *eg* arrears. A secondary consideration was that large numbers of investors would have been affected by a collapse and a rescue plan could satisfy both safety for investors and systemic interest considerations.

1991 was admittedly an unusual year as investor confidence became undermined by the BCCI collapse[23], but the Town & Country had more than sufficient capital and since capital

is supposed to provide a cushion in such circumstances,[24] the eagerness of the BSC to intervene may call into the question the very function of capital.

There is consequently some degree of a lack of competitive neutrality[25] since the five largest societies were forced to back the problem institution and a merger was imposed upon the society. It was probably cost-effective because of the overriding systemic factor. Flexibility seems to be the order of the day, but each time an *ad hoc* solution is cobbled together it seems more difficult to expect the next occasion to be successful. If one or more of the five largest societies had declined to 'volunteer', the outcome could well have been very different.

4.7 Forbearance and Closure

Forbearance may be defined as allowing an insolvent institution to remain in business[26] but the problem in the UK has usually been the fear of a loss of confidence because of the publication of bad news such as fraud, arrears or losses and even the New Cross was not insolvent.

A policy of forbearance when market forces would normally dictate closure may be justified on systemic grounds if the financial institution is large or pivotal,[27] *eg* the size of the Southdown and the Town & Country.[28] This clearly does not apply to the Wakefield or the Grays, unless one believes that a real 'domino' threat existed. There was similarly no systemic reason to justify permitting BCCI to continue,

according to the Bingham Report (HMSO, 1992, para 2.515). Instead BCCI involved fraud, managerial incompetence, money laundering prosecution and supervisory delays which carried political, diplomatic and foreign relations implications as well as public interest considerations. The first two and the latter tend to apply to problem building societies, but other factors can intervene, *eg* forbearance in the United States where a concern over safety for investors is blurred with the need to protect the deposit insurance fund. In contrast there seems to be, for systemic and safety reasons, a marked reluctance by the BSC and BSA to allow a shaky building society to succumb to market forces and collapse - a lack of competitive neutrality compared to UK banks.[29] On the other hand, early intervention means that insolvency and thus forbearance do not (yet) arise in the building society industry in contrast to the American S & Ls.

Because of this desire to avoid failure[30] the normal procedure for a troubled society is the promotion of a merger with a stronger, larger and safer institution and/or to arrange standby facilities in the hope that the problem is solvable in the short-run. This can, however, incur costs and delays for both the society and the supervisor[31] and these may be difficult to determine since they would normally occur behind closed doors.[32] The BSC (and the BSA) seem to seek out tailor made solutions and so there is a high degree of flexibility.

The alternative of closure[33] is one not applied nowadays in the building society industry. Closure would reduce excess capacity,[34] while a lack of closure tends to increase the likelihood of fraud (Hall, 1991b, p 17)[35] and tends to increase the moral hazard risk by encouraging excessive risk-taking (Brewer & Mondschean, 1992, p 10; and Carisano, 1992, pp 133-34). Co-insurance[36] reduces the latter, although building society savers enjoy better cover than bank savers. The Kerry Report (Kerry & Brown, 1992) criticised the Bank of England for being slow to intervene in the BCCI case, but postponing action or refraining from closure (Gilbert, 1991) can sometimes be self-defeating if the causes of the problem are not solved or if they are, indeed, increasing. This was potentially the case with the Town & Country[37] and in the USA[38] the initial causes of the S & L crisis - fraud, mismanagement and deregulation - were compounded by forbearance.[39] The long-run costs may consequently be greater especially if the industry is weakened, a deposit insurance fund undermined or the regulators reluctant to admit that institutions under their supervision may need to be closed (Baer, 1990, p 2).

4.8 Conclusions

The above cases[40] demonstrate the marked reluctance of the Commission[41] to allow any building society to fail and this may be attributed to a number of reasons: (i) an unwillingness to admit that supervision has 'failed';[42] (ii)

the desire to protect the public interest or, more accurately, to give a high priority to investor protection;[43] and (iii) a desire to preserve the systemic interest in the instances of the Southdown and the Town & Country. The result is an interventionist policy, which is sometimes initiated at an early stage before additional problems have materialised, *eg* the preventative intervention in the New Cross case.

There is on occasions a lack of competitive neutrality compared to the UK banking sector with its recent British & Commonwealth and BCCI failures and earlier JMB rescue. The intervention costs are usually minimal[44], but costs are imposed upon the rest of the building society industry either directly (through compensation or guarantees) or indirectly by the efficient institutions effectively subsidising the inefficient and suffering from the maintenance of excess capacity. This is exacerbated by the extent to which moral hazard may encourage excessive risk-taking and accordingly increase the likelihood of problems.

Flexibility is present, but there is no certainty that even larger problem societies can be treated in a similar fashion. Finally, an absence of flexibility could be considered to exist in the sense that intervention and rescue plans appear to be automatic.

CHAPTER 5: QUESTIONNAIRE DESIGN

5.1 Questionnaires v Interviews

Surveys are designed to determine policy, assess the effectiveness of a policy or to discover fundamental information. They are usually in the form of a questionnaire, but are also conducted by interview in person or by telephone (Fink & Kosecoff, 1985, p 13). Indeed, the interviews with members of the industry for this research were conducted in person, with the exception of one conducted by telephone.

Mailed questionnaires are designed to be self-explanatory and self-administered, thereby guaranteeing confidentiality and if necessary anonymity (Fink & Kosecoff, 1985, pp 19-20; Oppenheim, 1992, pp 101 & 105).[1] Rotondi (1989) stresses anonymity as a means of increasing the response rate, while interviews can only offer confidentiality.

Questionnaires are limited to preset questions, but open-ended ones may be included and if the respondent needs to consult records or colleagues, then questionnaires are especially appropriate (Sudman & Bradburn, 1983, p 262). On the other hand, the interviewer can ask for explanations, use supplementary questions and note the respondent's reactions.[2]

Questionnaires possess convenience for the respondent who can work at his/her own pace and at a time of his/her choosing, thereby encouraging a considered approach. Bias

may creep into questionnaires through the wording of questions and into interviews by the style and attitude of the interviewer, the tone of voice and non-verbal communication, *etc* (Fink & Kosecoff, 1985; Hornik & Ellis, 1988; and Oppenheim, 1992). Conversely, respondents may be offering other than true information and this must be taken into account. One means of identifying such a possibility is via pre-survey interviews.[3]

Interviews can reduce the likelihood of misunderstanding by the interviewee, for there is no opportunity to correct misunderstandings in a questionnaire (Belson, 1981; Fink & Kosecoff, 1985; and Oppenheim, 1992). Finally, interviews are flexible and can incorporate more complex information and questions.[4]

5.2 Validity and Reliability

Validity refers to the extent to which a questionnaire elicits the information which the researcher desires (Sudman & Bradburn, 1983, p 17) and reliability of the data refers to its purity and consistency, *ie* its repeatability (Oppenheim, 1992, p 144).

When assessing the validity and reliability of data,[5] a number of factors should be taken into account. One should consider the extent of pilot testing,[6] whether respondents are speaking from their own experiences,[7] whether clarity of language is employed, and whether there is flexible and responsive interaction between interviewer and respondent.[8]

There is the possibility that poor memory may impair the answers of some respondents, especially with complex questions,[9] or that there may be deliberate or motivated incorrect completion of questionnaires (Sudman & Bradburn, 1983, pp 18-19). Respondents can furthermore be propagandist, but this does not impair the data if opinions are required and respondents provide truthful answers. The guarantee of anonymity may assist the accuracy of the data (Rotondi, 1989) and pre-survey interviews should also help.[10]

Repeatability may be very difficult to achieve[11] for some surveys if substantial changes in circumstances occur, *eg* the end of the calculus for building societies or mergers between institutions affecting management style and philosophy. Non-response can cause a bias in the data if those not responding constitute a particular group(s) with a particular view(s), which is therefore not adequately reflected in the survey data as a whole (Oppenheim, 1992, p 106). In addition, Paxson (1992) stresses that, without follow ups or reminders to mail surveys, the non-response error is greater, and the validity and reliability of data is reduced.[12]

5.3 Construction of Questionnaires

A questionnaire must be accompanied by a brief statement of its objectives (Fink & Kosecoff, 1985, p 46) and Young (1966, p 205) suggests the inclusion of a covering letter

which should state the authority for the survey, *eg* a university.[13] Personalising the envelope and letter with the name of the respondent can increase the response rate (Hoinville *et al*, 1978, p 134 and Oppenheim, 1992, p 104).[14] The questions themselves must be properly worded, possess a clarity of language and instructions (Belson, 1981 and Rea & Parker, 1992), avoid abbreviations and allow sufficient space for responses (Fay, 1989 and Fink & Kosecoff, 1985). Lengthy questions should be avoided (Fink & Kosecoff, 1985; Oppenheim, 1992; and Sudman & Bradburn, 1983), but rather more important is the appearance of the questionnaire[15] and Sanchez (1992) found that changing the format of a questionnaire can change the responses to the same set of questions. Confidentiality and anonymity also need to be stressed (Rotondi, 1989).

The order of the questions can be critical and Young (1966, p 197) recommends an easy question at the beginning to persuade respondents to start[16] and to entice them to continue. The order of questions may be crucial (Roberson & Sundstrom, 1990; and Tourangeau *et al*, 1989) and it is often suggested that a logical order or questions of progressive difficulty is useful,[17] while Fink & Kosecoff (1985, p 44) suggest an easy question at the end to encourage flagging respondents.[18]

Many commentators recommend a pilot survey to test the questions, their style and sequence[19] and Hoinville *et al* (1978, p 134) even point out that pre-survey contact can

boost the response rate,[20] *eg* various drafts of questionnaire 1 shown to interviewees resulting in a clearer, more concise and accurate document.[21]

Questions fall largely into two categories: (i) open-ended where the questions allow freedom and spontaneity for the respondent (Oppenheim, 1992, p 115); and (ii) fixed-choice, closed-ended, forced-choice or multiple choice questions where a selection is made from a number of optional answers. Question 4 in questionnaire 1 is open-ended and intended to catch areas not covered in the other questions or to allow further comment on the preceding questions.[22] As Fink & Kosecoff (1985, p 26) point out, such open-ended responses are by definition difficult to quantify unless accompanied by an elaborate coding system. Fixed-choice questions are easier to quantify by providing uniform data but because all respondents have the same options, may be misleading, offer inappropriate choices or contain unintended bias.[23]

Finally, the initial mailing of a questionnaire may not produce the expected response rate and many commentators recommend the use of follow up or reminder letters[24] (preferably with an additional copy of the questionnaire), as used in questionnaire 1, which should be brief and intended to persuade at least some of the non-respondents to complete and return the form (Fink & Kosecoff, 1985 and Young, 1966). Nederhof (1988) even suggests a telephone reminder.

5.4 Forced-choice Questions

This section deals with the various types of forced-choice questions and the associated rating scales. Forced-choice questions are of two broad types: (i) those where the response is yes, no or don't know;[25] and (ii) those where the response involves a standard multiple choice question. A variation on the latter theme is to provide some rating scale for the respondent to use.[26] One factor to be taken into account with a type (ii) question is that poor alternatives or the absence of particular alternatives can affect the response (Fay, 1989; Sudman & Bradburn, 1983; and Young, 1966).[27]

Similarly, the use of standard English and the avoidance of specialised terminology[28] is to be recommended.[29] Care must also be exercised lest unclear or ambiguous words or phrases appear (Fay, 1989 and Fowler, 1992). Further, Oppenheim (1992) warns questionnaire compilers of the potential for leading questions,[30] while Sudman & Bradburn (1983) say that different ways of asking a question may produce quite different answers. Brevity and simplicity are recommended by Fink & Asecoff (1985) who argue that a question should contain merely one thought and avoid multiple concepts.[31]

Questions often invite respondents to assess the performance or importance of a variable on a rating scale, *eg* question 1 (questionnaire 1). A nominal or categorical response involves assigning the answer to particular categories or groups, *eg* regions of a country. An ordinal (ranking) scale

requires respondents to place answers in rank order or indicate a degree of agreement/disagreement with a question.[32] The latter is sometimes termed an interval scale, more usually reserved for measures such as income bands. The last type concerns the use of ratios.[33]
The actual presentation of a scale is not uniform.[34] Graphic scales may be used to offer a wider variety of response, *eg*

```
1    3    5    7    9
¦____________________¦
```

Place an 'X' somewhere along the above scale.

A comparative rating scale is simpler and avoids the problem of interpreting where an 'X' is placed on a graphic scale, *eg* ranking 5 variables in order of importance. Agreement/disagreement may be expressed thus:[35]

Agree 1 2 3 4 5 Disagree

Circle one number where 1 = good and 5 = worst

Instead, one could use the following approach:

```
Good  ¦___¦___¦___¦___¦  Bad
```

Tick one box.

An alternative is to use category scales[36], *eg*

```
Frequently Sometimes    Never
¦__________¦__________¦__________¦
```

Tick one box.

5.5 Questionnaire 1

Various drafts of the questionnaire were produced[37] in order to satisfy good design procedure and to ensure adequate pilot testing by interviewees, the early ones discussing the drafts 'blind' and the rest receiving copies in advance (Table 5.1). Changes were made to ensure clarity, lack of ambiguity and misunderstanding, the removal of irrelevant issues and the insertion of extra elements. It is to be hoped that the bias by respondents is minimised by pre-survey testing and interview. Comments were received on both format and content (Appendix 5.13) and a list of interviewees may be found in Chapter 6.

Table 5.1 Interviewees and Questionnaire Drafts

Interviewees	Drafts	Appendices
1	3-6	5.3-5.6
2	3-6	5.3-5.6
3	7	5.7
4-8	8	5.8

Question 1 of the first draft asked for an assessment of the objectives of supervision on a 1-5 scale and listed simplicity, safety for investors, competitive neutrality, cost-effectiveness and flexibility. Question 2 linked the current techniques and possible changes to the criteria contained in question 1. Question 3 focuses on the size of the respondent's society. Draft 2 separates the current and alternative techniques of supervision into different questions. On reflection this complicates and lengthens the questionnaire.

Subsequent drafts contained the insertion of stability of the industry (the systemic interest) in question 1 and thus in other related questions. Draft 3 therefore used six criteria with question 2 relating techniques to these criteria. Question 3 was for 'other comments'. Question 2 in draft 4 merely asked respondents to tick three criteria against each technique, while draft 5 reduced this to two. Draft 6 separated the then current techniques onto a 1-5 scale in question 2 and question 3 followed this pattern for possible amendments to the techniques. Some drafts, such as draft 6, were likely to yield limited information in simply assessing the success of techniques. It is much more useful to seek the reasons for answers and to link these to a standard set of criteria.

As a result of interviews several changes were made resulting in draft 7. Many of the comments centred upon clarifying words and phrases, removing ambiguities and

simplifying parts of the questionnaire.[38] The criteria were decreased to five.[39] Applying possible amendments to supervisory techniques and relating the current techniques to such amendments made the questionnaire confusing and lengthy and so was abandoned.

Draft 8 was a merger or simplification of questions in draft 7. This was becoming closer to the principles of acceptance and clarity and, consequently, was likely to induce respondents to complete the form. Apart from minor changes,[40] the major amendment to draft 9 was the deletion of 'formation' in questions 2 and 3. Criterion 1 in question 3 was corrected to 'safety for investors'. The result was five criteria assessed on a 1-5 scale in question 1, while question 2 involves assessing various techniques and alternatives also on a 1-5 scale. Question 3 requires the assessment of the former with respect to the five criteria. Question 4 is an open-ended 'other comments' question. Draft 10 is merely a desk top published version of draft 9 with an option for respondents to identify themselves or to remain anonymous.

5.6 Questionnaire 2

A consumer survey in this area must involve different questions[41] from those in the building society survey (questionnaire 1) because one cannot reasonably expect the average person to answer questions on complex, lengthy and specialist topics, such as the rules on capital and

liquidity. Questionnaire 2 is therefore designed to be complementary to questionnaire 1 and has a much narrower focus by attempting to obtain customers' views on some of the criteria (in questionnaire 1),[42] deposit protection and the annual accounts.

The questionnaire uses only fixed-choice questions, although the opportunity for 'other comments' exists at the end. It is vital to use simple, clear and standard English in order to avoid confusion and unreliable data. It should be remembered that a street survey entails a number of difficulties, *eg* poor memory by interviewees, errors, some people being reluctant and possibly tempted to hurry their responses and, moreover, the small sample size and restricted geographical catchment area.

Question 1(a) in the first draft (Appendix 5.14) covered the first criterion, safety for investors[43] and when combined with 1(b) provides some suggestion of a risk-return tradeoff. 1(c) and 1(d), by comparing bank and building society returns, introduced some measure of competitive neutrality from the investors' point of view. It is impractical to attempt to inquire about the cost-effectiveness and flexibility criteria and these were thus excluded.

Investor awareness of building society and bank deposit protection schemes were respectively probed in 2(a) and 2(c) and views on changing the cover were elicited via 2(b) and 2(d). 2(e) compared the bank and building society schemes,

thereby introducing the competitive neutrality criterion. Question 3 inquired about the relevance of the Summary Financial Statement and the Annual Report.

Pilot testing of the various drafts[44] was carried out and the second draft (Appendix 5.15) reworded the responses for question 1(d) - 'lower' rather than 'less'. Deposit insurance in question 2 was replaced by deposit protection and question 2(f) was inserted to ask whether investors were prepared to pay for protection. The word 'accounts' in 3(a) was replaced by 'money' to avoid a possible confusion with the annual accounts in 3(c). The old 3(b), Summary Financial Statement, was removed because it was too technical and the annual accounts question changed to discover if these were consulted prior to investing.

Draft 3 widened 1(b) and 1(d) to include services as well as returns. The options in 1(d), 2(b) and 2(d) were simplified via the deletion under '2' and '4' of the expression 'a little'.

The major change in draft 4 after pilot testing was to reduce all the 5 option responses to 3 and to add 'don't know' to the 'yes/no' questions. These moves generated greater clarity and brevity in questions 2(a), 2(c), 2(e), 2(f) and 3. The wording error in 2(a) was corrected and 3(a) deleted as unnecessary. The word 'accounts' could be misinterpreted as having an account with a society so that the phrase 'annual accounts' was used in question 3. Finally, the questions were rearranged to fit on one page so

as to ensure continuity and to avoid giving the impression of excessive length in having to turn over the page.

Draft 5 was essentially a tidying up operation and pilot testing revealed a problem with the type of responses switching variously from "important/unimportant/don't know" to "safer/same/less safe" and "yes/no/don't know".

The questions were therefore expanded and rearranged in draft 6 into objective ones (questions 1-8) and subjective ones (questions 9-17), with the questions 1-6 consisting of "yes/no" and questions 7-8 comprising gender and age information. The previous use of three responses was found to be too limiting and so a standard five-point rating scale was introduced for questions 9-17,[45] where consumers were required to state their degree of agreement with various statements. Finally, the opportunity was taken to insert an open-ended question (question 18).

A street survey in Loughborough and Tamworth in February 1994 was highly disappointing. Many potential interviewees avoided the author, those who did respond were sometimes reluctant to answer (any or all) questions and some displayed evidence of wishing to hasten the end of the interview. The consequent very low response rate[46] and the questionable reliability of the procedure necessitated a change in plan. It was therefore decided to circularise all University of Central England staff, *ie* academic and non-academic, in an attempt to generate sufficient and reliable data.[47] The final version of the questionnaire

includes a covering letter and is contained in Appendix 5.20.

CHAPTER 6: INTERVIEWS

6.1 Objectives

The objectives of the series of interviews were twofold:

(i) to elicit the views of key building society personnel, the Building Societies Association, the Building Societies Commission and HM Treasury[1] on general and specific aspects of prudential supervision; and

(ii) to obtain the comments of the above building society staff on various drafts of a proposed questionnaire to be sent to all societies.[2]

The interviews were therefore neither intended as mere background information nor as a statistical survey but as a means of obtaining information on the practical aspects of supervision, beyond what could reasonably be expected by questionnaire. They were consequently confidential, occasionally 'off the record' and generally non-attributable.

6.2 Interview Techniques

Interviews[3] may possess a number of advantages over questionnaires[4] for, in particular, they enable the researcher to probe more deeply, ask supplementary questions and glean information based on the interviewee's personal experience.[5]

There are three principal types of interview: (i) structured; (ii) unstructured; and (iii) semi-structured. Structured interviews comprise a rigid set of identical questions and the parallel is that of a questionnaire.[6] Geer (1991) warns of their restrictive nature and Burgess (1984, pp 101-02) has pointed out that few field researchers have followed this approach. Instead, an unstructured or semi-structured interview is more usual.

Unstructured interviews (Burgess, 1982, p 107 *ff*; and Oppenheim, 1992, p 74 *ff*) are more flexible in lacking a rigid format and fall into three classes. Firstly, non-directive unstructured interviews are where interviewees determine the direction of the interview. Secondly, there are group unstructured interviews which involve groups rather than individuals[7] and, thirdly, there is the freely flowing conversation type. Unstructured interviews are rarely used in isolation and are often part of a broader programme of research (Burgess, 1984, p 106).

The middle ground between a type (i) and type (ii) interview is that of the semi-structured interview, which may be composed of a standard set of questions and/or a 'hidden agenda' of areas to explore.[8] This moves us away from a fixed set of questions but provides a degree of consistency and comparison between interviewees, whilst additionally offering the option of supplementary questions and open-ended questions, favoured by Geer (1991), as well as a general discussion of relevant topics.

Burgess (1982, p 109; and 1984, p 108) stresses the need for detailed preparation by the interviewer, *eg* specialist knowledge, so that one can operate on the same level as the interviewee.[9] It is important to be a sympathetic listener and to be able to share the culture of interviewees, but care must be exercised lest being over-sociable and developing an over-rapport may generate an element of bias. The validity and reliability of interview data can thus become a problem, whether an interviewee is offering a truthful answer or one which he/she feels is what the interviewer would like to hear.[10] In addition, Johnstone's study of interview transcripts (1991) demonstrated that no two interviewers performed the task alike. As earlier stated, interviews can be designed to be complementary to a formal survey by questionnaire so that each can act as a check upon the other.[11] The promise of confidentiality may reduce this phenomenon and Oppenheim (1992, p 75) points out how telling comments may be made after the interview, when the situation is more relaxed and less guarded 'off the record' remarks may be made.

Hoinville *et al* (1978, p 20) suggest that an interviewee should be gradually eased into the 'core' of the interview by commencing with a discussion of generalities about behaviour and attitudes. The idea is to start with interesting and reassuring topics before moving onto more specific and probing questions. Fink & Kosecoff (1985, p 47) emphasise the need for flexibility when interviewing, *eg*

being prepared to ask follow up questions. Burgess (1982, p 108) suggests four types of question: (i) devil's advocate; (ii) hypothetical; (iii) the ideal position asserted by the researcher; and (iv) the researcher's interpretation of the situation, designed to stimulate the interviewee. Each type may be useful as some interviewees may be verbose and others somewhat taciturn.

As with questionnaires[12] extreme care must be exercised in the phrasing of questions to ensure consistency and clarity. The style and attitude of the interviewer, the tone of voice and non-verbal communication, *etc* can all affect validity of the interview (Fink & Kosecoff, 1985; Hornik & Ellis, 1988; and Oppenheim, 1992). At least interviews allow for a querying of the meaning of questions as well as permitting more complex questions, but loaded questions and bias can remain and it may be that open-ended questions could reveal hitherto undisclosed information relevant to previous questions or could produce additional comments on areas of special concern to the interviewees.

6.3 Issues of Concern

A number of key issues are raised in Chapters 3 and 4[13] and these laid the foundations for general and specific questions in the interviews with the industry and the authorities.[14]

Firstly, the objectives of supervision[15] are crucial in determining the effectiveness and relevance of supervision.

Safety for investors and stability of the industry are often inter-related and a lack of competitive neutrality compared with banks[16] tends to encourage attention being devoted to the conversion issue. Cost-effectiveness and flexibility are additionally important in that supervision may impose both direct and indirect costs.

Secondly, the techniques of supervision, the complexity of the rules[17] and the reporting burden also merit examination. Thirdly, there are several general matters concerning the Commission's interpretation and application of the supervisory rules and the degree to which it may wish to intervene or refrain from doing so. Finally, there are a number of additional elements such as fraud and moral hazard.

6.4 Semi-structured Interviews

A series of interviews were carried out (Appendix 6.1) to obtain comments on various drafts of questionnaire 1[18] and to obtain further information. Questionnaire 1 is examined in Chapter 5 but a major point raised by most interviewees was that many societies were reluctant to complete questionnaires - in contrast to the interviewees, who were willing to spend more time in an interview than it would take to complete a questionnaire. It is, furthermore, significant that half of the parties were approached 'blind' - *ie* not via contacts - and, yet, there were no 'refusals'. The fears of a low response rate were not borne out in the

survey.[19]

The interviews were semi-structured, *ie* a common or standard set of questions and topics were covered (Appendices 6.2 and 6.3) with the opportunity for open-ended questions and the encouragement of interviewees to discuss areas which they considered important. As stated in section 6.1 the interviews were designed to be complementary to the questionnaire 1 data and direct statistical validity was not required, especially when we consider that some comments were 'off the record'. It is especially important to state that the interviews were conducted on a confidential basis and, therefore, subsequent material is written with this in mind. Incidentally, both specific and background material gained by interview has been inserted into other chapters, principally previous ones.

What became immediately apparent during interviewing was the number of societies who suffered a tremendous and stifling shock as the initial trickle of prudential notes from the Commission turned into a veritable flood. There seemed an understandable fear of being swamped in paper work and one interviewee, very pointedly, remarked that while he was reasonably happy with the operation of supervision, his views eighteen months previously were far from complementary. Supervision of the building society industry has now become far more settled and accepted and this enables a more rational and calm approach to be made.

The BSC has attempted to formalise the supervisory system through a series of prudential notes and its monitoring appears primarily to involve the compilation of statistics to be passed from societies to the Commission, *eg* capital requirements and mortgage arrears. One interviewee stressed that the Commission did, however, tend to consider the calibre and expertise of management and staff above all else, whether considering a long established society or the formation of a new one.

The absurdly low initial limit of £5,000 on unsecured lending was criticised by a number of parties and this was only somewhat abated by the subsequent increase to £10,000[20]. One interviewee, interestingly in contrast, indicated a large degree of surprise that no serious problems had so far arisen for a society as a result of taking up some of the newer activities and he suggested that the answer possibly lay in the gradual (or over-cautious) approach by the Commission in regulating each society on a step by step basis, as the latter progressed into new territories (*eg* the different capital requirements in the short- and long-run in the former calculus - PN 1987/1). The same argument has in fact been used by the Commission with respect to the delays (a "strength") in the authorisation of new financial instruments. Despite this, some societies felt the need for a much wider Schedule 8.

Views on capital ranged from "not an issue" or "irrelevant" to a consideration that the complicated calculus did impede

expansion into newer areas and that it was necessary to estimate (and plan for) the impact of different types of activities/growth on capital. One society, incorrectly, felt that competitive neutrality had already been achieved between banks and building societies with respect to capital, whilst others resented the use of asset categories so disparate from those of banks'. One party even went on to postulate that the existence of both capital requirements and 'nature limits' on those activities were unnecessary and that he favoured the retention of the former and the abolition of the latter. Interestingly Mark Boleat, formerly Director-General of the BSA, considered capital not to be a problem.

Since the Building Societies Act 1986 the Commission has laid down a 'broad' and a 'narrow' liquidity target for each society and a couple of interviewees believed the latter to be given undue weighting. One society stated that its policy of holding gilts meant that it was forced to increase its cash to meet the liquidity requirement.

The rise in the wholesale funding limit to 40 per cent was termed "astonishing" by one interviewee; another complained that time deposits were treated the same as the rest of wholesale funding, which he considered inappropriate; a third pointed out that the BSC effectively set an operational maximum figure significantly below the statutory maximum - typically around 25 per cent; and a fourth expressed concern at the short-term negative effects which

the Hammersmith & Fulham *ultra vires* swaps case was inflicting upon societies, notwithstanding the clear legal position of building societies to engage in swaps and similar transactions for hedging purposes.

It is significant that there is a divergence on the issue of mutuality and wholesale funding between the BSA and the BSC. The former in its 1991 proposals (1991a and 1991b) envisages a minimum of 25 per cent of funds from members, while the BSC considers 50 per cent as the key figure for a mutual institution.[21]

Many of the interviewees were unhappy about the scale of statistical returns to be made to the Commission (one society declaring that this occupied one per cent of head office staff), although it must be said that several also collected the data for internal purposes anyway. One of the complainants ironically found that a computational error in its returns resulted in an amicable visit by the BSC to discuss the need for a more careful and structured monitoring system by the society. Smaller societies, similarly, bemoaned the "excessive" auditing burden and the employment of a large firm of auditors plus their consequently high scale of fees. The Summary Financial Statement was dismissed by one interviewee as of "no use".[22]

One "useful nuisance" was the systems régime,[23] since it appeared to provide an appropriate discipline for written documentation and planning, which some might otherwise give

insufficient importance. The need for backup computer facilities on a separate site was easily met by one society in the aftermath of a merger, whilst another used an unpopular make of computer system and could not obtain a disaster recovery service from an outside agency - resulting in additional expense. This was considered by the society as unnecessary because it was prepared accept the "commercial risk" of failure.

With respect to deposit insurance, Gill Noble of HM Treasury made the compelling point that societies are required to stand behind their subsidiaries 100 per cent and this applies, *inter alia*, to Isle of Man and Channel Islands subsidiaries. Thus, depositors there enjoy an effective 100 per cent cover compared with 90 per cent for mainland savings.[24]

The Building Societies Commission is itself not immune from criticism. Apart from some minor annoyance at the scale of BSC (and, incidentally, SIB) charges and the apparently superficial nature of Annual Review Meetings, a number of comments centred upon an (occasional) degree of inconsistency between supervisors and the problem of attempting to develop a corporate plan, when changes in the rules underpinning that plan could suddenly be changed.

One common problem raised was that of the secondment of (primarily) building society personnel to the BSC and a significant level of dissatisfaction was expressed at the key issues of confidentiality and a potential conflict of

interest. According to the Commission, this represented an unwarranted fear and, anyway, there is little secondment now. Greater building society powers, such as those recommended in the BSA's 1991 proposals (1991a and 1991b) will give rise to the need for more staff of an appropriate expertise and the secondment issue may return with the advent of the Deregulation Bill and the Treasury Review 1994.[25].

There was, additionally, the matter of delays in contacts with the Commission during the Abbey National's conversion - leading one party to suggest that BSC charges should be scaled into the following three bands: (i) core business; (ii) non-core business; and (iii) conversion. The Commission feels that the Abbey was unrealistically optimistic in calculating its time scale for conversion. One building society representative also referred to the problem of legal interpretation and the occasional need to seek counsel's opinion. One small society felt that financial success and probity did not impress the Commission, whose response at the Annual Review Meeting was to put pressure on the society to merge. However, there was a generally high degree of satisfaction through the development of a personal on-going relationship with members of the Building Societies Commission, such that new activities or problems could be confidentially discussed at an early stage, *eg* a merger proposal.

In a different vein, mutuality was not felt to be irrelevant to the building society movement; rather, its importance was stressed by many, from both large and small societies. Even so, some did forecast that, within five years, we would see mutual banks[26] and this seems to fit in with the views of others, who favoured one supervisor for banks and building societies.

The criticisms made by the interviewees were, therefore, rarely common to all - variety being the order of the day. They were, nonetheless, reasonably content with the current supervisory system and with the operation of the BSC. Their differences over specific grievances consequently stemmed from the nature of each society, the personnel involved and the long-run objectives of each society.

CHAPTER 7: STATISTICAL TECHNIQUES

7.1 Introduction

There are several factors that affect data:

(i) whether a survey is asking the appropriate questions;[1]

(ii) the reliability or repeatability of the data;[2] and

(iii) the statistical technique(s) applied to the raw data in order to obtain meaningful results.

7.2 Reliability

A frequent approach in assessing reliability is the standard deviation of the sample mean (or standard error of the mean) which equals (Bancroft & O'Sullivan, 1988, p 211):

$$\frac{\sigma}{\sqrt{n}} \qquad (7.1)$$

where n = number of observations and

σ^2 = population variance.

A normally distributed population implies that the sampling distribution of the mean is also normal (Bancroft & O'Sullivan, *op cit*; Iman & Conover, 1989, p 205). In addition, the larger the value of n, the smaller the variance of the sample mean and hence the closer we would expect the sample mean, $\bar{x}$, to be to the population mean, μ. There may be, on the other hand, a non-normally distributed population. However, if n is large then, according to the Central Limit Theorem, the distribution of the sample mean,

$\bar{x}$, is approximately normal (Bancroft & O'Sullivan, 1988, p 213; Daniel & Terrell, 1975, p 165; Iman & Conover, 1989, p 206). The theorem assumes a representative sample and the definition of "large" appears to be greater than 30 (Bancroft & O'Sullivan, *op cit*; Galloway, 1989, p 104). It may be that the median is more appropriate for "distinctly nonnormally distributed populations" (Iman & Conover, 1989, p 257).

For normally distributed statistics, it is consequently possible to calculate a confidence interval (or limits) for which it can be asserted that the interval (or limits) will contain the parameter that it is intended to estimate (Roscoe, 1975, p 166-67).[3] The most frequently used are the 95% confidence limits (Holl, 1987, p 102) which are represented as follows:

$$\bar{x} \pm 1.96 \times \frac{\sigma}{\sqrt{n}} \qquad (7.2)$$

where $\bar{x}$ = the sample mean

Applying the above to the survey data is difficult and, at times, inappropriate. A crucial assumption is that of a random (or representative) sample (Galloway, 1989, p 103).[4] A random sample via a street survey proved impractical and unreliable for questionnaire 2[5] and it is random only to the extent that other organisations might have been used.[6] Its reliability is thus subject to the sample size,

the nature of the target population and the response rate. The building society data in questionnaire 1 is by definition not random[7] but, instead, is obtained by targeting the whole population. This is somewhat analogous to a census, except that there is no legal pressure to participate, and so techniques to assess the reliability of census data (Yates, 1981, pp 2 and 116) do not apply.[8] Instead, there is a process at work sometimes referred to as self-selection (Keller *et al*, 1988, p 205).[9] Also, this data focuses on the opinions of respondents and the population distribution is unknown. It cannot be reasonably assumed to be normally distributed and, while some of the distribution of the actual (sample) survey data is admittedly normal, much is not.

Therefore, it seems inappropriate or invalid to apply confidence limits to the building society data because of its non-random nature and partial non-normal distribution. This does not invalidate the data. Indeed, several factors support the opposite view: (i) the total population equals the target population; (ii) the high response rate; and (iii) the often detailed "other comments" section of the questionnaire. The solution to any residual concern from a reliability standpoint for each questionnaire is careful attention to the response rate and a step-by-step analysis of (close) results so that any inherent limitations of the data may be indicated.[10]

7.3 Hypothesis Testing

Hypothesis testing may be defined as seeking "to confirm or deny some preconceived idea as to the value of a parameter" (Bowers, 1982, p 197). Despite the fact that hypothesis testing as such is not involved,[11] it is probably worthwhile examining some of the associated statistical techniques, in case they may assist the analysis.[12] The same may be said, indeed, of (ordinary) correlation, but it is also possible that some more sophisticated forms of correlation may have relevance.

The Chi-squared (χ^2) test (Bhattacharyya & Johnson, 1977, p 424 *ff*) measures the differences between what is expected and what is observed and may be defined by the formula:[13]

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i} \qquad (7.3)$$

which simplifies to:

$$\chi^2 = \sum \frac{O_i^2}{E_i} - n \qquad (7.4)$$

where χ^2 = the sum of the relative squared differences

O_i = the observed frequency of the *i*th class and

E_i = the expected frequency of the *i*th class.

The test thus represents a measure of the discrepancy between expected and observed frequencies: the larger the value, the less agreement between observed and expected frequencies; the smaller the value, the closer the

agreement.

This test will, admittedly, show the degree of match between the two, but is rejected on two grounds: firstly, it is a form of hypothesis testing or, rather, forecasting and can be misleading in this context; and secondly, and more importantly, the questionnaire 1 data yields in theory sixteen basic results, twelve of which are partly dependent upon four of the results.[14]

It is possible that the linear coefficient of correlation[15] may be helpful in establishing relationships between various sets of data:

$$r = \frac{N\Sigma X_i Y_i - \Sigma X_i \Sigma Y_i}{\sqrt{[N\Sigma X_i^2 - (\Sigma X_i)^2][N\Sigma Y_i^2 - (\Sigma Y_i)^2}} \qquad (7.5)$$

where i = an instance of X or Y

N = number of values of a variable

X = one variable

X_i = the ith instance of X

Y = another variable and

X_i = the ith instance of X.

r takes on values between -1 and +1. Closeness to zero signifies the absence of any relationship between X and Y. The sign of the coefficient signifies the direction of any relationship.

A major application of correlation is in factor analysis (Harman, 1976 and Lawley & Maxwell, 1971).[16] The analysis

uses a correlation matrix, *eg*

Table 7.1 Correlation Matrix
Questionnaire 1, Q2 - Data *b*, *c*, *d*
(i_4, i_5, i_6, i_7)

Data	Data *b*	*c*	*d*
b	1	.94	.77
c	.94	1	.51
d	.77	.51	1

Further, there may be interesting properties in a matrix, *eg* common ratios for the rows if the diagonal is ignored (Manly, 1986). The use of a correlation matrix (or a series of matrices) would be a useful way of analysing complex data and relationships in both questionnaires, *eg* analysing questions 9-17 in the second questionnaire with respect to age, sex and whether consumers posses a building society account.[17]

The (ordinary) correlation coefficient assumes normal distributions and cardinal numbers and the way to overcome these deficiencies may be via the Spearman rank correlation coefficient (Holl, 1987 and Yeomans, 1968) such that:[18]

$$r_s = 1 - \frac{6\Sigma(X_i - Y_i)^2}{n(n^2 - 1)} \qquad (7.6)$$

where r_s = the Spearman rank correlation coefficient

n = number of pairs of observations

X_i = rank of observations X and

Y_i = rank of observations Y.

r_s takes on values from -1 to +1. When r_s equals +1, there is perfect agreement between X_i and Y_i. A value of r_s equal to -1 indicates that the rankings in X_i and Y_i are exactly opposite. When r_s is near to zero, this indicates that X_i and Y_i are independent.[19]

No causal relationship should automatically be implied with this method, but it can only accommodate two sets of data, *ie* X_i and Y_i, whilst the questionnaire 1 data generates eight sets.[20] Spearman's Hypothesis may be suspect and Braden (1989) offers empirical evidence on its divergent soundness. Finally, as Nijkamp says, (1982a, p 122), this correlation analysis "rests in general on non-permissible numerical operations on ordinal data."[21]

The Kendall Tau statistic, which also examines two sets of data, is a relative measure of the discrepancy between actual ranking or order of one set and the two orders that would result from perfect association. It is applied in the same situations as r_s (Gibbons, 1976, p 284). One set, say X, is rearranged in natural order, *eg*

X rank	1	2	3	4	5	(7.7)
Y rank	2	3	1	4	5	(7.8)

The X set is arranged in natural order (*ie* 1 to 5) and each rank in Y is taken in turn (Gibbons, *op cit*; Snedecor & Cochran, 1989, pp 194-95). For rank 2, the count is 1, since only one rank to the right (*ie* 1) is smaller. The four counts are therefore 1, 1, 0, 0, there being no need to count the extreme right rank. Kendall's Tau statistic, T, is (Snedecor & Cochran, *op cit*):

$$T = 1 - \frac{4Q}{n(n-1)} \qquad (7.9)$$

where n = the number of ranking classes and

Q = the number of pairs of Y values that appear in natural order.

A result of +1 denotes complete concordance and -1 complete disagreement.

This measure falls down, as does r_s,[22] on its inability to cope with more than one pair of observations and it is interesting to note that Gibbons stresses the perils of implying a causal relationship between the variables, whether using r_s or T. She declares it to be "nonstatistical and usually dangerous" (1976, p 294).

The partial Tau coefficient examines the situation of three variables or sets of observations (X, Y and Z)[23] to

calculate the relationship between the first two and the third (Gibbons, 1976, p 298). The Kendall Tau coefficient is calculated for each possible set of paired observations and the partial Tau coefficient, denoted by $T_{xy.z}$, is computed thus:

$$T_{xy.z} = \frac{T_{xy} - T_{xz}T_{yz}}{\sqrt{(1 - T_{xz}^2)(1 - T_{yz}^2)}} \qquad (7.10)$$

The results are interpreted in the same way as T. This approach can be criticised as it assumes that there might be a relationship between X and Y on the one hand and Z on the other. This might not be the correct permutation. Indeed, no permutation might be correct for the questionnaire data. Also, it only uses three variables or sets of observations.

An apparent way of overcoming the situation of more than two ranks might be by calculating r_s (or a similar measure) for all possible pairs of series and averaging the coefficients (Yeomans, 1968, p 307). This a little cumbersome with respect to the questionnaire 1 where, with four sets of results, six values for r_s would be needed for each current technique and its alternatives.

A more attractive approach is to use Kendall's coefficient of concordance, W,[24] defined as follows (Yeomans, 1968, p 307):

$$W = \frac{12\Sigma\left(\Sigma r_a - \frac{\Sigma\Sigma r_a}{n}\right)^2}{k^2 n(n^2 - 1)} \qquad (7.11)$$

where Σr_a = the sum of the ranks by judges for a given variable

$\Sigma\Sigma r_a$ = the sum of these sums

k = the number of sets of ranks and

n = the number of ranks in each set.

This formula can be simplified in most cases by the following expression (Gibbons, 1976, pp 304-05):

$$W = \frac{12 \sum_{j=1}^{n} R_j^2 - 3k^2 n(n + 1)^2}{nk^2 (n^2 - 1)} \qquad (7.12)$$

where Gibbons uses R_j instead of $\Sigma\Sigma r_a$.

If we return to Yeomans (1968, p 307), we find that W comes into its own when there are many sets of rankings. He cites the example of 7, with the resultant necessity of calculating 21 values for r_s - hence the attractions of W. Questionnaire 1 seems therefore to fall between two stools.[25]

Most of the preceding statistical techniques contain certain features which tend to diminish their soundness or relevance. Firstly, some involve implicit or explicit forecasting. Secondly, even the more complicated approaches do not enable a comparison of four (or more) sets of data.[26]

Thirdly, despite some models incorporating larger numbers, there is a potential danger in using models in situations for which they were not designed. Many of the methods are unwieldy and might all too easily mask the rationale behind the figures. Therefore, in order to maintain clarity and flexibility in the discovery of relationships as well as consistency between questionnaires, a series of correlation matrices (derived from factor analysis) will be employed.[27]

7.4 Types of Data

Reliable and accurate data is the cornerstone of empirical analysis and falls into two broad categories: 'hard' and 'soft' data. Hard data consists of rational[28] undisputed facts (Phillips, 1991) and uses quantitative or cardinal information,[29] such as the annual capital expenditure of a financial institution. Soft data,[30] on the other hand, relates generally to qualitative or ordinal information,[31] *eg* job satisfaction and urban planning. In the latter case, soft data is "the rule rather than the exception", according to Nijkamp (1982b).[32]

Hard data is normally more measurable and apparently objective than soft data.[33] It is possible, for example, to compare the relative profitability of building societies by examining their published accounts over a given period. Even so, hard data may sometimes be misleading in the above instance because profits figures can become distorted by a merger, winning a court case against the Inland Revenue or a

change in accounting practice.

There are also many occasions when hard data is not available and attempting to measure the effectiveness of the supervision of building societies falls into this category. Some statistics of a hard nature do exist, *eg* the cost of operating the Building Societies Commission (BSC), but this represents merely one variable among many. Virtually all the key variables, such as the impact on consumers or the systemic interest, are simply non-measurable in the usual quantitative sense and soft data[34] is the result.

Soft data may be classified in four principal ways. Firstly, proxy variables[35] "assign a cardinal value...to non-metric variables" (Nijkamp, 1982a, p 122). The standard of living could be measured using real income per head, the unemployment rate, etc or one could seek similar means in measuring poverty (Blackburn, 1992). This is not really possible or practical for building society supervision, whether from the building society or investor standpoint, where flexibility in supervision is of necessity a subjective matter - as is the extent to which a level playing field is felt to exist. Even when considering cost-effectiveness, we find that only some costs are readily identifiable. The full cost to a building society is not merely the BSC levy but also, *inter alia*, the capital and liquidity implications, the impact upon management control systems, loss of flexibility, etc.

Secondly, dummy variables or univariate dichotomous models (Amemiya, 1981, p 1486; and Suits, 1958), may be used and a dummy variable has been defined by Keller *et al* (1988, p 733) as "a variable that can assume only two values (usually 0 and 1), where one value represents the existence of a certain condition and the other value indicates that the condition does not hold." The most relevant example with respect to financial institutions is that of failure prediction or early warning systems. The associated literature is rapidly increasing and includes Altman & Sametz (1977), Gardener (1986), Pantalone & Platt (1987), Pettway & Sinkey (1980) and Sinkey (1977 and 1989).

However, supervision is only one factor influencing failure and this research centres on supervision not failure prediction. It is therefore difficult, even at a general level, to see a role for dummy variables in a situation where subjective judgements are positively pursued. Further, as Nijkamp says (1982a, p 122), a zero-one indicator "does not normally make use of the available information in the most efficient way". More than purely zero-one information is usually available, for instance at its basic, 'good, better, best'.

Thirdly, a variation on the above theme is that of multi-response models (Amemiya, 1981, pp 1515 and 1525) where the answer or result is one of several possible. This on its own appears not to be relevant, but it does lead us to multicriteria models and impact matrices[36] because of the

wish to explore the relative relationship between supervisory techniques.

Fourthly, discrete data (which technically includes the previous three ways) has been defined by Snedecor & Cochran (1989, p 17) as quantitative variables where "the possible values take only a distinct series of numbers." This might be the number of employees in a building society (hard data) and a soft data version could involve asking respondents to rank the degree of importance attributed to safety for investors.[37] A narrower variation of the latter, termed categorical data, would be where respondents "have to indicate whether or not a certain object is regarded as important" (Nijkamp, 1982a, p 123).

The assessment of supervisory techniques necessarily involves soft data, and questionnaires designed primarily to elicit the views of key building society personnel or customers are actually seeking a series of gradings or rankings of the objectives and techniques of supervision.

There are three broad approaches which might be applied to soft data and this research: ranking or grading, (explicit) cost-benefit analysis (CBA) and the impact matrix.

The ranking method, referred to earlier, has attractions in its simplicity, as respondents can quickly grasp what is required and are not confused or deterred from proceeding. Cantilli cites a Bell Telephone Laboratories exercise (1974, p 6) where people were asked to rate various features of the telephone service as 'good, 'fair' or bad'. He also

touches on an Abt Associates study involving a ranking of personal preferences on various aspects of urban mass transit systems. The biggest drawback to a straightforward grading of variables is that it provides no information concerning the reasons for these decisions.

Cost-benefit analysis could be considered as meeting at least part of the above objection, since it attempts to place monetary values on as many potential costs and benefits as possible (Mishan, 1988), *eg* funds spent on the London Underground tending to reduce the need for expenditure on the roads. It should be remembered that many costs and benefits are qualitative, *eg* the environmental impact of a new airport. An example of CBA is below (Mishan, 1971, p 12):

If costs = £55m and benefits = £86m, (7.13)

the benefit-cost ratio = $\frac{86}{55}$ and (7.14)

the net benefit-cost ratio = $\frac{86 - 55}{55}$ (7.15)

It is, incidentally, possible to extend this analysis to encompass a wide range of possible approaches, one example being a payoff matrix for different policies (Pearce, 1983, p 84), which combines different rates of economic growth with different government policies:

Table 7.2 CBA Payoff Matrix Example

Policy	Growth 1	2	3	4
Policy 1	0	3	7	16
Policy 2	4	4	4	5
Policy 3	0	0	3	3
Policy 4	6	10	5	3

Given the degree of optimism/pessimism, an analysis *á la* game theory can then be carried out to arrive at an optimal solution.[38]

It is somewhat difficult to see how as many costs and benefits as possible - some of which are non-quantifiable, eg flexibility - could be incorporated into a questionnaire, without excessive length and complexity. A combination of ranking and CBA appears to offer the solution.

The above payoff matrix approach can also be applied outside the confines of CBA where it is usually termed an impact matrix. This frequent component of soft modelling shows the effects of several policies (Nijkamp, 1982b, p 197) and the main uses, thus far, have been in transport (Cantilli, 1974) and in geography/regional economics (Bloomstein & Nijkamp, 1983; Chatterji *et al*, 1983; Nijkamp *et al*, 1979). An impact matrix approach may be used in macro-economic forecasting or to assess the impact of AIDS upon the insurance industry (Getz & Bentkover, 1992). Similarly,[39]

there may be a choice of routes for a new road or alternative sites for the construction of a dam. If each alternative is assessed by reference to the same set of criteria, an optimal solution may be found.[40] This means that a respondent completing questionnaire 1 is effectively giving reasons for his/her answers.

An impact matrix therefore requires the determination of a set of criteria and their weighting. The principle of using objectives and their relative importance to determine weighting has been suggested by Cantilli (1974, p 4) and Nijkamp & van Delft (1977, p 19) respectively, while Farrell (1982, p 600) employed a panel of "experts" to determine the relative criteria. It is also possible to apply different sets of weights to the same data.

The impact matrix therefore seems the most suitable method for questionnaire 1 in that it affords the opportunity for a standard analytical framework in question 3, whereby each supervisory technique and some alternatives are assessed or ranked by reference to a standard set of criteria, *ie* the fundamental objectives of supervision (safety for investors, stability of the industry, level playing field between lenders, cost-effectiveness, flexibility) and it could be argued that these factors carry an implicit CBA approach. In this way the respondents are effectively providing reasons for their answers in question 3, not possible in question 2. The weighting of the objectives can be generated by the questionnaire and different sets of weights

could also be applied.

7.5 Soft Modelling

This section examines various techniques which may be applied to the questionnaire 1 data. Only the more relevant methods are examined in detail and a summary table is contained in Table 7.3. It should be remembered that the objective is to devise an optimal supervisory system.

The metagame method (Nijkamp, 1982b, p 200) resorts to the use of dummy variables and game theory to indicate whether policy makers or judges accept a particular option, whilst path models attempt to identify correlations between clusters of proxy variables (Keith, 1989 and Tuijnman, 1989).[41] Proxy variables are not really relevant for this analysis. Second Degree Stochastic Dominance Analysis (SSD), in contrast, focuses on the ranking of risky prospects (Evans & Weinstein, 1982, p 257), again not relevant.[42]

Table 7.3 Soft Modelling: A Summary

Model	Features	Examples	Comments
Metagame Method (Nijkamp, 1982b)	dummy variables and game theory	views of policy makers	irrelevant (See 7.4)
Path Models (Nijkamp, 1982a)	correlations between proxy variable clusters	economic growth efforts political conditions earnings (Tuijnman, 1989) education (Keith, 1989)	irrelevant (See 7.4)
Second Degree Stochastic Dominance Analysis (SSD) (Evans & Weinstein, 1982, Nijkamp *et al*, 1992)	ranking of risky prospects	ranking occupations as risky income prospects packing (Falk & Tilley, 1990) growth (Bishop *et al*, 1991) insurers' returns (Johnson, 1990)	irrelevant
Decompositional Multi-Attribute Preference Models (Golledge & Timmermans, 1988)	categorising attributes assumed to influence choice behaviour of interest	causes and effects	reverse of objectives/ questionnaire 1

Table 7.3 Soft Modelling: A Summary (Continued)

Model	Features	Examples	Comments
Impact Matrix (P) and Weights Vector (w_k) Approach = Multi-criteria Analysis: (Koksalan & Taner, 1992; Melachrinoudis & Rice, 1992; Olson & Dorai, 1992; Subramanian & Gershon, 1991; Taner & Koksalan, 1991)	P: outcomes of various alternatives w_k: ranking criteria in a given scenario (Saaty, 1986c)	alternative sites for a dam; routes for a proposed road (Nijkanp, 1982b) insurance (Getz & Bentkover, 1992) transport (Cantilli, 1974) regional economics (Chatterji *et al*, 1983)	several versions below
Expected Value Method (Nijkamp, 1982b; Nijkamp & van Delft, 1977)	ranking ordinal effects of alternatives for given criterion; multiplying by preference scores		not dominance analysis; based on non-permissible numerical operations
Lexicographic Method (Nijkamp, 1982b; Stork & Viaene, 1992)	classification of criteria/impact values according to classes; ordering by combination of classes	education (Sadler, 1989) model of an economy (Stork & Viaene, 1992) linear programming (MOLP-Marchi & Oviedo, 1992)	simple; quality results but "arbitrary" categories (similar to Q1 and Q2, but can be bettered by Q3)
Frequency Method, related to lexicographic method (Nijkamp, 1982b; Nijkamp & van Delft, 1977)	successive scores/ effects assigned to classes; compound classes		simple; but difficult to infer unambiguous solutions

Table 7.3 Soft Modelling: A Summary (Continued)

Model	Features	Examples	Comments
P/w_k = Multi-criteria Analysis (Contd):			
Permutation Method (Nijkamp, 1982b; Nijkamp & van Delft, 1977)	dominance relationships from permutations of successive criteria/weights		unnecessarily complex; difficulties in ranking/ interpretation
Ordinal Concordance Analysis (from Electre method) (Nijkamp, 1982b; Nijkamp/van Delft, 1977; Subramanian & Gershon, 1991)	weights from decision makers via revealed preference or question (Delphi technique) (Blair *et al*, 1987; Kacmar & Ferris, 1993; Scala & McGrath, 1993)	Delphi, *eg* licensing a profession (Heaston, 1990) management (Fulmer, 1989 regional economics (Gibson & Miller, 1990)	inappropriate and impractical; questionnaire use of two weights vectors
Multidimensional Scaling Analysis (MDS) (Evans, 1993; Louviere & Johnson, 1990; Nadaraajan, 1993; Nijkamp, 1982a; van der Lans & Heiser, 1992)	series of weighted outcomes by transforming ordinal data (from P and w_k) into metric cardinal data	economics, geography (Nijkamp, 1982a); risk (Vlek & Stallen, 1981); job dissatisfaction (Farrell, 1983) education (Davison, 1991) health (Raymond, 1989)	use of proxy variables and causal relationships between variables and object; can result in multiple rankings
Regime Method (Nijkamp: 1978, 1982a and 1982b)	P and w_k: pairwise comparisons of ordinal data; dominance analysis via regimes - non-/ dominance relationships	alternative sites for a dam	use of dominance analysis/binary numbers; standard treatment of data/weights application; uncluttered

Decompositional multiattribute preference models (Golledge & Timmermans, 1988, p xxi) typically involve an initial categorisation of attributes assumed to influence the choice behaviour of interest. This is, of course, the reverse of questionnaire 1, where the choices or policy options (the techniques of supervision) are rated according to their ability to satisfy certain criteria, *ie* the attributes used are effects, not causes.

There are also several models which are relevant, some of which are suspect in some way, and these generally follow an impact matrix and weights vector approach (Koksalan & Taner, 1992 and Nijkamp, 1982b). An impact matrix, P, exists thus:[43]

$$P = [p_{ij}], \quad i = 1, \ldots, I, \quad j = 1, \ldots, J, \qquad (7.16)$$

where i = a policy or option

I = upper limit of i

j = a criterion

J = upper limit of j

k = a scenario

p_{ij} = the outcome of the ith alternative with regard to the jth judgement criterion and

P = an impact matrix

Alternative scenarios give rise to a weights or preference matrix, W (also Saaty, 1986c), thus:

$$W = [w_{jk}], \quad j = 1, \ldots, J, \quad k = 1, \ldots, K, \qquad (7.17)$$

where k = a scenario

K = upper limit of k

w_{jk} = the ranking of the jth criterion in the kth scenario

w_k = a weights vector produced by the priorities implied by scenario k and

W = a weights or preference matrix

The objective of multicriteria analysis[44] is therefore to produce, for each scenario k, a ranking of alternatives 1, ..., I, that derives from the impact matrix P and the weights vector w_k. For example, question 3 in questionnaire 1 follows this approach and links the 5 criteria or j to a given technique of supervision, i, and then some alternatives. In this way the objectives of supervision are related to the techniques.[45]

The expected value method (Nijkamp, 1982b and Nijkamp & van Delft, 1977) follows an impact matrix approach. The ordinal effects of all alternatives for a certain criterion, j, are ranked in descending order and the contents of the weights vector are also ranked. Then, for each alternative i, the ordinal effects are multiplied by the corresponding ordinal preference scores. This seems very close to the (later) regime method, but does not employ dominance analysis and Nijkamp dismisses it as "a rather crude aggregation

procedure based on nonpermissible numerical operations on ordinal numbers" (1982b, p 199).

The lexicographic method (Nijkamp, 1982b and Stork & Viaene, 1992) takes for granted a classification of the evaluation criteria according to *a priori* defined importance classes. Next, for each criterion *j*, impact values of all alternatives are classified according to their degree of performance into *a priori* defined performance classes. Finally, the alternatives are ranked via a lexicographic ordering by means of a combination of the importance and performance classes.[46] Although a fairly simple tool, Nijkamp dismisses the identification of ordinal equivalence categories as "arbitrary". The style of questions 1 and 2 in questionnaire 1 appears to mirror the earlier part of this method, but it can be improved upon and the ranking system, as used in question 3 with respect to the criteria, seems preferable to discrete classes of performance or the adoption of limited categorical data.

The frequency method (Nijkamp & van Delft, 1977) is related to the lexicographic method and assigns successive preference scores and criterion effects to *a priori* defined importance and performance classes respectively. Next, compound importance-preference classes are constructed by means of a combinatorial analysis. Then the number of times each alternative falls into a compound class is counted to arrive at an overall result. This method possesses an apparent simplicity, but it may sometimes be difficult to

infer unambiguous solutions (Nijkamp, 1982b, p 199) and is rejected on this ground.

The permutation method (Nijkamp, 1982b and Nijkamp & van Delft, 1977) is based on the data in P and w_k and develops a procedure to investigate the degree at which alternative *i* dominates the other alternatives. This is done via an examination of the dominance relationships, resulting from permutations of the successive decision criteria as well as the weights. However, it possesses an unnecessary complexity, because of the large number of permutations, and this can create difficulties in the ranking of alternatives and the interpretation of weights during the permutations (Nijkamp, 1982b).

Ordinal concordance analysis (Subramanian & Gershon, 1991) is an ordinal variant of the quantitative concordance or electre method (*Elimination et choix traduisant la réalité* - Nijkamp & van Delft, 1977). The model attempts to derive an optimum plan from a series of competing alternatives on the basis of multiple criteria. An impact matrix is constructed to link the alternatives and criteria. Interestingly, the weights can be determined by revealed preference, *ie* by the past revealed preference of the decision makers (or supervisors in this context). This approach is inappropriate because it is backward looking and the information impossible to obtain. An alternative is to ask the decision maker directly for his/her priorities (to determine w_k).[47] This latter approach is sometimes called the Delphi

technique, developed at the Rand Corporation in the 1950s (Goldfisher, 1992), and is applied in areas such as politics, productivity, electronic data interchange, licensing a profession, regional economics and management.[48] Relying exclusively upon such a narrow source could however be unwise. A development of the Delphi Technique to arrive at a group consensus is the Analytic Hierarchy Process (AHP) (Benjamin *et al*, 1992; Muralidhar *et al*, 1990; and Stout *et al*, 1991).[49]

The next step in the ordinal concordance model is a pairwise comparison of alternatives, initially akin to the regime method. Two kinds of indicators are computed (Nijkamp, 1982b). Firstly, the concordance index is calculated, equal to an aggregate score for those criteria with respect to which a certain alternative, i, outperforms the other alternatives. The result is a concordance dominance matrix A, composed of concordance sets, $\bar{c}$, for a given criterion j (Nijkamp & van Delft, 1977, p 29) with typical elements $a_{ii'}$:

$$a_{ii'} = 1, \text{ if } c_{ii'} \geq \bar{c} \qquad (7.18)$$

$$a_{ii'} = 0, \text{ if } c_{ii'} < \bar{c} \qquad (7.19)$$

where a = elements of $\bar{c}$

A = concordance dominance matrix

$\bar{c}$ = concordance set of A

i = alternative and

j = criterion

It should be noted that $a_{ii'} = 1$ signifies that plan i is preferred to plan i' and that $a_{ii'} = 1$ does not imply that $a_{i'i} = 0$, because the definition of a concordance set includes an equality sign. This means that, in the case of equal project effects, the corresponding weight is included in both $c_{ii'}$ and $c_{i'i}$.

Similarly, the discordance index is calculated equal to an aggregate discrepancy index (Nijkamp, 1982b, p 199) for those judgement criteria with respect to which a certain alternative i has worse outcomes than other alternatives. The result is a discordance dominance matrix B, composed of discordance sets, $\bar{d}$, for a given criterion j (Nijkamp & van Delft, 1977, p 30). This operates in a similar, but opposite, way to matrix A with typical elements $b_{ii'}$:

$$b_{ii'} = 1, \text{ if } d_{ii'} \leq \bar{d} \tag{7.20}$$

$$b_{ii'} = 0, \text{ if } d_{ii'} > \bar{d} \tag{7.21}$$

where b = elements of $\bar{d}$

B = discordance dominance matrix

$\bar{d}$ = discordance set of B and

j = criterion

Then, the intersection of A and B is calculated and the resultant aggregate dominance matrix is defined with typical elements $e_{ii'}$ as:

$$e_{ii'} = 1, \text{ if } (a_{ii'} = 1) \cap (b_{ii'} = 1) \quad (7.22)$$

$$e_{ii'} = 0, \text{ otherwise} \quad (7.23)$$

where e = elements of aggregate dominance matrix and

E = aggregate dominance matrix

The technique seems unnecessarily clumsy and there is no guarantee that there will be only one solution. Indeed, "multiple...solutions may exist" (Nijkamp & van Delft, 1977, p 30).

Multidimensional Scaling Analysis (MDS), sometimes known as polynomial conjoint analysis or ordinal geometric scaling,[50] transforms ordinal data (from P and w_k) into metric cardinal data so that a series of weighted outcomes is obtained (Nijkamp, 1982a, pp 123-27).[51] MDS has been used in a variety of disciplines - *eg* economics, geography and marketing - to assess factors such as risk (Vlek & Stallen, 1981) and job dissatisfaction (Farrell, 1983).[52]

However, Nijkamp's case study (1982a) illustrates how the technique falls down on several counts. Firstly, he uses proxy variables to establish a causal relationship between observable variables and the object under discussion through a subsequent regression analysis. Secondly (1982b, p 200), it can result in multiple rankings of alternatives and, thirdly, it uses "fairly complicated algorithms" (1982a, p 125).

The regime method is essentially a combination of some of the best features of the above models and involves a pairwise comparison of ordinal data, followed by a dominance analysis via so-called regimes - sets of combinations of dominance and non-dominance relationships (Nijkamp, 1982a and 1982b).[53] The method employs the approach of the impact matrix P and weights vector w_k, outlined earlier.[54]

If, according to criterion j, alternative or supervisory technique i is ranked higher than an other technique, then the result is the assignment of +1; if the converse, -1, *ie*

$$p_{ij} \geq p_{i'j} \dashrightarrow d_{ii'}^{(j)} = +1 \qquad (7.24)$$

$$p_{ij} < p_{i'j} \dashrightarrow d_{ii'}^{(j)} = -1 \qquad (7.25)$$

where $d_{ii'}^{(j)}$ = the binary discordance index and

p_{ij} = the outcome of the ith alternative with regard to the jth judgement criterion

(*NB* This will be modified by the author by the insertion of

tie-breakers so that p_{ij} and $p_{i'j}$ cannot be at equality.)

Successive comparisons of each pair of techniques (i, i') produce a set of J discordance indices $d_{ii'}^{(j)}$ (j = 1, ..., J). This latter set is called a regime and may be represented by a binary regime vector, $r_{ii'}$.

When a pairwise comparison is carried out for all I alternatives the total number of regimes is evidently equal to (p 201):

$$I\ (I - 1) \tag{7.26}$$

A vector of weights, w, is next constructed. This vector contains ranked ordinal elements and does not comprise cardinal data. Therefore the apparently normal route below, which assumes cardinal weights leading to a linear utility function with $\Sigma w_j = 1$, is not appropriate:

$$g_{ii'} = w^T r_{ii'} = \sum_{j=1}^{J} w_j r_{ii'}^{(j)} \tag{7.27}$$

where $g_{ii'}$ = a dominance index for each pair (i, i') and

$r_{ii'}$ = a binary regime vector

Instead, a (binary) dominance index, $n_{ii'}$, is constructed (*cf* the earlier binary discordance index). An adjusted dominance indicator g_i has to be defined and, for a particular supervisory technique i, equals the number of

times, n, that the dominance indicator is positive minus the number of times it is negative, *ie*:

$$g_{ii'} \geq 0 \dashrightarrow n_{ii'} = +1 \qquad (7.28)$$

$$g_{ii'} < 0 \dashrightarrow n_{ii'} = -1 \qquad (7.29)$$

where $n_{ii'}$ = the binary dominance index

(*NB* Again, the above is modified by the author's insertion of tie-breakers so that $g_{ii'}$ will not equal zero.)

Then, the adjusted dominance indicator, g_i, becomes:

$$g_i = \sum_{i'=1}^{I} n_{ii'} \qquad (7.30)$$

If there are several possible rankings from the weights vector, the various permutations would require further exploration, *eg* where there are four criteria but only three ranking classes. Additionally, there may be more than one scenario and hence more than one weights vector. Four scenarios are envisaged in questionnaire 1, with weights vectors being separately derived from building societies as a whole, smaller societies, larger societies and the author. Finally, it should be pointed out that non-unique solutions may result. The author intends to overcome this by the introduction of additional tie-breakers.

The only significant point of criticism is the use of dominance analysis and binary numbers and, yet, this might be construed an advantage in that a standard treatment or

transformation of ordinal information is to be preferred to adopting the 'untouched' data, as with the expected value method.

To conclude, the impact matrix and weights vector route seems to supply a standard analytical framework and still preserve some measure of simplicity for the questionnaire. Furthermore, it is felt that the regime method is not only the most statistically relevant and valid technique, but the most uncluttered and elegant of solutions.

7.6 Actual Methodology

7.6.1 Questionnaire 1

Most standard non-parametric techniques appear not to be suitable,[55] with the exception of correlation matrices derived from factor analysis (r and r_s) and therefore an alternative is used, namely the regime method.[56] This has to be adapted[57] and it is, furthermore, necessary to convert data into an appropriate form for the regime method, *eg* questions 1 and 3. This entails the creation of three formulae for the degree of effectiveness (e), degree of importance (m) and degree of success (s) and the process may, along with correlation matrices, in turn yield useful statistical information. Question 3 is the core when using the regime method since it links the techniques of supervision to the objectives. Question 2 merely asks for a rating of the techniques and useful comparisons may be made between the two questions. Question 4 consists of 'Other Comments'. Additionally, the responding societies are classified in three ways:

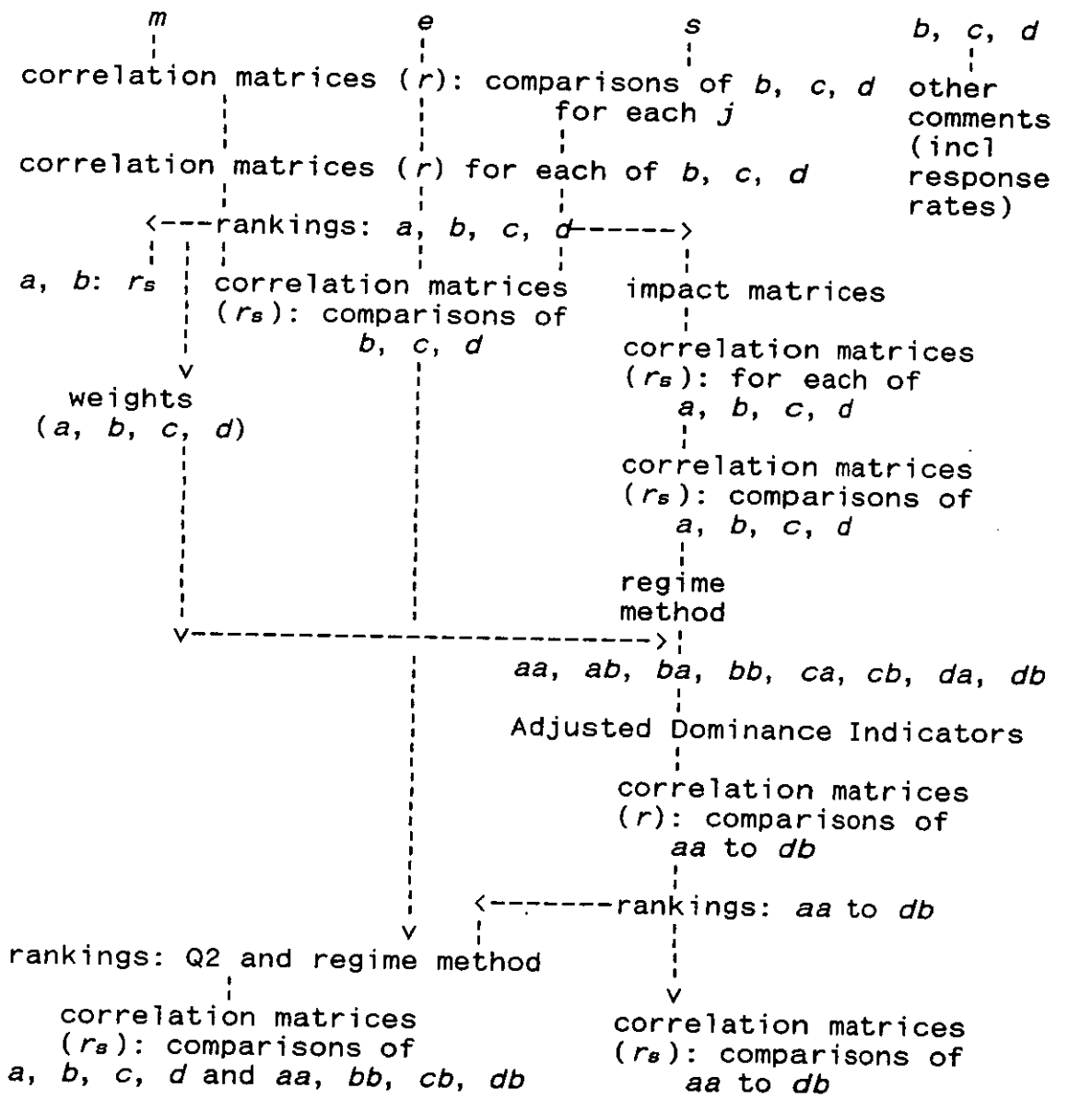
(i) data b - all societies;

(ii) data c - smaller societies; and

(iii) data d - larger societies.[58]

The detailed steps in the actual methodology are displayed in Table 7.4.

Table 7.4 Actual Methodology Steps: Questionnaire 1



a = author *b* = building societies *c* = smaller societies

d = larger societies *e* = degree of effectiveness

j = criterion *m* = degree of importance

Q = question *s* = degree of success

It is first necessary to devise some means of transforming the raw data into a suitable format for the application of the regime method. For example, it would be possible in question 1 to select the most important criterion and therefore to rank all the criteria by employing the column with the highest figure, but this could be misleading because of the distribution of the data. Also, when we consider that questions 1 to 3 require 149 responses on the questionnaire, it is not surprising that there is an occasional omission. If we then exclude the whole of such a questionnaire because of one omission, otherwise valuable information would become lost. Consequently, such data will be included and a series of weighted average formulae are to be created, *ie* the degree of effectiveness (e), degree of importance (m) and degree of success (s).[59]

Questions 1 contains 5 criteria, j, and 5 classes of importance, l. The latter (*ie* l_1, l_2, l_3, l_4 and l_5) are attributed the respective weights of 5, 4, 3, 2, and 1. For each set of data, *eg* data c (small societies), it is possible to construct a correlation matrix using the raw values for l.

Table 7.5 Question 1: Example 1

Correlation Matrix: Questionnaire 1, Q1 - Data *c*

	j_1	j_2	j_3	j_4	j_5
j_1	1	.72	-.02	-.02	.18
j_2	.72	1	.67	.63	.77
j_3	-.02	.67	1	.89	.88
j_4	-.02	.63	.89	1	.98
j_5	.18	.77	.88	.98	1

Next, for each criterion j, the degree of importance m may be calculated thus:

$$m = \frac{\sum_{l=1}^{L} n_l w_l}{\sum_{l=1}^{L} n_l} \qquad (7.31)$$

where i = a policy or supervisory technique

j = a criterion

l = a class of importance or grading

L = upper limit of l

m = degree of importance

n = number of respondents in a particular 'cell' and

w = weight

These values (m) for each criterion j can be used to produce a correlation matrix in order to compare data b, c and d (all, small and large societies).

Table 7.6 Question 1: Example 2

j	n	w_l:	l_1 5	l_2 4	l_3 3	l_4 2	l_5 1	Total	m
j_1	n_l		47.00	2.00	0.00	0.00	0.00	49	4.96
	$n_l w_l$		235.00	8.00	0.00	0.00	0.00	243	
	n_l (%)		95.92	4.08	8.00	0.00	0.00	100	

The values for n_l in percentages are included as additional statistical information and this procedure has been repeated in questions 2 and 3. For the purposes of the regime method, the ranking of criteria for each data set can be obtained by a ranking of the values of the degree of importance, m, to provide a weights vector, w, (high values - best; low values - worst).

If there is a 'tie' between criteria, the values for the degree of importance m being the same, then a ranking may be achieved with reference to an additional or 'tie-breaker' variable: n_l in percentage terms. This centres on a consideration of the highest values for n_l for l_1. If there is still equality, then l_2 is examined and so on.

A correlation matrix (r_s) may be used to compare the *b*, *c* and *d* rankings (all, small and large societies) and the correlation coefficient may be calculated between building societies (*b*) and the author (*a*).

Table 7.7 Question 1: Example 3

j	*m*	Criteria Rankings (via *m*)
j_1	4.96	1
j_2	4.27	2
j_3	3.75	5
j_4	3.88	4
j_5	4.00	3

With question 2 the objective is to identify the degree of effectiveness of each supervisory technique. The 5 classes of effectiveness (*ie* f_1, f_2, f_3, f_4 and f_5) are attributed the respective weights of 5, 4, 3, 2, and 1. For each set of data, *eg* data *c* (small societies), it is possible to construct a correlation matrix using the raw values for *f*.

Table 7.8 Question 2: Example 1

Correlation Matrix: Questionnaire 1, Q2 - Data c (i_1, i_2, i_3)

i	i_1	i_2	i_3
i_1	1	.74	-.21
i_2	.74	1	.45
i_3	-.21	.45	1

Next, for each set of data, the formula for m is modified to replace m and l with e and f respectively:

$$e = \frac{\sum_{f=1}^{F} n_f w_f}{\sum_{f=1}^{F} n_f} \qquad (7.32)$$

where e = degree of effectiveness

f = a class of effectiveness and

F = upper limit of f

Table 7.9 Question 2: Example 2

i	n	w_f:	f_1 5	f_2 4	f_3 3	f_4 2	f_5 1	Total	e
i_3	n_f		11.00	12.00	15.00	5.00	4.00	49	3.45
	$n_f w_f$		55.00	48.00	45.00	10.00	4.00	162	
	n_1 (%)		23.40	25.53	31.91	10.64	8.51	100	

These values (e) can be used to produce a correlation matrix in order to compare b, c and d (all, small and large societies).

A ranking of each supervisory technique and some possible alternatives, *eg* i_1, i_2, and i_3 (activity restrictions, same rules for banks and building societies, and one supervisory body), may then be obtained from the values for e (high values - best; low values - worst). If there is a 'tie' between criteria, the values for the degree of effectiveness e being the same, then a ranking may be achieved with reference to an additional or 'tie-breaker' variable: n_f in percentage terms. This centres on a consideration of the values for n_f for f_1. If there is still equality, then f_2 is examined and so on.

The values for the degree of effectiveness e are, firstly, useful in themselves in assessing the techniques and, secondly, can be used in comparison with the results obtained by applying the regime method to question 3.

Table 7.10 Question 2: Example 3

i	e	Criteria Rankings (via e)
i_1	3.61	1
i_2	3.59	2
i_3	3.45	3

Furthermore, a rankings correlation matrix (r_s) may be compiled in order to compare *a*, *b*, *c* and *d* (author, all, small and large societies), *eg* Table 7.11.

Table 7.11 Question 2: Example 4

Correlation Matrix: Questionnaire 1, Q2 - Data *a*, *b*, *c*, *d* (i_1, i_2, i_3)

Data	Data *a*	*b*	*c*	*d*
a	1	-.50	-1	.50
b	-.50	1	.50	.50
c	-1	.50	1	-.50
d	.50	.50	-.50	1

The classes of importance approach, followed in question 1, is duplicated in question 3, where the initial objective is to identify the degree of success, *s*, of each supervisory

technique in meeting each criterion and to compare each then current technique with some alternatives. The formula for m is modified so that:

$$s = \frac{\sum_{l=1}^{L} n_l w_l}{\sum_{l=1}^{L} n_l} \qquad (7.33)$$

where s = degree of success

Table 7.12 Question 3: Example 1

i	n	Criterion j_1					Total	s
		l_1	l_2	l_3	l_4	l_5		
		w_l : 5	4	3	2	1		
i_2	n_l	7.000	16.000	18.000	3.000	1.000	45	3.556
	$n_l w_l$	35.000	64.000	54.000	6.000	1.000	160	
	n_l (%)	15.556	35.556	40.000	6.667	2.222	100	

These values (s) can be used to produce a correlation matrix in order to compare b, c and d (all, small and large societies).

Table 7.13 Question 3: Example 2

Correlation Matrix: Questionnaire 1, Q3 - Data *b*
(i_1, i_2, i_3)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	-.51	-1.00	-1.00	-.96
j_2	-.51	1	.43	.43	.27
j_3	-1.00	.43	1	1	.99
j_4	-1.00	.43	1	1	.99
j_5	-.96	.27	.99	.99	1

Then, a rankings correlation matrix (r_s) may be compiled in order to compare *b*, *c* and *d* (all, small and large societies), *eg* Table 7.14.

Table 7.14 Question 3: Example 3

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_1)
(i_8, i_9, i_{10}, i_{11})

Data	*b*	*c*	*d*
b	1	.93	.85
c	.93	1	.58
d	.85	.58	1

A ranking of the values for the degree of success s may then be computed (high values - best; low values - worst). If there is a 'tie' between techniques, the values for s being the same, then a ranking may be achieved with reference to an additional or 'tie-breaker' variable: n_l in percentage terms. This centres on a consideration of the values for n_l for l_1. If there is still equality, then l_2 is examined and so on. For example, the figures for s in Table 7.15 suggest under j_3, level playing field, an equal ranking for i_2 and i_3. However, the respective values of n_l under l_1 are 37.778% and 35.556% - hence the ratings displayed in the last column of the table.

Table 7.15 Question 3: Example 2

Criterion j_3		
i	s	Criterion Rankings (via s)
i_1	2.559	3
i_2	3.867	1
i_3	3.867	2

The values of s for a given criterion, eg j_1 (safety), are calculated for each group of techniques, *eg* i_1, i_2 and i_3 (activity restrictions, same rules and one supervisory body). The rankings for j_1 are computed and then the

procedure is repeated for j_2, j_3, j_4 and j_5 - stability, level playing field, cost-effectiveness and flexibility. (This renders the data in a suitable format for the application of the regime method. See below.)

Some statistical analysis of question 4 data is indicated and this includes a separate examination of *b*, *c* and *d* (all, small and large societies):

(i) percentage of respondents completing question 4;

(ii) classifying responses (and the associated response rate); and

(iii) inserting some details of the comments made.

The regime method, which focuses upon questions 1 and 3, involves the following steps:[60]

(i) impact matrix;

(ii) binary discordance index(ices);

(iii) binary regime vectors;

(iv) binary dominance indicators;

(v) weights vector (Question 1);

(vi) weighted regime vectors;

(vii) adjusted dominance indicators; and

(viii) rankings (including tie-breakers).

Firstly, an impact matrix for each set of techniques, containing a current supervisory technique and the associated alternatives/modifications (*eg* i_1, i_2 and i_3), is constructed from the series of rankings of the values for the degree of success *s* in question 3, *ie* repeating the procedure in Table 7.15 for each criterion *j*.

Table 7.16 Impact Matrix

Techniques	Criteria				
i	j_1	j_2	j_3	j_4	j_5
i_1	1	2	3	3	3
i_2	3	1	1	2	2
i_3	2	3	2	1	1

Each row represents a regime vector and there are, in total, seven matrices because there are seven technique groups centred upon i_1, i_4, i_8, i_{12}, i_{15}, i_{19} and i_{22} (activity restrictions, capital, liquidity, funding/treasury risk management, reporting, management and systems, and investor protection.

A rankings correlation matrix (r_s) may be generated separately for *a*, *b*, *c* and *d* (author, all, small and large societies) using the relevant impact matrices.

Table 7.17 Correlation Matrix (b) - i_1, i_2, i_3

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	-.50	-1	-.50	-.50
j_2	-.50	1	.50	-.50	-.50
j_3	-1	.50	1	.50	.50
j_4	-.50	-.50	.50	1	1
j_5	-.50	-.50	.50	1	1

Then, for each criterion j, another series of correlation matrices (r_s) may be computed to compare a, b, c and d (author, all, small and large societies).

Table 7.18 Correlation Matrix (j_1) - i_1, i_2, i_3

Data	Data: a	b	c	d
a	1	.50	-.50	1
b	.50	1	.50	.50
c	-.50	.50	1	-.50
d	1	.50	-.50	1

Next we come to the binary discordance index(ices) and this is based upon relationships 7.24 and 7.25 except that the insertion of tie-breakers means that p_{ij} and $p_{i'j}$ cannot be at equality. Pairwise comparisons are made, *ie* i_1 is compared in turn with i_2 and i_3 so that, for j_1 (safety), when we compare i_1 with i_2:

the binary discordance index, $d_{i_1 i_2}^{(j1)} = +1$ (7.34)

and $d_{i_1 i_2}^{(j2)} = -1$ (7.35)

This means that, for j_1, i_1 is preferred to or has dominance over i_2 while the converse applies for j_2. This process is repeated until all permutations have been satisfied. Because the questionnaire and subsequent rankings are arranged in a 1-5 format, with 1 as best and 5 as worst, Nijkamp's rankings (1982b) will be reversed. This leads to (binary) regime vectors[61], composed of binary discordance indices.

Table 7.19 Regime Vectors in a Neutral Scenario: Activity Restrictions

i	Compared with	Criteria j_1	j_2	j_3	j_4	j_5	Sum of regime vector	
i_1	i_2	1	-1	-1	-1	-1	-3	
	i_3	1	1	-1	-1	-1	-1	
Sum of binary discordance indices		2	0	-2	-2	-2	-4	= dominance indicator
i_2	i_1	-1	1	1	1	1	3	
	i_3	-1	1	1	-1	-1	-1	
Sum of binary discordance indices		-2	2	2	0	0	2	= dominance indicator
i_3	i_1	-1	-1	1	1	1	1	
	i_2	1	-1	-1	1	1	1	
Sum of binary discordance indices		0	-2	0	2	2	2	= dominance indicator

The number of regimes is determined by relationship 7.26 and in the case of Table 7.19:

$$I = 3 \tag{7.36}$$

$$\text{Thus } I\ (I - 1) = 3\ (3 - 1) \tag{7.37}$$

$$= 3\ (2) \tag{7.38}$$

$$= 6 \tag{7.39}$$

Some sets have $I = 3$, whilst others have $I = 4$. In the latter case, the number of regimes therefore equals:

$$4\ (4 - 1) \tag{7.40}$$

$$= 4\ (3) \tag{7.41}$$

$$= 12 \tag{7.42}$$

The binary dominance indicator for each supervisory technique i can then be calculated from the summation of the regime vectors (last column) or from the summation of the binary discordance indices (3rd, 6th and 9th rows when $I = 3$). The resultant dominance indicators are only valid if implied equal weights are applied to the data.

The primary purpose of question 1 is to construct a weights vector, which assesses the relative importance of each criterion j. The regime vectors can be multiplied by the weights vector to give weighted regime vectors. However, if a table such as Table 7.19 has already been constructed with the assumption of equal weights (or a neutral scenario), then a short cut is contained in Table 7.20. This necessitates multiplying the sum of binary discordance indices, for each supervisory technique i, to give the adjusted dominance indicators (ADIs). The latter are then used to compute the rankings for each set of supervisory

techniques, *i*.

Table 7.20 Application of Weights Vector(s)

Weighted Regime Vectors Table		Neutral Scenario Table		
Row 1	=	Row 3 (j_1 to j_5)	x	weights vector
Row 2	=	Row 6 (j_1 to j_5)	x	weights vector
Row 3	=	Row 9 (j_1 to j_5)	x	weights vector

Table 7.21 Weighted Regime Vectors: Activity Restrictions (*bb*)

	Criteria					Adjusted Dominance Indicator	Ranking (via ADI)
i	j_1	j_2	j_3	j_4	j_5		
i_1	10	0	-2	-4	-6	-2	3
i_2	-10	8	2	0	0	0	2
i_3	0	-8	0	4	6	2	1
Weights Vector *b*	5	4	1	2	3		

A virtue of the regime method is that more than one set of weights may be applied to a given set of data and, if we change the priorities via question 1, then there may be a different result in the ranking of a group of techniques -

as in Table 7.22.

Table 7.22 Weighted Regime Vectors: Activity Restrictions (*ba*)

i	Criteria					Adjusted Dominance Indicator	Ranking (via ADI)
	j_1	j_2	j_3	j_4	j_5		
i_1	10	0	-4	-6	-2	-2	3
i_2	-10	8	4	0	0	2	1
i_3	0	-8	0	6	2	0	2
Weights Vector *a*	5	4	2	3	1		

It is possible to apply four weights vectors to each set of data. There are consequently in theory sixteen permutations based on four sets of data and weights, *ie*

(i) *cc*, *cd*, *cb* and *ca*;

(ii) *dd*, *dc*, *db* and *da*;

(iii) *bb*, *bc*, *bd* and *ba*; and

(iv) *aa*, *ac*, *ad* and *ab*.[62]

where the data/weights combinations are represented by:

a = author

b = building societies

c = smaller societies and

d = larger societies.

A tie-breaker may be required if two adjusted dominance indicators are equal, eg i_{16} and i_{17} (more data and more spot checks) in Table 7.23. The procedure follows that outlined for the degree of success s with one modification. The dominant supervisory technique i is the one possessing the highest value for the highest weighted criterion j or the next highest weighted j and so on until the deadlock is broken.

Table 7.23 Weighted Regime Vectors: Reporting (*bb*)

i	Criteria j_1	j_2	j_3	j_4	j_5	Adjusted Dominance Indicator	Ranking (via ADI)
i_{15}	15	12	-1	6	9	41	1
i_{16}	-5	4	1	-2	-9	-11	2
i_{17}	5	-4	-3	-6	-3	-11	3
i_{18}	-15	-12	3	2	3	-19	4
Weights Vector b	5	4	1	2	3		

An Adjusted Dominance Indicator (ADI) correlation matrix may be separately constructed to compare the 8 data/weights permutations.

Table 7.24 ADI Correlation Matrix

(i_1, i_2, i_3)	Correlation Matrix: via ADI Matrix							(i_1, i_2, i_3)
Data/Weights	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
aa	1	1.00	-.94	-.19	.19	.27	.33	.33
ab	1.00	1	-.96	-.24	.24	.32	.28	.28
ba	-.94	-.96	1	.50	-.50	-.57	0	0
bb	-.19	-.24	.50	1	-1	-1.00	.87	.87
ca	.19	.24	-.50	-1	1	1.00	-.87	-.87
cb	.27	.32	-.57	-1.00	1.00	1	-.82	-.82
da	.33	.28	0	.87	-.87	-.82	1	1
db	.33	.28	0	.87	-.87	-.82	1	1

A similar approach may be taken with the regime method rankings to produce another series of correlation matrices (r_s).

Table 7.25 Correlation Matrix: via Regime Method Rankings

(i_1, i_2, i_3)								(i_1, i_2, i_3)
Data/Weights	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
aa	1	1	-1	-.50	.50	.50	.50	.50
ab	1	1	-1	-.50	.50	.50	.50	.50
ba	-1	-1	1	.50	-.50	-.50	-.50	-.50
bb	-.50	-.50	.50	1	-1	-1	.50	.50
ca	.50	.50	-.50	-1	1	1	-.50	-.50
cb	.50	.50	-.50	-1	1	1	-.50	-.50
da	.50	.50	-.50	.50	-.50	-.50	1	1
db	.50	.50	-.50	.50	-.50	-.50	1	1

Finally, we can compare the rankings obtained from question 2 with those obtained from the regime method, in the form of a limited correlation matrix, *eg*

Table 7.26 Correlation Matrix of Question 2 and Regime Method Rankings

(i_8, i_9, i_{10}, i_{11})

Data	Data/Weights *aa*	*bb*	*cb*	*db*
a	.40			
b		.80		
c			1	
d				.80

7.6.2 Questionnaire 2

The analysis of the second questionnaire focuses upon a sequence of correlation matrices, but a couple of elementary calculations must first be made. The response rate needs to be computed and also the age/sex distribution of respondents, the latter being obtained through questions 7-8.

Table 7.27 Actual Methodology Steps: Questionnaire 2

Q1-6	Q7-8	Q9-17	Q18
See Q18	See Q18	See Q18	
	age/sex distribution	Q1 yes Q1 no	age/sex distribution
		v--> <--v	
n	*n*	*n*	*n*
% yes	%	%	%
		u	classification of comments
correlation matrices (age/sex permutations)		correlation matrices (age/sex permutations)	
		correlation between Q1 yes and Q1 no	

Let *f* = female

h = age group

h_1 = under 20 years of age

h_2 = 20-39

h_3 = 40-59

h_4 = 60+

m = male

n = number of respondents in a particular 'cell'

Q = question

r = coefficient of correlation

u = degree of agreement and

v = a class of agreement.

In questions 1-6 it would be useful to have the percentage distribution within each question and to obtain the data for various age/sex permutations, *eg* Table 7.28.

Table 7.28 Questionnaire 2: Percentage Age Distribution

Q1-Q6			h_1, h_2, h_3, h_4		% yes	
Age	Q1	Q2	Q3	Q4	Q5	Q6
h_1	53.13	0	100	24	23.08	36.36
h_2	80.08	11.11	88.33	15.04	13.14	29.30
h_3	87.91	11.95	93.62	31.84	15.47	27.83
h_4	67.74	20	78.26	45.45	21.74	22.73

One can derive additional age permutations in Table 7.29, *eg* under 60s compared to those aged 60 and over:

$$(h_1 + h_2 + h_3) \text{ and } h_4 \qquad (7.42)$$

Table 7.29 Questionnaire 2: Percentage Age Distribution 2

Q1-Q6 $(h_1 + h_2)$, $(h_3 + h_4)$, h_1, $(h_2 + h_3 + h_4)$, $(h_1 + h_2 + h_3)$, h_4 % yes

Age	Q1	Q2	Q3	Q4	Q5	Q6
$(h_1 + h_2)$	76.98	10.61	89.39	15.87	14.12	29.96
$(h_3 + h_4)$	86.33	12.46	92.73	32.59	15.83	27.52
h_1	53.13	0	100	24	23.08	36.36
$(h_2 + h_3 + h_4)$	83.93	11.88	91.08	25.93	14.83	28.18
$(h_1 + h_2 + h_3)$	83.18	11.34	91.88	25.19	14.91	28.69
h_4	67.74	20	78.26	45.45	21.74	22.73

The procedures outlined in Tables 7.28 and 7.29 can be repeated for the various male and female age groups. Then grand totals can be derived for all males, all females, and all males plus all females.[63]

It is also possible to use correlation matrices for the sex/age groups[64] and, in order to calculate *r*, the 'yes' responses to questions 1-6 will be used, *eg* Table 7.30.

Table 7.30 Correlation Matrix by Age and Sex

	Q1 - Q6 (h_1, h_2, h_3, h_4)					
	Q1	Q2	Q3	Q4	Q5	Q6
Q1	1	.94	.99	.89	.95	.97
Q2	.94	1	.97	.88	.96	.86
Q3	.99	.97	1	.91	.97	.94
Q4	.89	.88	.91	1	.97	.77
Q5	.95	.96	.97	.97	1	.86
Q6	.97	.86	.94	.77	.86	1

The same age/sex permutations can be used in questions 9-17 where it is also useful to have the percentage distribution, this time with respect to the five-point scale of agreement/disagreement with each statement. However, one can break the data down further into building society and non-building society customers, *ie* those answering 'yes' to question 1 and those answering 'no', *eg* Table 7.31.

Table 7.31 Questionnaire 2: Question 9

Q1 'yes' Q9 - Q17			Data				
					Q9		
sex	age		v_1	v_2	v_3	v_4	v_5
■	h_1	(n)	26	6	3	2	0
		($n_h w_h$)	130	24	9	4	0
		(%)	70.27	16.22	8.11	5.41	0
		(u)	4.51				
	h_2	(n)	56	22	8	1	0
		($n_h w_h$)	280	88	24	2	0
		(%)	64.37	25.29	9.20	1.15	0
		(u)	4.53				
	h_3	(n)	102	43	7	0	2
		($n_h w_h$)	510	172	21	0	2
		(%)	66.23	27.92	4.55	0	1.30
		(u)	4.58				
	h_4	(n)	6	4	0	0	0
		($n_h w_h$)	30	16	0	0	0
		(%)	60	40	0	0	0
		(u)	4.60				

Correlation matrices are to be separately constructed for question 1 'yes' and 'no' data, using the age/sex permutations as outlined earlier. Whilst r could be calculated within each question, this could still mean that comparisons are complicated because of the 1-5 scale. Instead the degree of agreement with each statement will be calculated.[65]

Each question or statement contains 5 classes of agreement, v. The latter (*ie* v_1, v_2, v_3, v_4 and v_5) are attributed the respective weights of 5, 4, 3, 2, and 1. For each question

the degree of agreement, u, may be calculated thus:

$$u = \frac{\sum_{v=1}^{V} n_h w_h}{\sum_{v=1}^{V} n_h} \qquad (7.43)$$

where n = number of respondents in a particular 'cell'

u = degree of agreement

v = a class of agreement.

V = upper limit of v and

w = weight.

u will form the basis for a series of correlation matrices, along the lines of those in questions 1-6, *eg* Table 7.32.

Table 7.32 Correlation Matrix: Questions 9-17

Q1 'yes' Correlation Matrix by Age: Q9 - 17 (h_1, h_2, h_3, h_4)

	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q9	1	.61	-.92	.68	-.84	.86	.98	-.16	-.22
Q10	.61	1	-.44	.91	-.07	.43	.43	.65	.49
Q11	-.92	-.44	1	-.66	.86	-.63	-.95	.19	.11
Q12	.68	.91	-.66	1	-.23	.32	.55	.60	.57
Q13	-.84	-.07	.86	-.23	1	-.78	-.93	.64	.59
Q14	.86	.43	-.63	.32	-.78	1	.84	-.40	-.57
Q15	.98	.43	-.95	.55	-.93	.84	1	-.34	-.35
Q16	-.16	.65	.19	.60	.64	-.40	-.34	1	.94
Q17	-.22	.49	.11	.57	.59	-.57	-.35	.94	1

Finally, the correlation between building society and non-building society customers may be calculated by comparing the values for *u*.

The approach to question 18 ('Other Comments') largely follows that of question 4 in questionnaire 1, except that aside from classifying the comments the data will also be split on an age/sex basis.

CHAPTER 8: ANALYSIS OF QUESTIONNAIRE 1

8.1 Response Rate

The final draft of questionnaire 1[1] was dispatched on 23 April 1990 to all BSA members and authorised societies as listed in the *Building Societies Yearbook 1989* (BSA, 1989). This totalled 107 societies.[2]

The bulk of the response to the initial mailing[3] was received by mid-May, with 32 positive responses and 3 negative responses - the latter basically explained by time pressure, merger activity or legal factors. A further 5 positive responses trickled in by the middle of June, resulting in a total of 37 completed questionnaires.

Thus, a second or reminder mailing occurred on 15 June 1990 in an attempt to persuade the remainder to complete a duplicate questionnaire and this exercise yielded an additional dozen replies by early July so that the grand total became 49.

Table 8.1 Response Rates: Questionnaire 1

Data	Number of Responses	Target Population	Response Rate (%)
b	49	107	45.79
c	32	76	42.11
d	17	31	54.84

b = building society data (all societies)

c = smaller societies' data

d = larger societies' data

For a full list of variables see the Abbreviations section.

The 45.79 per cent response rate to the survey is most encouraging when we reflect that, while question 1 is relatively short, requiring a usual minimum of five responses, the other questions are fairly long. Question 2, for instance, requires a usual minimum of twenty four responses, in contrast to question 3, which is even longer and more involved, leading to a normal return of one hundred and twenty responses. In other words, one could expect at least one hundred and forty nine responses from a fully completed questionnaire. There are, indeed, opportunities for additional input at the end of each question, whilst question 4 is an open-ended one.

It could be misleading if we group all societies together (data *b*) because this may mask differences between societies. For instance, larger societies may be more concerned with issues of conversion, wholesale funding and the maximum range of permitted services than their smaller brethren. It is therefore proposed to split the data into two groups, *ie* smaller (data *c*) and larger (data *d*) societies. In deciding how to divide the data, there are several factors which should be considered. One needs, as far as possible, a clear break in size rather than an

arbitrary one and the resultant number of respondents must be sufficiently large to be statistically reliable.[4]

Table 8.2 Total Assets of Building Societies

Year end 31/12/89 unless indicated in brackets	Total assets 1989 £m
Leamington Spa	1,180.7
Derbyshire	1,043.2
Norwich & Peterborough	1,018.0
Portman Wessex	962.5
West Bromwich (31/3/90)	873.8
Principality	769.2
Heart of England (28/2/90)	766.0
Portsmouth	760.8
North of England	759.6
Newcastle	731.8
Cheshire	694.7
Staffordshire	650.7
Sussex County	483.2
Dunfermline	474.4
Lambeth (31/1/90)	432.2
Nottingham	427.7
Cheshunt	360.4
Walthamstow (31/3/90)	351.4
Cumberland (31/3/90)	350.2
Stroud & Swindon	340.0
Scarborough (30/4/90)	276.5
National Counties	273.8
Eastbourne Mutual	267.9
Furness	241.5
Lancastrian	235.6
Leek United	211.2

Source: Building Societies Association and Council of Mortgage Lenders, *Building Societies Year Book 1990*, Franey & Co, London, 1990, pp 133-34

It is possible to select the twenty largest societies, but this is arbitrary and no clear split emerges between society numbers 20 and 21. Also, this would generate only 12 responses. Similar results apply if 'larger' is interpreted as those institutions with over £1b of assets (13 out of 22 societies).

Table 8.3 Building Society Size by BSC Classification Groups

Asset group (a)	Number of societies at end of December 1981	1985	1986(b)	1987(b)	1988(b)	1989(b)	March 1990	Upper limit of asset grouping at end 1989 £million
(i) Authorised societies								
A	2	2	2	3	3	2	2	No limit
B1	5	7	6	4	4	6	6	21,891
B2	10	6	8	8	7	5	5	6,923
C	48	38	34	35	32	32	32	2,189
D	95	72	62	56	53	51	51	219
E	46	19	22	16	15	13	13	22
F	30	6	3	2	2	1	1	2.2
Total	236	150	137	124	116	110	110	
(ii) Societies not authorised								
F	17	17	15	14	15	16	16	
Total all societies	253	167	152	138	131	126	126	

Source: Building Societies Commission, *Annual Report of the Building Societies Commission 1989-90*, HMSO, London, 1990

An alternative approach is to employ the Commission's classification system where:[5]

(i) group A denotes societies whose assets individually are 10% or more of all societies;

(ii) group B denotes societies whose assets individually are 1-10% or more of all societies; and

(iii) group C denotes societies whose assets individually are 0.1-1% or more of all societies (BSC, 1990).

Defining large as groups A and B gives a response rate of 9 out of 13, dubiously low on which to base comparisons. There is additionally no evidence of a 'natural' break in the assets size. On the other hand, one could include group C, which produces 45 societies, but this appears to be stretching the definition of large to suggest that almost a half of societies are large.

If we instead examine the ranked assets of building societies, there seems to be a 'natural' break between numbers 32 and 33 with assets of £651m and £483m respectively. This generates 17 responses from 31 societies[6] (a 55 per cent response rate) and gives us a big enough return on which to base correlations and comparisons. The response rate for smaller societies then becomes 42 per cent.

The author additionally proposes to demonstrate and justify his own views on supervision by the completion of questionnaire 1[7] - designated data *a*.

8.2 Question 1

Question 1 is devoted to the criteria to be used when assessing the techniques of supervision.[8]

Table 8.4 Values for *m*:

Questionnaire 1, Q1 - *b*, *c*, *d*

j	Data *b*	*c*	*d*
j_1	4.96	5	4.88
j_2	4.27	4.28	4.24
j_3	3.75	3.58	4.06
j_4	3.88	3.74	4.12
j_5	4	3.90	4.20

j = a criterion

j_1 = safety for investors

j_2 = stability of the industry

j_3 = level playing field between lenders

j_4 = cost-effectiveness

j_5 = flexibility

m = degree of importance

With respect to j_1, safety for investors, there is only a slight difference between smaller (*c*) and larger societies (*d*), attributable to 'very important' ratings (l_1) of 100 per cent and 88 per cent respectively. Data *b* (all societies) gives a 96 per cent result and this overwhelming vote illustrates the significance for building societies in preserving their image as a safe haven for savings and can be mirrored by the occasional drift of funds towards these

institutions or 'flight to quality', when the risk of particular alternatives becomes more readily apparent, *eg* the stock market crash of 1987 or the collapse of BCCI in 1991.

Protecting the systemic interest or the stability of the industry, j_2, also generates almost identical values for the degree of importance (*m*) of 4.28 and 4.24 respectively. While the returns under l_1 ('very important') are 47 per cent for both smaller (*c*) and larger societies (*d*), there is a marked difference between l_2 ('important') and l_3 ('neutral'): 34 per cent and 18 per cent; and 29 per cent and 24 per cent respectively. This might suggest a greater nervousness on the part of the smaller societies.

The level playing criterion, j_3, does illustrate a distinction between smaller and larger societies (*c* and *d*).[9] 47 per cent of larger responding societies rated it as 'very important' in contrast to 42 per cent of smaller institutions rating it only as 'important'. Some of the smaller societies may not be in a position to take advantage of all the available powers and therefore a still unlevel playing field is perhaps less significant for them. Interestingly, 10 per cent of smaller institutions consider the issue to be irrelevant. Furthermore, the chief executive of one small society produced the classic statement, "We don't have the same rules for banks and building societies and I don't think we should."[10] Data *b* (all societies) is more evenly distributed with the highest *l* value being 38

per cent for l_2 ('important').

Some respondents did, however, stress its significance and one large society bemoaned the fact that even the Commission did not have a level playing attitude between building societies.[11] This line has been reinforced on two fronts. Firstly, Jim Burrell, chief executive of the Halifax, has argued (Hughes, 1990) that it is "illogical and commercially unsound" for societies to be regulated differently from banks, while Mark Bolèat, the former director-general of the BSA (Smithers, 1990), has called for new and less restrictive legislation to enable societies to compete on a level playing field with other financial institutions - resulting in the BSA's 1991 proposals (1991a and 1991b).

The fourth criterion, j_4 cost-effectiveness, shows a marked difference between the distribution of smaller and larger societies. 47 per cent of the latter responding felt it to be very important, compared to only 19 per cent of the former[12] - hence the higher degree of importance (m) for the larger institutions.

The pattern for j_4 is generally repeated for j_5, flexibility, with 47 per cent of larger societies rating it as very important (l_1), compared to 26 per cent of smaller institutions.[13]

Table 8.5 Correlation Matrix: Questionnaire 1, Q1 - Data *c*

	j_1	j_2	j_3	j_4	j_5
j_1	1	.72	-.02	-.02	.18
j_2	.72	1	.67	.63	.77
j_3	-.02	.67	1	.89	.88
j_4	-.02	.63	.89	1	.98
j_5	.18	.77	.88	.98	1

With smaller societies there is a high correlation of 0.88 to 0.98 between j_3, j_4 and j_5 (level playing field, cost-effectiveness and flexibility). No connection, however, exists between j_1 and j_3/j_4 (safety and level playing field/cost-effectiveness) where the coefficient of correlation $r = -0.02$. This suggests a break between safety and stability on the one hand and the other three criteria. With data *d* (larger societies) there is a remarkably higher average correlation between the criteria. Indeed r is tightly clustered in the 0.80 to 0.98 range.

Table 8.6 Correlation Matrix: Questionnaire 1, Q1 - Data *d*

	j_1	j_2	j_3	j_4	j_5
j_1	1	.80	.90	.86	.84
j_2	.80	1	.94	.98	.95
j_3	.90	.94	1	.95	.98
j_4	.86	.98	.95	1	.96
j_5	.84	.95	.98	.96	1

Table 8.7 Correlation Matrix: Questionnaire 1, Q1 - Data *b*

	j_1	j_2	j_3	j_4	j_5
j_1	1	.76	.40	.36	.38
j_2	.76	1	.89	.85	.83
j_3	.40	.89	1	.95	.94
j_4	.36	.85	.95	1	.99
j_5	.38	.83	.94	.99	1

The overall position then (*b*) is one of strong correlations between a level playing field, cost-effectiveness and flexibility (j_3, j_4 and j_5: 0.83 to 0.99) and a good one for safety and stability (j_1 and j_2), but a low *r* between j_1 (safety) and j_3 to j_5. Finally, there is an excellent correlation between the degree of importance (*m*) values for *b*, *c* and *d* (all, small and large societies).[14] Appendices

8.12-8.14 show the variety of extra criteria ranging from practicality, profitability and the need to "understand the commercial realities of the business", on the one hand, to the need to take account of changing trends and to provide the "ability to react" on the other.[15]

Table 8.8 Rankings: Questionnaire 1, Q1 - *a*, *b*, *c* and *d*

j	Data *a*	*b*	*c*	*d*
j_1	1	1	1	1
j_2	2	2	2	2
j_3	4	5	5	5
j_4	3	4	4	4
j_5	5	3	3	3

a = author's data

b = building society data (all societies)

c = smaller societies' data

d = larger societies' data

The outstanding feature of Table 8.8 is that the resultant rankings of the five criteria are identical for *b*, *c* and *d* (all, small and large societies) despite the differences in the distribution of the data and the degree of importance (*m*) values. With respect to j_1, safety, consumers may possess neither the time, knowledge nor ability to carry out a competent risk assessment of all financial institutions

and a financial service cannot be tested before or at the time of purchase.[16] Contagion risk is a real one, *eg* BCCI in 1991,[17] and the author therefore agrees with ranking safety and stability (j_1 and j_2) in first and second places.[18]

The remaining three criteria j_3, j_4 and j_5 (level playing field, cost-effectiveness and flexibility) are very closely related, *eg* the similar degree of importance (*m*) values for *b*, *c* and *d* (all, small and large societies). It is vital that careful attention be devoted towards the delicate balance between effective supervision and its direct/indirect costs such as annual levies, the compilation of returns for the Commission and the impact of capital constraints on expansion plans - hence the author placing j_4, cost-effectiveness, third.

At the same time the lack of a level playing field can create distortions and encourage conversion as a means of circumventing the regulations. A (more) level playing field must also be a relevant objective of supervision - j_3 in a close fourth position.

Paralleling these two criteria (j_3 and j_4) is j_5, which refers to flexibility for the supervisor in interpreting and applying the rules as well as the degree of freedom afforded to societies both o'n a day-to-basis and in the long-run. A lack of flexibility can arise if new activities are devised which are automatically precluded by the regulations.[19] Another example is that of uncertainty, *eg* the Abbey's court case or the Lloyds' proposed takeover of the Cheltenham &

Gloucester. Although flexibility is significant, the author considers the other four criteria to be of over-riding importance, ranking this criterion fifth. The consequence is that the Spearman rank correlation coefficient (r_s) between the author and all building societies (and thus small and large societies) equals 0.70.

Table 8.9 Weights Vectors: Questionnaire 1, Q1 - *a, b, c, d*

j	W_k			
	a	b	c	d
j_1	5	5	5	5
j_2	4	4	4	4
j_3	2	1	1	1
j_4	3	2	2	2
j_5	1	3	3	3

The rankings are transformed into weights which constitute weights vectors for each set of data. Because the rankings for *b*, *c* and *d* are identical, so are the weights vectors, *ie*

$$W_{kb} = W_{kc} = W_{kd} \qquad (8.1)$$

where W_k = a weights vector

W_{kb} = all building societies weights vector

W_{kc} = smaller building societies weights vector and

W_{kd} = larger building societies weights vector

8.3 Activity Restrictions

Table 8.10 Values for *s*: Questionnaire 1, Q3 - Data *b* (i_1, i_2, i_3)

i	j				
	j_1	j_2	j_3	j_4	j_5
i_1	3.971	3.471	2.559	3.088	2.382
i_2	3.556	3.511	3.867	3.222	3.068
i_3	3.600	3.467	3.867	3.222	3.222

Table 8.11 Values for *s*: Questionnaire 1, Q3 - Data *c* (i_1, i_2, i_3)

i	j				
	j_1	j_2	j_3	j_4	j_5
i_1	3.905	3.571	2.333	3	2.238
i_2	3.483	3.379	3.828	3.069	2.750
i_3	3.448	3.241	3.586	3	2.862

Table 8.12 Values for *s*: Questionnaire 1, Q3 - Data *d* (i_1, i_2, i_3)

i	j_1	j_2	j_3	j_4	j_5
i_1	4.077	3.308	2.923	3.231	2.615
i_2	3.688	3.750	3.938	3.500	3.625
i_3	3.875	3.875	4.375	3.625	3.875

b = building society data (all societies)

c = smaller societies' data

d = larger societies' data

i_1 = Activity Restrictions

i_2 = same set of rules for banks and building societies

i_3 = one supervisory body

s = degree of success

NB The correlation matrices for each criterion *j* are contained in Appendices 8.15-8.19.

Smaller and larger societies are generally agreed over the great extent to which the rules on activity restrictions, i_1, go a long way towards satisfying j_1, safety, since 62 per cent of larger societies awarded it a '2' and 31 per cent a '1' compared to smaller societies who are less convinced with respective figures of 53 per cent and 19 per cent - plus a large 29 per cent for '3'.

An alternative of the same rules for banks and building societies, i_2,[20] provokes a far wider distribution of responses, implying an element of disagreement between societies, especially for smaller societies where the degree of success (s) is lower than for larger societies. This suggests that activity restrictions are less important for smaller than larger societies. Data b (all societies) provides an even or flattened distribution curve and the judgement of respondents may be coloured by individual societies' experience and aspirations rather than by a objective assessment.

Having one supervisory body (for banks and building societies), i_3, is well favoured by larger building societies (s = 3.875) and this can be explained by the tighter cluster around the l_1 ('1') to l_3 ('3') ratings, with l_2 ('2') attracting 57 per cent. Possibly because of the i_2 (same rules) result, smaller institutions feel i_3, one supervisory body, to be less relevant. The correlation between small and large societies is 0.84.

According to smaller societies, activity restrictions can substantially help in maintaining the stability of the industry,[21] j_2, and this is reinforced by the 52 per cent l_2 ('2') grading, in contrast to equal 38 per cent l_2 and l_3 figures for larger societies.

Larger institutions seem relatively content that i_2, same rules, would add to stability, *eg* by a more diversified balance sheet.[22] Smaller societies, perhaps less worried by

competitive pressures or their inability to adopt all the wider powers, are less convinced[23] and the result is that for smaller societies *s*, the degree of success, equals 3.379 and for larger societies *s* is 3.750.

Even a larger split between the two groups of societies emerges with i_3, one supervisory body, where similar high l_1 ('1') and l_2 ('2') ratings for larger societies (*d*) cause a high *s* value of 3.875, while with smaller societies (*c*) the bulk of the returns are in l_2 and l_3, making the degree of success (*s*) equal to 3.241. Smaller and larger societies are negatively correlated (-0.98) with respect to i_1, i_2 and i_3.

Smaller societies clearly consider that i_1, the activity restrictions régime, does not satisfy the j_3 criterion (level playing field) since most of the responses are in l_3 and l_5 ('3' and '5') with only 5 per cent each for l_1 and l_2 ('1' and '2'). Larger societies are in some disagreement amongst themselves producing a very flat distribution curve, *eg* l_1 being 23 per cent and l_5 31 per cent. The above is reflected in the fairly flat distribution for all societies. Whilst one would by definition expect i_2, the same set of rules, to generate high returns under l_1 and l_2 (*eg* larger societies) this is muted with the smaller societies and might reflect concerns over its implementation. Larger institutions heavily favour i_3, one supervisory body, awarding it a high *s* (degree of success) of 4.375. Smaller societies are less sure[24] but the overall position is a high

rating. Small and large societies have a good correlation for i_1 to i_3, *ie* 0.90.

Data *c* (smaller societies) demonstrates little concern about the degree to which i_1, activity restriction regulations, satisfies j_4, cost-effectiveness, but there remains quite a difference of opinion. Data *d* (larger societies) is not so negative with 31 per cent for the l_2 and l_3 ('2' and '3') gradings. These results may be caused by the cost and complexity of the regulations plus the view that limiting asset diversification may cause an over-concentration of risk.

Larger societies tend to believe that abolishing i_1 and opting for a level playing field would add to j_4, cost-effectiveness, although l_3 ('3') equalled 50 per cent. Smaller societies, on the other hand, are less convinced and, moreover, divided in their views. A similar position applies to i_3, one supervisory body.

While both smaller and larger societies attribute a low element of j_5, flexibility, to i_1 (s = 2.238 and s = 2.615 respectively), it is surprising that the latter value is higher since the constraints tend to be more relevant for the larger institutions.

As expected with i_1 to i_3 there is a dichotomy between smaller and larger societies (*c* and *d*). Smaller societies either believe that i_2, the same rules for banks and building societies, does not generate much extra flexibility or are not bothered about the issue, whilst the

larger societies think the result will be greatly increased flexibility. The high i_1 to i_3 cluster for the larger institutions produces a degree of success (s) value equal to 3.625 compared to a mere 2.750 for smaller ones. This pattern is repeated for i_3, one supervisory body, with figures of 3.875 and 2.862 respectively.[25]

Finally, the correlation matrices in Appendices 8.20-8.22 possess some interesting features. With smaller societies there is a strong positive correlation not only between j_1 and j_2 (safety and stability), but also between j_3 and j_5 (level playing field and flexibility). The latter might hint at the increased flexibility of a level playing field. There exists a large negative relationship between: j_1 and j_3 (safety and level playing field); j_1 and j_5 (safety and flexibility) ; and j_2 and j_5 (stability and flexibility).

The larger societies (d) generate some positive correlations: j_2 and j_3 (stability and level playing field); j_2 and j_4 (stability and cost-effectiveness); j_2 and j_5 (stability and flexibility); and j_4 and j_5 (cost-effectiveness and flexibility). The first and fourth correlations carry implications for moves towards increased competitive neutrality. The negative correlations of j_1 and j_3 (safety and level playing field) and j_1 and j_5 (safety and flexibility) match data c (smaller societies).

Table 8.13 Impact Matrices: Questionnaire 1 (i_1 , i_2 , i_3)

i	j	*a*					*b*					*c*					*d*				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
i_1		1	1	3	2	3	1	2	3	3	3	1	1	3	2	3	1	3	3	3	3
i_2		3	3	1	3	1	3	1	1	2	2	2	2	1	1	2	3	2	2	2	2
i_3		2	2	2	1	2	2	3	2	1	1	3	3	2	3	1	2	1	1	1	1

The resultant rankings and impact matrix for *c* (smaller societies) produce '1,2,3' for j_1 and j_2 (safety and stability), a first for j_3 and j_4 (level playing field and cost-effectiveness) with i_3, one supervisory body, being the best in satisfying j_5, flexibility. j_2 and j_5 (stability and flexibility) have a correlation of -1. The larger societies give a '1,3,2' vote for j_1 (safety) and the same '3,2,1' for the other criteria, constituting a clear vote for one supervisory body and a level playing field.[26] For *b* (all societies) a less clear picture emerges, apart from a '1' for i_1 (activity restriction rules) under j_1 (safety), with '1' splitting between stability and level playing field (i_2) and between cost-effectiveness and flexibility (i_3), *ie* still support for change, the same rules for banks and building societies and one supervisory body.[27]

The author[28] considers j_1 and j_2 (safety and stability) to be of paramount importance, but favours i_3 (one supervisory body) and then i_2 (same rules) in the interests of

cost-effectiveness, experience and competitive neutrality - hence '1,3,2' for j_1 and j_2 (safety and stability); '1' for i_2 under j_3 (level playing field) and '1' for i_3 under j_4 (cost-effectiveness).

It is interesting that under j_1 (safety) *a*, *b* and *d* are identical and *c* (smaller societies) only has i_2 and i_3 reversed, whereas there is no such agreement in j_2 (stability), *eg* smaller and larger societies with $r_s = -1$. Almost unanimity returns with j_3 (level playing field: 3,1,2,), the exception being larger societies where i_2 and i_3 (same rules and one supervisory body) are reversed. j_4 (cost-effectiveness) is a little unusual in that *b* (all societies) and *d* (large societies) are the same (3,2,1) and the author concurs that i_3, one supervisory body, is best under j_4, but foresees dangers and complications with completely identical rules (i_2) - hence '3'. Smaller societies disagree with their larger brethren and place the same rules first and one supervisory body second.[29]

Data *b*, *c* and *d* are the same under j_5 (flexibility), *ie* 3,2,1. More freedom, equality and one regulator are heavily favoured, with the author opting for a more level playing field in the short-run and i_3, one supervisory body, in the long-run.

Table 8.14 Regime Method: ADI Matrix (i_1, i_2, i_3)

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_1	12	10	-2	-2	6	6	-10	-10
i_2	-18	-14	2	0	-2	-2	-10	-10
i_3	6	4	0	2	-10	-8	20	20

ADI = Aggregate Dominance Indicator

aa = author's data, author's weights

ab = author's data, building society weights

ba = building society data, author's weights

bb = building society data, building society weights

ca = smaller societies' data, author's weights

cb = smaller societies' data, building society weights

da = larger societies' data, author's weights

db = larger societies' data, building society weights

A correlation of 1 exists for large societies between *da* and *db*[30] and there is also a high correlation between *bb* (all societies) and *db*.[31] There is a correlation of -0.82 between *cb* and *db*, *ie* a major difference between smaller and larger societies.[32] The equal Aggregate Dominance Indicators (ADIs) under *da* and *db* are interesting as is the minute variation in ADIs for each technique *i* under *ba* and *bb* (all societies). The other significant negative correlations are: *aa*, *ba*; *ab*, *ba*; *bb*, *ca*; and *bb*, *cb*. Finally, the application

of different weights can change the rankings, *eg ba* and *bb*.

Table 8.15 Regime Method Rankings (i_1 , i_2 , i_3)

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_1	1	1	3	3	1	1	2	2
i_2	3	3	1	2	2	2	3	3
i_3	2	2	2	1	3	3	1	1

Larger societies (*da* and *db*) have r_s (the Spearman rank correlation coefficient) equal to 1, but it must be remembered that the tie-breaker[33] had to be used to split the identical ADIs of i_1 and i_2 (activity restrictions and same rules).[34] However, some differences emerge, eg[35] *aa*, *ba*; *ab*, *ba*; *bb*, *ca*; *and bb*, *cb*. One supervisory body, i_3, is placed first by *bb*, *da* and *db*. Both smaller (*c*) and larger societies (*d*) put activity restrictions (i_1) in last position.[36] Whilst the larger societies prefer one agency for banks and building societies, the smaller societies (irrespective of the weights vector) put this option in third position.[37] The author's rankings give much credit to i_1 and urge more cooperation and then integration between the Bank of England (BOE) and the Building Societies Commission (BSC) as a means of achieving a more level playing field. However, the main feature of the rankings

table is the divergence between smaller and larger societies.

Table 8.16 Question 2 and Regime Method Rankings (i_1 , i_2 , i_3)

i	*a*	*aa*	*b*	*bb*	*c*	*cb*	*d*	*db*
i_1	2	1	1	3	2	1	1	2
i_2	3	3	2	2	1	2	3	3
i_3	1	2	3	1	3	3	2	1

Single letter variables refer to question 2.
Double letter variables refer to question 3 and the regime method (RM) rankings.

When it is required to justify one's views with reference to a standard set of criteria, as with question 3 where the objectives of supervision (j) are related to the techniques (i), it is not surprising that the result may be different from a straightforward assessment of i, as in question 2 - *eg* *b* (Q2: all societies) and *bb* (RM: building society data, building society weights) where r_s = -1. The other permutations cause r_s to be 0.50.[38]

8.4 Capital

Table 8.17 Values for *s*: Questionnaire 1, Q3 - Data *b* (i_4, i_5, i_6, i_7)

i	j_1	j_2	j j_3	j_4	j_5
i_4	4.061	3.667	2.618	2.848	2.576
i_5	3.558	3.500	3.595	3.310	3.024
i_6	3.047	3.214	3.333	3.095	3.395
i_7	3.595	3.195	3.405	3.023	3.047

Table 8.18 Values for *s*: Questionnaire 1, Q3 - Data *c* (i_4, i_5, i_6, i_7)

i	j_1	j_2	j j_3	j_4	j_5
i_4	3.895	3.526	2.400	2.895	2.789
i_5	3.444	3.346	3.346	3.231	2.692
i_6	2.778	3.077	3.115	2.962	3.259
i_7	3.577	3.320	3.346	3.037	3.074

Table 8.19 Values for *s*: Questionnaire 1, Q3 - Data *d* (i_4, i_5, i_6, i_7)

i	j_1	j_2	*j* j_3	j_4	j_5
i_4	4.286	3.857	2.929	2.786	2.286
i_5	3.750	3.750	4	3.438	3.563
i_6	3.500	3.438	3.688	3.313	3.625
i_7	3.625	3	3.500	3	3

b = building society data (all societies)

c = smaller societies' data

d = larger societies' data

i_4 = Capital Adequacy

i_5 = same set of rules for banks and building societies

i_6 = reduce/remove no of asset categories

i_7 = publication of min/actual ratios

s = degree of success

Larger societies (*d*) appear to believe that the rules on capital adequacy (i_4) are more important for j_1 (safety) than do smaller societies, mainly due to a j_1/j_2 (safety/stability) cluster whereas the smaller societies' 29 per cent for l_3 ('3') tends to depress *s*, degree of success. Small societies are not very convinced that i_5, same rules for banks and building societies, would add to safety, while large societies are more convinced, *eg* the 69 per cent for

l_2 ('2'). (This is especially relevant given the phasing out of the calculus and the use of a risk assets system.[39]) Smaller institutions are even less convinced that i_6 (reducing/removing the number of asset categories)[40] will aid safety, producing a very low 2.778 for *s*, the degree of success. Larger societies on the other hand generate a degree of success (*s*) similar to that for their i_5, same rules. There is muted support from for the publication of ratios, i_7,[41] but neither small nor large institutions like the interim position of reducing/removing the number of asset categories, i_6.

As expected, a positive correlation shows for small and large societies (*c* and *d*) and there is a similar relationship between j_3 (level playing field) and j_5 (flexibility) for small societies and between j_1 and j_4 for large societies, the latter link between safety and cost-effectiveness being interesting. Smaller societies exhibit a negative relationship between j_1/j_3 (safety and level playing field), j_1/j_5 (safety and flexibility) and j_2/j_5 (stability and flexibility). The first relationship is thought-provoking, while the latter in contrast for the larger societies is virtually zero. Overall (*b*) then there is a large coefficient of correlation *r* for j_3/j_4 (level playing field and cost-effectiveness) and negative correlations for j_1/j_5 (safety and flexibility) and j_2/j_5 (stability and flexibility).

Larger institutions give a higher s, degree of success, for the capital adequacy rules (i_4) under j_2 (stability) than smaller ones because of the doubled response under l_2 ('2': 64 per cent) and this is almost repeated for i_5, same rules. Larger societies also have a higher s for i_6, reducing/removing the number of asset categories, attributable to the 38 per cent under l_2 ('2') compared to the smaller societies' 12 per cent. Larger societies, on the other hand, are less keen on the publication of ratios (i_7) than smaller ones. There is a correlation of only 0.45 between the two groups of building societies.

With reference to the capital rules, i_4, the degree of success (s) under j_3 (level playing field) is less than 3 for the larger institutions, but is still much higher than smaller institutions (2.400), mainly because the sum of l_1 and l_2 ('1' and '2') equals zero. Both groups favour i_5, the same rules for banks and building societies, but larger societies more so with l_2 being 38 per cent. A similar situation arises with reducing/removing the number of asset categories, i_6, but the remarkable feature about the publication of ratios (i_7) is that l_4 and l_5 ('4' and '5') are zero. Larger societies seem more interested in alternatives to the then current system, *ie* i_5, i_6 and i_7. There is a 0.88 correlation between small and large societies.

While some institutions[42] are not too troubled about capital, it seems that size is again a determining factor

for j_4 (cost-effectiveness). Different institutions exhibit moderate satisfaction with the (then) current capital adequacy system, but the larger ones do appear to prefer change, especially i_5 and i_6 - same rules and changing asset categories. Cost-effectiveness scores higher here and i_7 (publication of ratios) is not favoured. There is only limited correlation between the small and large building societies data.[43]

With regard to j_5 (flexibility) larger societies seem unhappy with the low level of flexibility from the then current system and its calculus, i_4, in contrast to smaller societies, the former's distribution curve being skewed at the right. The reverse applies with i_5, same rules, which the former strongly favour compared to the latter: the degree of success, s, being 3.563 and 2.692 respectively. The larger institutions again produce a larger s for i_6, reducing/removing the number of asset categories, than the smaller ones and both are approximately the same for i_7, publication. There is thus a low correlation of 0.33 between the two groups of societies.

The correlation matrices for each set of data reveal a high coefficient of correlation r for small societies for criteria j_1/j_2 (safety and stability) and j_3/j_5 (level playing field and flexibility), but negative values for j_1/j_3 (safety and level playing field), j_1/j_5 (safety and flexibility), j_2/j_3 (stability and level playing field) and j_2/j_5 (stability and flexibility). The larger societies show

a good correlation between j_1 and j_3 (safety and level playing field), negative for j_1 and j_5 (safety and flexibility), as well as high r values for j_3/j_4 (level playing field and cost-effectiveness), j_3/j_5 (level playing field and flexibility) and j_4/j_5 (cost-effectiveness and flexibility). The overall position of data b demonstrates high correlations for j_1/j_2 (safety and stability) and j_3/j_4 (level playing field and cost-effectiveness), but many negative values, *eg* j_1/j_5 (safety and flexibility) and j_2/j_5 (stability and flexibility).

Table 8.20 Impact Matrices: Questionnaire 1 (i_4, i_5, i_6, i_7)

		a					*b*					*c*					*d*				
i	*j*	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
i_4		1	2	3	3	3	1	1	4	4	4	1	1	4	4	3	1	1	4	4	4
i_5		4	4	1	4	1	3	2	1	1	3	3	2	1	1	4	2	2	1	1	2
i_6		3	3	2	2	2	4	4	3	2	1	4	4	3	3	1	4	3	2	2	1
i_7		2	1	4	1	4	2	3	2	3	2	2	3	2	2	2	3	4	3	3	3

For small institutions there is a high correlation between j_1 and j_2 (safety and stability) and a perfect correlation between j_3 and j_4, implying a link between competitive neutrality and cost-effectiveness. However, j_2 and j_5 (stability and flexibility) exhibit a negative correlation and i_6, changing asset categories, is placed last under j_1

and j_2 (safety and stability) in contrast to first for i_5 (same rules) under j_3 and j_4 (level playing field and cost-effectiveness) - repeated for all societies (*b*). With larger societies a less clear picture is painted with a negative correlation between j_1 and j_3 (safety and level playing field), repeated for all societies, which additionally produces a correlation between j_4 and j_5 (cost-effectiveness and flexibility). Larger societies definitely do not favour i_7, publication, which receives one fourth and three thirds.

The author considers that the existence of rules on capital[44] does generally assist j_1 (safety)[45] - hence its '1' rating. The i_7 (publication) option would be cheap and provide a safety indicator for investors and financial analysts alike.[46] Some education of investors would be necessary and it could inhibit an institution's operations if it became constantly scrutinised by the public[47] - hence the fourth under j_5 (flexibility). i_6 (changing asset categories) prior to i_5 (same rules) could offer a means of simplification (hence '2' under j_3, j_4 and j_5 - level playing field, cost-effectiveness and flexibility). The use of the same rules (i_5) could in the short-run mean a more uniform treatment of building society assets, still principally mortgages, without the diversification of, say, banks, *ie* inherent dangers: fourth for j_1 and j_2 (safety and stability). This might not be advisable and a transitional

period might be an alternative.

With reference to j_1 (safety), there is a good correlation between the author's views (*a*) and those of small societies (*c*) and between all societies (*b*) and small societies, but a weak inverse relationship exists between the author's views and those of the large societies (*d*). For small and large societies, r_s equals zero. The latter also applies to the author's views and all societies for j_2 (stability) as well as to the former and small societies. With j_3 (level playing field) r_s is 1 for all societies and small societies and there is a good correlation between: *a/d*, *b/d* and *c/d*. This is also applicable to the former two under j_4 (cost-effectiveness). Finally, with j_5 (flexibility) there is a good correlation between all societies, small societies and large societies.

Table 8.21 Regime Method: ADI Matrix (i_4 , i_5 , i_6 , i_7)

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_4	13	13	9	9	11	15	9	9
i_5	-27	-21	13	5	11	-1	25	21
i_6	-3	-3	-23	-17	-29	-21	-11	-7
i_7	17	11	1	3	7	7	-23	-23

ADI = Aggregate Dominance Indicator

aa = author's data, author's weights

ab = author's data, building society weights

ba = building society data, author's weights

bb = building society data, building society weights

ca = smaller societies' data, author's weights

cb = smaller societies' data, building society weights

da = larger societies' data, author's weights

db = larger societies' data, building society weights

The ADI matrix despite relative differences illustrates many positive correlations and few strong negative ones, *eg* *aa*,*ab*; *ba*,*bb*; *ba*,*ca*; *ba*,*cb*; *bb*,*ca*; *bb*,*cb*; *ca*,*cb*; and *da*,*db*. Apart from the same ADI values for i_4 and i_5 (*ca*), the rest are noticeable for a generally large variation within each permutation.

Table 8.22 Regime Method Rankings (i_4 , i_5 , i_6 , i_7)

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_4	2	1	2	1	1	1	2	2
i_5	4	4	1	2	2	3	1	1
i_6	3	3	4	4	4	4	3	3
i_7	1	2	3	3	3	2	4	4

As with the ADIs[48] there are many strong correlations, including r_s being for 1 for *bb*,*ca* and *da*,*db*, *eg* *aa*,*ab*;

aa, *cb*; *ba*, *bb*; *ba*, *ca*; *ba*, *da*; *ba*, *db*; *bb*, *cb*; and so on. Interestingly r_s equals 0 for *cb* and *db*, small and large societies using the building society weights vector. As noted earlier using two sets of weights often generates different results. Larger societies favour the level playing field option, i_5, which is less preferred by their smaller brethren where with *cb* it is even placed third with i_6 last, asset categories.

Table 8.23 Question 2 and Regime Method Rankings (i_4, i_5, i_6, i_7)

i	*a*	*aa*	*b*	*bb*	*c*	*cb*	*d*	*db*
i_4	2	2	1	1	1	1	2	2
i_5	4	4	2	2	3	3	1	1
i_6	3	3	4	4	4	4	3	3
i_7	1	1	3	3	2	2	4	4

Single letter variables refer to question 2.
Double letter variables refer to question 3 and the regime method (RM) rankings.

The simple relationship here is a perfect match between the question 2 and RM rankings.

8.5 Liquidity

Table 8.24 Values for *s*: Questionnaire 1, Q3 - Data *b* (i_8, i_9, i_{10}, i_{11})

i	j				
	j_1	j_2	j_3	j_4	j_5
i_8	4.133	3.800	3.100	2.900	2.833
i_9	3.690	3.452	3.116	2.854	2.833
i_{10}	3.810	3.524	3.317	3.049	2.857
i_{11}	3.372	3.372	3.116	2.907	3.233

Table 8.25 Values for *s*: Questionnaire 1, Q3 - Data *c* (i_8, i_9, i_{10}, i_{11})

i	j				
	j_1	j_2	j_3	j_4	j_5
i_8	3.882	3.588	3.059	2.941	2.706
i_9	3.654	3.423	3.074	2.840	2.962
i_{10}	3.800	3.407	3.360	3.040	2.885
i_{11}	3.148	3.222	2.929	2.852	3.222

Table 8.26 Values for *s*: Questionnaire 1, Q3 - Data *d* (i_8, i_9, i_{10}, i_{11})

i	j_1	j_2	j_3	j_4	j_5
i_8	4.462	4.077	3.154	2.846	3
i_9	3.750	3.500	3.188	2.875	2.625
i_{10}	3.824	3.733	3.250	3.063	2.813
i_{11}	3.750	3.625	3.467	3	3.250

b = building society data (all societies)

c = smaller societies' data

d = larger societies' data

i_8 = Liquidity

i_9 = minimum cash ratio

i_{10} = minimum liquidity ratio

i_{11} = access to lender of last resort

s = degree of success

The larger societies generate a very high degree of success (*s*) of 4.462 for i_8, liquidity rules, under j_1 (safety) with all the responses in l_1 and l_2 ('1' and '2') and the smaller institutions produce a (still) high figure of 3.882. A similar *s* of 3.654 and 3.750 is produced by small and large societies for i_9, implying a measure of support for a minimum cash ratio. A closer agreement and higher *s* applies to i_{10} (minimum liquidity ratio) for small and large

societies, but there is a lot of difference between the two groups of institutions for i_{11}, lender of last resort (LLR), surprisingly not favoured by small societies.[49] There is quite a good correlation between small and large societies (0.81) and an excellent correlation of 0.98 between all societies and small societies.

Larger societies consider under j_2 (stability) that i_8 (liquidity rules) performs quite a bit better than smaller societies, mainly because l_2 (the '2' rating) equals 77 per cent. The degree of success (s) is approximately the same for i_9 (minimum cash ratio), though with some variation in l_2 and l_3: 3.423 and 3.500. There is a slightly bigger gap between small and large institutions for a minimum liquidity ratio, i_{10}, with flatter distribution curves and there exists some difference over i_{11}, LLR, which is unexpectedly less favoured by small societies.[50] A good correlation between small and large societies of 0.71 is the result alongside an excellent one between all societies and small societies, and between all societies and large societies.[51]

There is additionally a strong correlation between small and large societies under j_3 (level playing field), except for i_{11}, LLR. i_8, the liquidity règime, has a bell-shaped curve, clustered around l_2 to l_4 ('2' to '4' ratings). A value of a little over 3 for the degree of success (s) also applies to i_9, minimum cash ratio, but there is a slightly greater preference for i_{10}, minimum liquidity ratio, possibly

because of standardisation.[52] An LLR facility, i_{11}, is not felt especially by small institutions to add to j_3 (level playing field), although larger ones are more keen (s = 3.467). Overall r is -0.42 for small and large societies with 0.92 for all societies and small societies, and -0.30 for all societies and large societies.

With j_4 (cost-effectiveness) small and large institutions produce very similar results for s, the degree of success, but the correlation is only 0.49 because the slight differences are not always in the same direction. Furthermore, all the values are in a narrow 2.8 to 3.1 range, suggesting moderate success for each i in satisfying j_4. Finally, there is a general spread of responses implying some internal disagreement within each group of societies.

Most of the frequency distributions l for each supervisory technique i under criterion j_5 (flexibility) are flatter than those of previous criteria - indicating little agreement within each group of societies. Large institutions favour i_8, liquidity rules, more than smaller institutions, which suggests some lack of flexibility in the latter's case.[53] Smaller societies give a higher degree of success, s, than larger societies to i_9, minimum cash ratio, but the figure is still in the middle range. s is almost the same for small and large societies in i_{10}, minimum liquidity ratio, but again there is no general agreement between societies, suggesting caution within the data. The LLR option, i_{11}, also gives almost identical results of 3.222

and 3.250 respectively. There is, however, little correlation between the two groups of societies (r = 0.43) because of changes in direction.

Each group of societies separately shows a strong correlation between j_1 and j_2 (safety and stability) and there is additionally a good correlation between j_3 and j_4 (level playing field and cost-effectiveness) for small societies and between j_3 and j_5 (level playing field and flexibility) for large societies, flexibility being the key in the latter case. There are some negative correlations for small institutions: $j_1 j_5$ (safety and flexibility) and $j_2 j_5$ (stability and flexibility), implying a tradeoff between safety/stability and flexibility[54]. The strong $j_1 j_2$ and $j_3 j_4$ correlations referred to above are naturally repeated by all societies, where there is in addition a negative correlation for $j_1 j_5$ (safety and flexibility).

Table 8.27 Impact Matrices: Questionnaire 1 (i_8, i_9, i_{10}, i_{11})

i	j	*a* 1	2	3	4	5	*b* 1	2	3	4	5	*c* 1	2	3	4	5	*d* 1	2	3	4	5
i_8		4	4	4	1	2	1	1	4	3	3	1	1	3	2	4	1	1	4	4	2
i_9		2	2	3	4	3	3	3	2	4	4	3	2	2	4	2	3	4	3	3	4
i_{10}		3	3	2	3	4	2	2	3	1	2	2	3	1	1	3	2	2	2	1	3
i_{11}		1	1	1	2	1	4	4	1	2	1	4	4	4	3	1	4	3	1	2	1

There is an inverse relationship (r_s = -1) between j_1 and j_5 for small societies, *ie* between safety and flexibility, a good match between j_1 and j_2 (safety and stability) which also applies to large societies and r_s equals -0.8 for j_2 and j_5 (stability and flexibility). For larger institutions there is an inverse relationship between j_1 and j_3 (safety and level playing field) and r_s is 0 for j_4 and j_5 (cost-effectiveness and flexibility). The data *b* rankings (all societies) are identical for safety and stability (j_1 and j_2), *ie* 1,3,2,4, and the opposite for $j_1 j_3$ (safety and level playing field) and $j_2 j_3$ (stability and level playing field). j_4 and j_5 (cost-effectiveness and flexibility) are the same, except for the reversal of i_{10} and i_{11}, minimum liquidity ratio and LLR.

One element that might assist an institution with an actual or (un)expected liquidity shortage is an LLR facility,[55] since one cannot assume that private sector funds will always be available - hence the author placing it first under j_1 and j_2 (safety and stability).[56] Similarly i_9, a minimum cash ratio, could help by compelling societies to maintain (continuously) a minimum cash level and this could be complemented by a publicly stated minimum liquidity ratio, i_{10}.[57] The j_3 rankings (level playing field) are almost the same as j_1 and j_2 (safety and stability) since i_9, i_{10} and i_{11} imply a degree of equality between societies as well as between them and other financial institutions,

eg banks. The liquidity règime, i_8, appears to be fairly cost-effective[58] and the unlikely event of i_{11}, LLR, being used puts it second. i_{10}, a minimum liquidity ratio, would entail a minor change - therefore third - whilst i_9, the minimum cash ratio, though helpful would incur costs for societies *vis-á-vis* foregone interest. The noticeable feature of the impact matrices for *a*, *b*, *c* and *d* (author, all, small and large societies) is the perfect correlation between *b*, *c* and *d*, *ie* 1,3,2,4. The author[59] considers i_{11}, LLR, to a speedy and unlikely to be used option with potentially large benefits with respect to j_1 and j_2 (safety and stability) - hence first place. Similar improvements from i_9 and i_{10} (minimum ratios) are next. Building societies seem relatively happy with the current system, would like a uniform minimum liquidity ratio, are not very keen on a cash ratio and do not consider an LLR facility necessary.[60]

Table 8.28 Regime Method: ADI Matrix (i_8, i_9, i_{10}, i_{11})

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_8	-23	-21	17	19	25	19	13	21
i_9	-3	-1	-19	-23	-7	-3	-25	-29
i_{10}	-13	-19	17	17	15	7	19	13
i_{11}	39	41	-15	-13	-33	-23	-7	-5

ADI = Aggregate Dominance Indicator

aa = author's data, author's weights

ab = author's data, building society weights

ba = building society data, author's weights

bb = building society data, building society weights

ca = smaller societies' data, author's weights

cb = smaller societies' data, building society weights

da = larger societies' data, author's weights

db = larger societies' data, building society weights

The overall pattern is one of substantial differences between techniques, irrespective of the data/weights permutation. There are several strong correlations: *aa*,*ab*; *ba*,*bb*; *ba*,*da*; *ca*,*cb*; and *da*,*db*. Thus, for a given set of data, the choice of weights vector has no substantive impact. There are, on the other hand, some negative correlations: *aa*,*ca*; *aa*,*cb*; *ab*,*ca*; and *ab*,*cb*, *ie* the author disagreeing with the building society views.[61]

Table 8.29 Regime Method Rankings (i_8 , i_9 , i_{10} , i_{11})

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_8	4	4	1	1	1	1	2	1
i_9	2	2	4	4	3	3	4	4
i_{10}	3	3	2	2	2	2	1	2
i_{11}	1	1	3	3	4	4	3	3

The RM rankings are unusual in that with each of *a*, *b* and *c* (author, all and small societies) different weights produce the same result. *da* and *db* (larger societies) differ only in having i_8 and i_{10} reversed (liquidity rules and liquidity ratio). Also, all societies and small societies are closely related (r_s = 0.80) and *ba*, *bb*, and *db* (all societies and large societies) are identical. Therefore many similarities exist between building societies, with the author taking a different line.[62]

Table 8.30 Question 2 and Regime Method Rankings (i_8, i_9, i_{10}, i_{11})

i	*a*	*aa*	*b*	*bb*	*c*	*cb*	*d*	*db*
i_8	4	4	1	1	1	1	1	1
i_9	1	2	3	4	3	3	3	4
i_{10}	2	3	2	2	2	2	2	2
i_{11}	3	1	4	3	4	4	4	3

Single letter variables refer to question 2.
Double letter variables refer to question 3 and the regime method (RM) rankings.

c and *cb* (small societies) are the same, whilst *b* and *bb* (all societies) as well as *d* and *db* (large societies) have r_s equal to 0.80. There is thus some difference when using

the regime method, but societies generally prefer no change.[63]

8.6 Treasury Risk Management

Table 8.31 Values for *s*: Questionnaire 1, Q3 - Data *b* (i_{12}, i_{13}, i_{14})

i	j_1	j_2	j_3	j_4	j_5
i_{12}	3.719	3.656	2.813	3.063	2.844
i_{13}	3.209	3.163	3.452	3.512	3.619
i_{14}	3.302	3.302	3.535	3.326	3.512

Table 8.32 Values for *s*: Questionnaire 1, Q3 - Data *c* (i_{12}, i_{13}, i_{14})

i	j_1	j_2	j_3	j_4	j_5
i_{12}	3.579	3.579	2.684	3	2.648
i_{13}	3.074	2.852	3.192	3.407	3.500
i_{14}	3.074	3	3.333	3.111	3.259

Table 8.33 Values for s: Questionnaire 1, Q3 - Data d (i_{12}, i_{13}, i_{14})

i	j				
	j_1	j_2	j_3	j_4	j_5
i_{12}	3.923	3.769	3	3.154	3.077
i_{13}	3.428	3.688	3.875	3.688	3.813
i_{14}	3.688	3.813	3.875	3.688	3.938

b = building society data (all societies)

c = smaller societies' data

d = larger societies' data

i_{12} = Funding/Treasury Risk Management

i_{13} = increase wholesale limit

i_{14} = hedging rules same as banks'

s = degree of success

With safety, j_1, the degree of success for small societies, s_c, is a moderate 3.579, but s_d is a high 3.923 implying larger societies believe that the funding and treasury risk management (TRM) rules, i_{12},[64] satisfy this criterion quite well. Smaller societies are neither impressed by increasing the wholesale limit, i_{13}, nor by having the same hedging rules as banks, i_{14}, in terms of safety[65] while larger societies allocate moderate success to i_{13} and a slightly better performance to i_{14}, with the latter's l_2 ('2') being 69 per cent. The correlation coefficient for small and large

societies is 0.85.

A greater divergence occurs between small and large societies when we consider j_2, stability. i_{12}, funding and TRM rules, receives a moderate 3.579 from smaller institutions but 3.769 from larger institutions. The major disagreement comes with i_{13} and i_{14} where the former, increasing the wholesale limit, receives 3.688 from larger societies and a mere 2.852 from smaller ones. Larger societies seem confident that a rise in the wholesale limit,[66] by enabling a more diversified funding base, would contribute to an increase in stability whereas smaller societies are not so convinced. This position is accentuated with i_{14}, same hedging rules as banks, where all the responses of larger societies are in the l_1 to l_3 ('1' to '3') range with l_2 equalling 69 per cent. The consequence is a low correlation, r, of 0.36 between the two groups of societies, but r is 1.00 for between all societies (b) and small societies (c).

For j_3, level playing field, the pattern of divergence between the two groups of societies continues. Slightly different figures emerge from i_{12} but again i_{13}, increased wholesale limits, and i_{14}, same hedging rules, highlight a difference in perception with larger societies producing higher values than smaller societies, particularly because in each case the latter's l_4 ('4') and l_5 ('5') are zero. Although the degree of success values of small and large societies differ in magnitude, their relative relationships

do not and so r = 0.98.

Both small and large institutions are reasonably happy that i_{12}, the current system, is cost-effective, j_4, and there seems to be some support for a rise in the wholesale limit on j_4 grounds from both groups of institutions (more from the larger ones).There is, however, some disagreement on the same hedging rules as banks, i_{14}, where the degree of success of small institutions, s_c, is 3.111 and s_d (large institutions) is 3.688, principally caused by l_4 ('4') and l_5 ('5') being zero for large societies.[67] There is a reasonably good correlation between small and large societies.[68]

Smaller societies do not believe that the current system, i_{12}, offers much flexibility, j_5, compared to larger societies. The former 's pessimism might appear to be the opposite of what one would have expected, but the explanation may lie in the difficulty which the smaller institutions perceive in persuading the Commission to allow them the degree of freedom in wholesale funding and hedging permitted to their larger brethren.[69] There is a little difference in i_{13} with the degree of success for large societies, s_d, being a little higher than s_c (smaller societies), meaning support for an increase in the wholesale limit. The only major difference of opinion is with the possibility of the same hedging rules as banks, i_{14}, which is very heavily favoured by the large societies and where l_4 ('4') and l_5 ('5') are again zero. Overall the correlation

between small and large societies equals 0.91.

When we look at all societies, small societies and large societies separately, there are few parallels in the correlation calculations. For small institutions, j_1 and j_2 (safety and stability) have r equal to 1 and very close relationships apply to $j_3 j_5$ (level playing field and cost-effectiveness) and $j_4 j_5$ (cost-effectiveness and flexibility), but negative values appear for $j_1 j_3$ (safety and level playing field), $j_1 j_5$ (safety and flexibility) and $j_2 j_3$ (stability and level playing field) with r equalling -1 for $j_2 j_5$ (stability and flexibility). With respect to large societies r is 1 for $j_3 j_4$ (level playing field and cost-effectiveness) and -1 for $j_1 j_3$ (safety and level playing field) and $j_1 j_4$ (safety and cost-effectiveness). Negative relationships also apply to $j_3 j_5$ (level playing field and flexibility) and $j_4 j_5$ (cost-effectiveness and flexibility). Positive links for all societies (b) are $j_1 j_2$ (safety and stability), $j_3 j_4$ (level playing and cost-effectiveness), $j_3 j_5$ (level playing field and flexibility) and $j_4 j_5$ (cost-effectiveness and flexibility), while negative ones are $j_1 j_3$ (safety and level playing field), $j_2 j_3$ (stability and level playing field), $j_2 j_4$ (stability and cost-effectiveness) and $j_2 j_5$ (stability and flexibility). r, the coefficient of correlation, equals -1 for $j_1 j_5$ (safety and flexibility). There often seems, as one would expect, closeness between j_1 and j_2 (safety and stability) as well as between the remaining three criteria

and there are frequent negative relationships between the two groups of criteria.

Table 8.34 Impact Matrices: Questionnaire 1 (i_{12}, i_{13}, i_{14})

i	j	*a* 1	2	3	4	5	*b* 1	2	3	4	5	*c* 1	2	3	4	5	*d* 1	2	3	4	5
i_{12}		1	1	3	1	3	1	1	3	3	3	1	1	3	3	3	1	2	3	3	3
i_{13}		2	3	2	2	2	3	3	2	1	1	2	3	2	1	1	3	3	1	1	2
i_{14}		3	2	1	3	1	2	2	1	2	2	3	2	1	2	2	2	1	2	2	1

Smaller societies (c) place the current system, i_{12}, first under j_1 and j_2 (safety and stability) and there is a perfect correlation between j_3 and j_4 (level playing field and cost-effectiveness) as well as the Spearman rank correlation coefficient, r_s equalling -1 for $j_1 j_3$ (safety and level playing field), $j_2 j_4$ (stability and cost-effectiveness) and $j_2 j_5$ (stability and flexibility). The $j_1 j_2$ and $j_3 j_4 j_5$ division is therefore maintained. The larger societies' data (d) displays an even more diverse pattern with only j_3 and j_4 (level playing field and cost-effectiveness) matching and inverse links for $j_1 j_3$ (safety and level playing field) and $j_1 j_4$ (safety and cost-effectiveness). No technique i scores more than two firsts but i_{12}, the current system, is placed third three times while i_{14}, same hedging rules, consists only of firsts

and seconds. The overall position, b, has r_s equal to 1 for $j_1 j_2$ (safety and stability) and $j_4 j_5$ (cost-effectiveness and flexibility) and there are four substantial negative relationships as follows: $j_1 j_4$ (safety and cost-effectiveness), $j_1 j_5$ (safety and flexibility), $j_2 j_4$ (stability and cost-effectiveness) and $j_2 j_5$ (stability and flexibility).

The author agrees with the societies[70] by placing i_{12}, the current system, in first position under j_1 and j_2, safety and stability, since it is now well established and specifically designed to satisfy these two criteria. Building societies have similarly gained a lot of experience with working within the wholesale limits. The same considerations apply to putting i_{12} first under j_4, cost-effectiveness - hence the match between j_1 and j_4, safety and cost-effectiveness. The existence of a risk-return tradeoff[71] is why i_{13}, increased wholesale limit, and i_{14}, same hedging rules, are second and third under j_1 and j_4 (safety and cost-effectiveness). i_{13}, *eg* redefining wholesale funds to exclude subordinated debt and PIBS (Deregulation Bill) and the proposal in the First Stage of the Treasury Review to raise the limit to 50 per cent (HMT, 1994a and 1994b),[72] would offer greater flexibility and could lower the overall cost of funding[73] but could, *inter alia*, create a rollover risk. Thus the Spearman rank correlation coefficient, r_s, is -1 for j_1 and j_5 (safety and flexibility). The ultimate in j_5 and j_3 (flexibility and

level playing field) would be the adoption of i_{14}, same hedging rules as banks - hence the 3,2,1 for j_3 and j_5 (level playing field and flexibility). This option would of course constitute a transformation and require careful monitoring, as an extension of the already established principles of treasury risk management. Thus r_8 equals -0.10 for j_4 and j_5 (cost-effectiveness and flexibility) and i_{14} may in certain circumstances go beyond, say, hedging into speculation.[74]

It is interesting to note under j_1, safety, an identical match between the author (*a*) and small societies (*c*) on the one hand (1,2,3) and between all societies (*b*) and large societies (*d*) on the other (1,3,2). The second criterion, stability, shows in contrast greater agreement with *a*, *b* and *c* producing 1,3,2 in contrast to *d* and 2,3,1. This pattern is repeated for j_3, level playing field, but with different rankings. All, small and large societies (*b*, *c* and *d*) have the same gradings under j_4, cost-effectiveness, and with j_5, flexibility, *a* and *d* give 3,2,1 while *b* and *c* give 3,1,2.

Table 8.35 Regime Method: ADI Matrix (i_{12}, i_{13}, i_{14})

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_{12}	18	14	6	6	6	6	-2	-2
i_{13}	-8	-8	-10	-8	0	2	-8	-12
i_{14}	-10	-6	4	2	-6	-8	10	14

ADI = Aggregate Dominance Indicator

aa = author's data, author's weights

ab = author's data, building society weights

ba = building society data, author's weights

bb = building society data, building society weights

ca = smaller societies' data, author's weights

cb = smaller societies' data, building society weights

da = larger societies' data, author's weights

db = larger societies' data, building society weights

Each pair of weight combinations (*a*, *b*) gives a good correlation, but there is also a good match between: *aa*,*ca*; and *ab*,*ca* - general agreement between the author and the smaller societies.[75] There are quite a few (weak) negative correlations but a strong negative one is *cb* and *da* (small and large societies). For *cb* and *db* r_s equals -0.78. This disagreement between small and larger societies is mainly over the role of i_{13} and i_{14}, increased wholesale limit and same hedging rules as banks. It is noticeable that there is generally a large gap between the Aggregate Dominance

Indicators (ADIs) for each technique *i*, *eg db*.

Table 8.36 Regime Method Rankings (i_{12}, i_{13}, i_{14})

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_{12}	1	1	1	1	1	1	2	2
i_{13}	2	3	3	3	2	2	3	3
i_{14}	3	2	2	2	3	3	1	1

Different weights vectors do not affect the rankings for *b*, *c* and *d* - all, small and large societies - and the transposition of the i_{13} and i_{14} rankings under *aa* and *ab* is via very close ADIs. There are negative correlations for: *aa*,*da*; *aa*,*db*; *ca*,*da*; *ca*,*db*; *cb*,*da*; and *cb*,*db*. In other words there is general agreement between the author and small societies and a lack of agreement between the author and small societies on the one hand and the large societies on the other.

Table 8.37 Question 2 and Regime Method Rankings (i_{12}, i_{13}, i_{14})

i	*a*	*aa*	*b*	*bb*	*c*	*cb*	*d*	*db*
i_{12}	1	1	1	1	1	1	2	2
i_{13}	3	2	3	3	3	2	3	3
i_{14}	2	3	2	2	2	3	1	1

Single letter variables refer to question 2.
Double letter variables refer to question 3 and the regime method (RM) rankings.

The most notable feature when we compare question 2 with the regime method is that the rankings are identical for *b*, *bb* and *d*, *db* (all and large societies). The author (*a*) agrees with *b* and *c* (small societies) putting i_{14}, same hedging rules, in first place and is identical to *bb*, whilst the effect of the application of the regime method is that *aa* reverses i_{13} and i_{14} so that *aa* and *cb* (the author and the small societies, each using internal weights) are the same. In contrast, *d* and *db* (large societies) put i_{14} first in the interests of j_3 and j_5, level playing field and flexibility.

8.7 Reporting

Table 8.38 Values for *s*: Questionnaire 1, Q3 - Data *b* (i_{15}, i_{16}, i_{17}, i_{18})

i	j_1	j_2	j j_3	j_4	j_5
i_{15}	3.758	3.548	2.839	2.625	2.548
i_{16}	3.233	3.250	2.860	2.326	2.356
i_{17}	3.372	3.233	2.814	2.279	2.419
i_{18}	2.881	2.810	2.929	2.357	2.500

Table 8.39 Values for *s*: Questionnaire 1, Q3 - Data *c* (i_{15}, i_{16}, i_{17}, i_{18})

i	j_1	j_2	j j_3	j_4	j_5
i_{15}	3.737	3.500	2.778	2.579	2.389
i_{16}	3.111	3.250	2.852	2.091	2.138
i_{17}	3.370	3.148	2.852	2.185	2.296
i_{18}	2.808	2.846	2.450	2.308	2.360

Table 8.40 Values for *s*: Questionnaire 1, Q3 - Data *d* (i_{15}, i_{16}, i_{17}, i_{18})

i	j				
	j_1	j_2	j_3	j_4	j_5
i_{15}	3.786	3.615	2.973	2.692	2.769
i_{16}	3.438	3.250	2.875	2.571	2.750
i_{17}	3.375	3.375	2.750	2.438	2.625
i_{18}	3	2.750	2.882	2.438	2.733

b = building society data (all societies)

c = smaller societies' data

d = larger societies' data

i_{15} = Reporting (to BSC and members)

i_{16} = increase data passed to BSC

i_{17} = increase spot checks by BSC

i_{18} = expand Summary Financial Statement

s = degree of success

Under the first criterion j_1, safety, the degree of success values for small and large societies (s_c and s_d) are almost equal - the belief that safety is underpinned by i_{15}, the reporting rules. Smaller institutions are less convinced than larger ones that more information for the BSC, i_{16}, will assist safety. i_{17}, more spot checks, is again almost identical and its figure(s) suggest additional safety. Neither group of societies exhibit confidence that i_{18},

expanding the Summary Financial Statement, would constitute a meaningful contribution to safety. There is a high correlation coefficient, r, of 0.94 between small and large societies.

Both groups of institutions again produce largely similar results for j_2, stability. A value of 3.5 to 3.6 suggests a general belief that i_{15}, reporting rules, works well and an identical s, degree of success, of 3.250 means no large weight in favour of i_{16}, more data.[76] Neither group is impressed that i_{17}, more spot checks, would add to stability and definitely do not consider i_{18}, expanding Summary Financial Statement, relevant to this criterion. The result is a high correlation of 0.95 between small and large institutions.

The theme from smaller and larger building societies which underpins j_3, level playing field, is one of overall agreement about the general lack of a level playing field, and the only significant difference is the low s_c of 2.450 for i_{18} (small societies).[77]

There is little evidence that building societies consider any of techniques i_{15} to i_{18} particularly cost-effective, j_4. The degree of success for small societies (s_c) ranges from 2.091 to 2.579 and for large societies (s_d) from 2.438 to 2.692. Both groups concur on i_{15}, reporting rules, but smaller societies do not believe i_{16}, more data, would assist j_4.[78] This is repeated for i_{17} and i_{18} (more spot checks and Summary Financial Statement)[79] and any extra

burdens are not appreciated.[80] With reference to i_{18}, the Deregulation Bill (Appendix 3.7) incidentally envisages advertising instead of the automatic dispatch of the Summary Financial Statement to members.

The j_4 pattern is in the main duplicated with j_5, flexibility, where there is a feeling of inflexibility throughout the supervisory techniques, especially by small societies for i_{16} and i_{17}, more data and more spot checks. There is no correlation between the smaller and larger societies' data.[81]

The only common significant correlation for all, small and large societies is between j_1 and j_2 and between j_4 and j_5. There are additional positive correlations for small societies (*c*): j_1, j_4 (safety and cost-effectiveness); j_3, j_4 (level playing field and cost-effectiveness); and j_3, j_5 (level playing field and flexibility). Some negative correlations exist for all societies (*b*): j_1, j_3 (safety and level playing field) and j_2, j_3 (stability and level playing field.[82]

Table 8.41 Impact Matrices: Questionnaire 1 (i_{15}, i_{16}, i_{17}, i_{18})

i	j	*a* 1	2	3	4	5	*b* 1	2	3	4	5	*c* 1	2	3	4	5	*d* 1	2	3	4	5
i_{15}		4	3	2	3	1	1	1	3	1	1	1	1	3	1	1	1	1	1	1	1
i_{16}		2	2	3	2	2	3	2	2	3	4	3	2	1	4	4	2	3	3	2	2
i_{17}		1	1	1	4	3	2	3	4	4	3	2	3	2	3	3	3	2	4	3	4
i_{18}		3	4	4	1	4	4	4	1	2	2	4	4	4	2	2	4	4	2	4	3

The smaller societies' data (*c*)[83] displays a clear preference for no change with i_{15}, the current rules, scoring four firsts. There is also a good match between j_1 and j_2 (safety and stability) and a perfect one between j_4 and j_5 (cost-effectiveness and flexibility). There is a substantial negative correlation for j_3, j_4 (level playing field and cost-effectiveness) and j_3, j_5 (level playing field and flexibility. With larger societies the data (*d*) is even more stark with five firsts for i_{15} whilst i_{16}, more data, is in general second place. The all building societies' data (*b*) awards four firsts to i_{15} while i_{18}, expanding the Summary Financial Statement, is interesting with 4,4,1,2,2. Given the recent spate of problems with certain building societies since the 1986 Act,[84] there may be room for improvement. The threat of spot checks, i_{17}, seems to be a standard way of keeping financial institutions on their toes

and so the author places it in first position under j_1 and j_2, safety and stability.[85] i_{18}, expanding the Summary Financial Statement, is only really relevant in terms of j_1 (safety), but may well be more appearance than reality because it is largely ignored by the public[86] on grounds of a lack of time and expertise, etc.[87] It rates first under j_4 (cost-effectiveness) because the cost element is essentially printing and administration, the data being already available though not for public consumption. The consequence is a correlation between j_1 and j_2 (safety and stability) and between j_2 and j_3 (stability and level playing field) combined with inverse relationships for j_2, j_4 (stability and cost-effectiveness) and j_3, j_4 (level playing field and cost-effectiveness).[88]

With j_1 (safety), all building societies (*b*) and small societies (*c*) give the same results while the transposition of i_{16} and i_{17} by *b* and *c* means a good correlation between *b* and *c* on the one hand and *d* (large societies) on the other. The author (*a*) diverges greatest from the larger societies. Under j_2 (stability), all societies and small societies are identical and there is a good correlation not only between all societies and larger societies but also between smaller and larger societies. The author disagrees substantially, but is closest to the large societies. The level playing field criterion, j_3, illustrates a large diversity of views: a negative correlation of -0.60 between small and large institutions and between the author and all

societies; -0.40 for the author and large societies; and 0.40 for the author and small societies. There is little overall linkage in j_4 (cost-effectiveness) apart from a positive one between all societies and small societies (*b* and *c*) and a negative one between the author and the large societies (*a* and *d*). With j_5, flexibility, all four data sets put i_{15}, reporting rules, first and, while all societies and small societies agree, the other permutations do not (with r_s ranging from 0.20 to 0.80).

Table 8.42 Regime Method: ADI Matrix (i_{15}, i_{16}, i_{17}, i_{18})

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_{15}	-17	-11	37	41	37	41	45	45
i_{16}	11	13	-5	-11	-7	-13	3	5
i_{17}	23	21	-15	-11	-1	-3	-13	-15
i_{18}	-17	-23	-17	-19	-29	-25	-35	-35

ADI = Aggregate Dominance Indicator

aa = author's data, author's weights

ab = author's data, building society weights

ba = building society data, author's weights

bb = building society data, building society weights

ca = smaller societies' data, author's weights

cb = smaller societies' data, building society weights

da = larger societies' data, author's weights

db = larger societies' data, building society weights

The various building society data permutations are very closely (positively) correlated (0.92 to 1.00) and, apart from *bb* (all societies), there is a wide range of Aggregate Dominance Indicator (ADI) values. Generally weak correlations exist between the author and the other data sets. In two cases the tie-breaker system was activated.

Table 8.43 Regime Method Rankings (i_{15}, i_{16}, i_{17}, i_{18})

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_{15}	4	3	1	1	1	1	1	1
i_{16}	2	2	2	3	3	3	2	2
i_{17}	1	1	3	2	2	2	3	3
i_{18}	3	4	4	4	4	4	4	4

The remarkable feature of the RM rankings is that they are the same for *bb*, *ca*, *cb* and *db* (all, small and large societies). Moreover, *ba* and *da* are identical, differing from the former by transposing i_{16} and i_{17}, more data and more spot checks. The author, largely because of j_1 and j_2 (safety and stability),[89] puts i_{17} in first place because of its deterrent effect and the placing of i_{15} and i_{18}, expanding the Summary Financial Statement, are determined by the tie-breaker because they possess a common ADI of -17.

Table 8.44 Question 2 and Regime Method Rankings (i_{15}, i_{16}, i_{17}, i_{18})

i	*a*	*aa*	*b*	*bb*	*c*	*cb*	*d*	*db*
i_{15}	4	4	1	1	1	1	1	1
i_{16}	3	2	3	3	3	3	4	2
i_{17}	1	1	2	2	2	2	2	3
i_{18}	2	3	4	4	4	4	3	4

Single letter variables refer to question 2.
Double letter variables refer to question 3 and the regime method (RM) rankings.

There is a close correlation between *a* and *aa* (the author) but only a small one between *d* and *db* (large societies), in contrast to a situation where *b* equals *bb* and *c* equals *cb* (all and small societies).

8.8 Management and Systems of Control

Table 8.45 Values for *s*: Questionnaire 1, Q3 - Data *b* (i_{19}, i_{20}, i_{21})

i	j				
	j_1	j_2	j_3	j_4	j_5
i_{19}	3.882	3.576	3.121	2.971	2.938
i_{20}	3.500	3.195	2.905	2.419	2.512
i_{21}	3.186	3.442	3.326	3.419	3.651

Table 8.46 Values for *s*: Questionnaire 1, Q3 - Data *c* (i_{19}, i_{20}, i_{21})

i	j				
	j_1	j_2	j_3	j_4	j_5
i_{19}	3.842	3.087	3	2.895	2.889
i_{20}	3.630	3.462	3.074	2.607	2.607
i_{21}	3.111	3.407	3.148	3.259	3.630

Table 8.47 Values for *s*: Questionnaire 1, Q3 - Data *d* (i_{19}, i_{20}, i_{21})

i	*j*				
	j_1	j_2	j_3	j_4	j_5
i_{19}	3.933	3.800	3.286	3.067	3
i_{20}	3.267	2.733	2.600	2.067	2.333
i_{21}	3.313	3.500	3.625	3.688	3.688

b = building society data (all societies)

c = smaller societies' data

d = larger societies' data

i_{19} = Management and Systems of Control

i_{20} = increase requirements

i_{21} = increase flexibility

s = degree of success

The current management and systems regulations, i_{19}, have been termed "a useful nuisance"[90] and both small and large societies are convinced that they satisfy j_1, safety, with *s* (the degree of success) equal to 3.8 and 3.9 respectively. Smaller societies, furthermore, feel that safety would be enhanced by increased requirements, i_{20},[91] in contrast to larger institutions who are not so convinced. The alternative of i_{21}, increased flexibility, performs less well under the safety criterion, especially according to the smaller societies, and this to some extent reinforces the

i_{20} argument in favour of increased requirements. The element of disagreement between the two groups of institutions is reflected in a correlation of 0.68.

With j_2 (stability) a strong disagreement between small and large societies emerges with r equal to -0.81. Smaller building societies do not like the current system, i_{19} (s = 3.0), while larger organisations do (s = 3.8), the latter largely caused by l_1 (the first or '1' grading) being 27 per cent. A dichotomy also appears with i_{20}, increased requirements, which scores 3.5 for small building societies and only 2.7 for large societies, where the latter's l_1 is zero. Smaller societies therefore consider i_{20} would add to stability, but the one point of consensus is the need for more flexibility with management and systems, i_{21}.

There is little relationship between the two groups under j_3 (level playing field), although they generally concur that i_{19}, the current rules, achieves a reasonable amount of success. Larger societies exhibit less satisfaction than with i_{20} than smaller ones and this position is reversed for i_{21}, increased flexibility.[92]

There is general agreement between small and large institutions that i_{19}, current system, is relatively cost-effective (j_4) but significant differences result from i_{20} and i_{21}, increased requirements and flexibility respectively. Larger societies do not consider greater requirements, i_{20}, to be cost-effective (s = 2.1), though smaller societies are not so dismissive (s = 2.6). Larger

organisations favour more flexibility, i_{21}, although smaller ones are less enthusiastic.

An excellent correlation coefficient of 0.97 between small and large building societies exists for j_5 (flexibility) with close values for the current system, i_{19} (s = 2.9 and 3.0), and the i_{21} option (s = 3.6 and 3.7). i_{19} is moderately favoured, i_{21} more so, but i_{20} (the opposite of flexibility) naturally scores poorly (s = 2.6 and 2.3).

Overall there were strong positive correlations between j_4 and j_5 (cost-effectiveness and flexibility) for each of the small and large society groups) as well as for: $j_2 j_3$ (stability and level playing field); $j_3 j_4$ (level playing field and cost-effectiveness); and $j_3 j_5$ (level playing field and flexibility) as well as $j_4 j_5$ for large societies (cost-effectiveness and flexibility). High negative relationships were found with small societies for $j_1 j_3$ (safety and level playing field); $j_1 j_4$ (safety and cost-effectiveness); and $j_1 j_5$ (safety and flexibility). Slightly different patterns compared to other groups of supervisory techniques might be because i_{20} and i_{21}, increased requirements and flexibility respectively, could be viewed as opposites.

Table 8.48 Impact Matrices: Questionnaire 1 (i_{19}, i_{20}, i_{21})

i	j	*a* 1	2	3	4	5	*b* 1	2	3	4	5	*c* 1	2	3	4	5	*d* 1	2	3	4	5
i_{19}		2	2	2	1	2	1	1	2	2	2	1	3	3	2	2	1	1	2	2	2
i_{20}		1	1	3	3	3	2	3	3	3	3	2	1	2	3	3	3	3	3	3	3
i_{21}		3	3	1	2	1	3	2	1	1	1	3	2	1	1	1	2	2	1	1	1

The small societies' data (*c*) reveals the Spearman rank correlation coefficient, r_s, to be 1 for j_4 and j_5 (cost-effectiveness and flexibility) whilst the opposite or negative relationship applies to j_1 and j_3 (safety and level playing field). The large societies' data (*d*) shows far more uniformity with j_1 and j_2 (safety and stability) being identical on the one hand and the other three criteria on the other. Both groups of societies heavily favour i_{21}, increased flexibility, under the latter three criteria with i_{20}, increased regulations, proving unpopular. With respect to all societies (*b*) the latter three criteria are again the same whereas j_1 and j_2 (safety and stability) are closely related, merely changing the positions of i_{20} and i_{21}.

Given the attention devoted to management and systems, i_{19}, by the BSC since the 1986 Act, the various problems encountered by several societies and the trend towards 'rescue' mergers,[93] there is a strong case on j_1 and j_2 grounds (safety and stability) to build on i_{19} by moving

onto i_{20}, increased requirements - hence the latter placed first under j_1 and j_2 (safety and stability) by the author. The author also considers that for i_{19} to i_{21} there is a strong correlation between j_3 and j_5 (level playing field and flexibility), compared to other financial institutions, principally banks. When considering the costs, direct and indirect, of implementing greater requirements (i_{20}) compared to the effects, it is placed last. i_{19} is put first because it is in operation and has already identified several problem societies.[94] The j_5 rankings (flexibility) arise by definition: $i_{21} = j_5$, i_{19} is the current position and i_{20} means tighter controls. The result is j_1 and j_2 (safety and stability) are the same and j_3 and j_5 (level playing field and flexibility) are also the same, with r_s equal to -1 for $j_1 j_3$ (safety and level playing field); $j_1 j_5$ (safety and flexibility); $j_2 j_3$ (stability and level playing field); and $j_2 j_5$ (stability and flexibility).

With j_1, safety, there is quite a wide range of rankings and the only clear relationship is between the author and the larger societies, where r_s equals -1. With j_2, stability, there are instances of r_s being 1: *b* and *d* (all and small societies). For j_3 (level playing field) the author, all societies and societies (*a*, *b* and *d*) give the same results, while with j_4, cost-effectiveness, this only applies to all societies and small societies (the author giving opposite results). Flexibility, j_5, is unique in that each data set

is the same, *ie* 2,3,1.

Table 8.49 Regime Method: ADI Matrix (i_{19}, i_{20}, i_{21})

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_{19}	6	4	18	18	-2	0	18	18
i_{20}	6	6	-20	-20	0	-2	-30	-30
i_{21}	-12	-10	2	2	2	2	12	12

ADI = Aggregate Dominance Indicator

aa = author's data, author's weights

ab = author's data, building society weights

ba = building society data, author's weights

bb = building society data,. building society weights

ca = smaller societies' data, author's weights

cb = smaller societies' data, building society weights

da = larger societies' data, author's weights

db = larger societies' data, building society weights

The Aggregate Dominance Indicators (ADIs) for *da* and *db* (large societies) are the same (also *ba* and *bb* - all societies) and possess a wide variation, unlike *ca* and *cb* (small societies) encompassed in a narrow -2 to +2 range with r_s only equal to 0.5. Data *aa* (author) requires the tie-breaker for i_{19} and i_{20} and there are strong negative relationships between the author and small societies.

Table 8.50 Regime Method Rankings (i_{19} , i_{20} , i_{21})

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_{19}	2	2	1	1	3	2	1	1
i_{20}	1	1	3	3	2	3	3	3
i_{21}	3	3	2	2	1	1	2	2

The application of two weights vectors only influences the results for *ca* and *cb* (small societies), i_{19} and i_{20} becoming transposed. Furthermore, *ba* = *bb* = *da* = *db* (all and large societies). The most noticeable aspect of the RM rankings is the disagreement over first place: the author (*aa*) - i_{20}; all societies (*bb*) - i_{19}; small societies(*cb*) - i_{21}; and large societies (*db*) - i_{19}.

Table 8.51 Question 2 and Regime Method Rankings (i_{19} , i_{20} , i_{21})

i	*a*	*aa*	*b*	*bb*	*c*	*cb*	*d*	*db*
i_{19}	1	2	1	1	1	2	2	1
i_{20}	3	1	3	3	3	3	3	3
i_{21}	2	3	2	2	2	1	1	2

i_{19} to i_{21} represent a classic example of how the use of question 3 and the application of the regime method can change the result. Only one pair of data match, ie *b* and *bb* (all societies), and the rest have r_s in the -0.50 +0.50 range.

8.9 Investor Protection

Table 8.52 Values for *s*: Questionnaire 1, Q3 - Data *b* (i_{22}, i_{23}, i_{24})

i	j				
	j_1	j_2	j_3	j_4	j_5
i_{22}	3.794	3.625	3.188	2.818	2.758
i_{23}	3.465	3.372	3.605	3.070	2.860
i_{24}	3.186	3.045	3.163	2.627	2.568

Table 8.53 Values for *s*: Questionnaire 1, Q3 - Data *c* (i_{22}, i_{23}, i_{24})

i	j				
	j_1	j_2	j_3	j_4	j_5
i_{22}	3.714	3.500	3.150	2.714	2.619
i_{23}	3.241	3.241	3.375	3.103	2.759
i_{24}	2.929	2.828	2.964	2.556	2.448

Table 8.54 Values for *s*: Questionnaire 1, Q3 - Data *d* (i_{22}, i_{23}, i_{24})

i	j_1	j_2	*j* j_3	j_4	j_5
i_{22}	3.923	3.833	3.250	3	3
i_{23}	3.929	3.643	4	3	3.071
i_{24}	3.667	3.467	3.533	2.800	2.800

b = building society data (all societies)

c = smaller societies' data

d = larger societies' data

i_{22} = Deposit Insurance/Investor Protection/Ombudsman

i_{23} = same set of rules under Banking/Building Societies/ Financial Services Acts

i_{24} = increase publicity/coverage

s = degree of success

The first criterion of safety, j_1, demonstrates a range of values for the degree of success, *s*, for smaller and larger societies but, because the relative differences are generally maintained, *r* is 0.79. i_{22}, the current system, produces a good 3.7 to 3.9, though there is a divergence with i_{23}, same set of rules, which is heavily favoured by larger organisations and not by smaller ones. This pattern is repeated for i_{24}, suggesting that more publicity or coverage for deposit insurance and the ombudsman scheme, etc

is not felt by the smaller building societies to add much to safety. A broadly similar picture is repeated for j_2, stability.

There is moderate contentment that the current system, i_{22}, satisfies the level playing field criterion, j_3, but larger societies (d) rate i_{23}, same set of rules, highly with the degree of success (s) being 4, compared to 3.4 for smaller societies (c). The relative difference is maintained for i_{24}, increased cover and publicity, which is awarded a low 2.9 by smaller societies.

There are quite close results for i_{22} and i_{23}, current system and same rules, under j_4 cost-effectiveness, with all the values for s, the degree of success, lying in the 2.7 to 3.1 range and larger societies producing an identical s of 3 for each technique i. There is little support for i_{24}, increased cover and publicity, which receives only 2.6 from the smaller institutions. Neither small nor large societies consider there is much j_5, flexibility, present in any of i_{22} to i_{24}. Smaller societies are less happy with i_{22} than i_{24} and both small and large building societies consider i_{23}, same rules, to be slightly better than the current system, but believe i_{24}, increased cover and publicity, to be distinctly worse.

Small and large societies (c and d) each have a high correlation between j_4 and j_5 (cost-effectiveness and flexibility), while smaller institutions have a negative one between j_1 and j_3, safety and level playing field. $j_1 j_2$

(safety and stability), $j_1 j_4$ (safety and cost-effectiveness), $j_1 j_5$ (safety and flexibility) and $j_4 j_5$ (cost-effectiveness and flexibility) are the principal negative correlations for large societies. In contrast, the principal elements of the all societies' data (*b*) are high positive correlations between $j_1 j_2$ (safety and stability), $j_3 j_4$ (level playing field and cost-effectiveness) and $j_4 j_5$ (cost-effectiveness and flexibility).

Table 8.55 Impact Matrices: Questionnaire 1 (i_{22}, i_{23}, i_{24})

		a					*b*					*c*					*d*				
i	*j*	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
i_{22}		2	2	3	2	1	1	1	2	2	2	1	1	2	2	2	2	1	3	2	2
i_{23}		3	3	1	3	3	2	2	1	1	1	2	2	1	1	1	1	2	1	1	1
i_{24}		1	1	2	1	2	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3

Two clear themes transpire in the impact matrices in that there is almost complete uniformity between small and large building societies (*c* and *d*) and a pronounced $j_1 j_2 / j_3 j_4 j_5$ division. Smaller institutions place i_{22}, the current system, first under j_1 and j_2 (safety and stability) and the only change with larger organisations is that it is in second position under j_1. i_{23}, same rules, is in first place for j_3, j_4 and j_5 (level playing field, cost-effectiveness and flexibility), whilst i_{24} (increased cover and

publicity) receives nine out of ten third places.

The author[95] suggests that i_{24} could assist in alleviating the fears of investors[96], *eg* in the almost expectation of continuing problems of banks and building societies, especially given that at the time of writing the £20,000 protection limit has remained unchanged since 1987. Thus it is ranked first under j_1 and j_2, safety and stability. i_{22} in terms of building societies offers more cover than banks and is placed second and i_{23}, the same rules option, is ranked last because it might entail a 'bidding down' of protection. The current system possesses a large amount of j_5, flexibility, because it is not a standing fund.[97] i_{23}, same rules as banks, is naturally first under j_3, level playing field, and i_{24} comes first under j_4, cost-effectiveness, since it could increase the level of protection or rather prevention in the system and it is very unlikely that it would ever need to be activated.[98]

If we compare the above results for each criterion j, we find that $b = c = d$ (all, small and large societies) not only for j_2 (stability) but also j_4 and j_5 (cost-effectiveness and flexibility). Furthermore, $b = c$ for j_1 and j_2 (safety and stability), while r_s equals -1 for a (author) and d (large societies) under j_1 and j_3, safety and level playing field. The Spearman rank correlation coefficient, r_s, also equals -1 for a and b, as well as a and c, under j_4 (cost-effectiveness). In other words, there is a high correlation within the building society data for a

given criterion.

Table 8.56 Regime Method: ADI Matrix (i_{22}, i_{23}, i_{24})

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_{22}	-2	4	18	18	18	18	4	6
i_{23}	-22	-26	12	12	12	12	22	22
i_{24}	24	22	-30	-30	-30	-30	-26	-28

ADI = Aggregate Dominance Indicator

aa = author's data, author's weights

ab = author's data, building society weights

ba = building society data, author's weights

bb = building society data, building society weights

ca = smaller societies' data, author's weights

cb = smaller societies' data, building society weights

da = larger societies' data, author's weights

db = larger societies' data, building society weights

The Aggregate Dominance Indicators (ADIs) illustrate a wide range of figures and the minimal impact of different weights vectors, but the overwhelming feature of the results is the uniformly high r_s (0.88 to 1.00) between all the *b*, *c* and *d* permutations (all, small and large societies) and the negative correlations between *aa*, *ab* (the author) and the above permutations (-0.71 to -1.00).

Table 8.57 Regime Method Rankings (i_{22} , i_{23} , i_{24})

i	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_{22}	2	2	1	1	1	1	2	2
i_{23}	3	3	2	2	2	2	1	1
i_{24}	1	1	3	3	3	3	3	3

The unique feature of the RM results is that, for a given set of data, the two weights vectors give the same rankings, *ie*

$$aa = ab \tag{8.2}$$

$$ba = bb = ca = cb \text{ and} \tag{8.3}$$

$$da = db \tag{8.4}$$

Smaller societies (*c*) clearly prefer i_{22}, the current system, over the two options, whilst larger societies (*d*) favour a level playing field, i_{23}, more relevant for the latter who are more immediately and directly in competition with the large banks and able because of their size to exploit the benefits of this alternative. Small and large societies reverse their i_{22} and i_{23} rankings and do not like the notion of i_{24}, favoured by the author[99] for its preventative qualities and its j_1 and j_2 (safety and stability) effects.

Table 8.58 Question 2 and Regime Method Rankings (i_{22}, i_{23}, i_{24})

i	*a*	*aa*	*b*	*bb*	*c*	*cb*	*d*	*db*
i_{22}	2	2	1	1	1	1	2	2
i_{23}	3	3	2	2	2	2	1	1
i_{24}	1	1	3	3	3	3	3	3

For only the second time[100] the question 2 rankings equal the RM rankings, *ie* $a = aa$, $b = bb$, $c = cb$ and $d = db$.

8.10 Question 4

Of those institutions responding a good proportion offered their 'other comments' in question 4 - 36.73 per cent of all societies, 37.50 per cent of small societies and 35.29 per cent of large societies.[101] The respondents were free to create their own agenda and on occasions this meant one line, on others several lines or even more.[102]

Smaller societies considered non-executive directors useful, but stressed the burden of overcoming their lack of experience. A diverse range of comments emerged on the supervision of small societies from satisfaction to a feeling that the Commission did not understand that their risks were different from large societies. One suggestion was for the elimination of small societies through stringent

requirements. The general attitude and relationship with the BSC was highly praised, *eg* using the latter as a "sounding board".[103]

On mutuality small societies were divided with views ranging from "will continue" to "now irrelevant" and this diversity is most interesting, given the inclusion of the possibility of full mutual banking status in the Treasury Review (HMT 1994a and 1994b). Larger and smaller societies were agreed that supervisors tended to lack a detailed appreciation of the practicality of running the business. Both groups also bemoaned the excessive time spent on providing information for the Commission, with the burden being disproportionately higher for smaller societies. One small society considered supervision to have gone too far and one large society was concerned about the subjective assessments of the BSC. Both large and small concurred on the need for strict supervision during such a period of rapid change.

There was little agreement on the issue of a level playing field with one small society commenting that even the Commission did not treat all societies equally. Concern emerged from both groups over secondment to the BSC[104] and the problem of a possible leakage of confidential information. Finally, one small society expressed disquiet over the excessive cost of auditing imposed upon the society.

8.11 Conclusions

The excellent response rates from both small and large building societies indicate a high level of reliability and the use of correlation matrices yielded useful similarities and differences within and between data. The most notable feature of question 1 is the complete agreement between all, small and large institutions over the ranking of the five criteria, *ie* j_1, j_2, j_5, j_4 and j_3 (safety, stability, flexibility, cost-effectiveness and level playing field) compared to the author's assessment of j_1, j_2, j_4, j_3 and j_5 (safety, stability, cost-effectiveness, level playing field and flexibility).

With respect to first choices under the regime method, the larger societies opt for one supervisory body, while the author and small societies favour the current activity restriction rules. There is a greater divergence when the smaller organisations prefer the (then) current capital adequacy rules, larger societies want the same capital regulations as apply to banks and the author suggests the publication of ratios. With respect to liquidity, small and large building societies prefer the present system although *da* (larger societies' data, author's weights) results in a minimum liquidity ratio and the author suggests a lender of last resort facility. The author and small societies approve of the funding and treasury risk management system while the larger societies opt for the same hedging rules as apply to banks. No change in reporting

is desired by small or large building societies, with the author favouring more spot checks. There is general disagreement with management and systems where no changes are desired by the large societies, more flexibility is the wish of small societies and increased requirements favoured by the author. This pattern is repeated with investor protection where the small societies prefer no change, large societies want parity with the banks and the author sees the need for increased cover and publicity[105].

The frequent disparity in results between question 2, a simple ranking of supervisory techniques, and question 3, assessing them with respect to the objectives of supervision, appears to vindicate the impact matrix and regime method approach, the latter being intensified by the use of two weights vectors. Occasionally there were some identical Aggregate Dominance Indicator results, which necessitated the use of tie-breakers. A parting of the ways between the views of building societies and those of the author can often be traced to the five criteria and the associated weights.

One element which comes out of question 3 and the regime method is that there tends to be a general split with most data and with most techniques between safety and stability on the one hand and the concepts of a level playing field, cost-effectiveness and flexibility on the other.

A comparison of the above results with a consumer survey[106] is carried out in Chapter 10 and a blueprint for reform is

produced in Chapter 11.

CHAPTER 9: ANALYSIS OF QUESTIONNAIRE 2

9.1 Introduction

The second questionnaire[1] is designed to complement the first one[2] and, as stated in Chapter 5, the initial intention was to use a street survey of consumers.[3] However, this proved to be most disappointing in yielding a very low response rate and was consequently abandoned as unreliable and impractical.[4]

Table 9.1 Questionnaire 2: Response Rate[5]

Age	Number male	Number female	% male	% female
<20	23	9	6.93	2.64
20-39	111	135	33.43	39.59
40-59	188	176	56.63	51.61
60+	10	21	3.01	6.16
Total	332	341	100.00	100.00

Instead, a survey of 1,407 University of Central England (UCE) staff was carried out producing an excellent 47.83 per cent response rate[6] and a 49.33/50.67 per cent male/female ratio. This generates a large volume of completed questionnaires and although only a small proportion are under 20 or over 60 years of age, the numbers (32 and 31

respectively) are probably the same or better than one could reasonably expect if a street survey of 100 to 150 interviews were conducted.[7] The UCE survey also covered a diverse range of occupations by encompassing both academic and non-academic staff, *eg* lecturers, secretaries, catering personnel, technicians, nurses and chaplains.[8]

9.2 Questions 1 to 6

Question 1 is intended to distinguish building society customers from non-building society customers in order to compare the views of the two groups in questions 9 to 17.

Table 9.2 Questionnaire 2: Questions 1 to 6 by Age - (h_1, h_2, h_3, h_4)

% yes

Age	Q1	Q2	Q3	Q4	Q5	Q6
<20	53.13	0	100	24	23.08	36.36
20-39	80.08	11.11	88.33	15.04	13.14	29.30
40-59	87.91	11.95	93.62	31.84	15.47	27.83
60+	67.74	20	78.26	45.45	21.74	22.73

h_1 = under 20 years of age

h_2 = 20-39

h_3 = 40-59

h_4 = 60+

There appears to be little of surprise in the results with 86 per cent of those aged 20-59 having a building society account, but only 68 per cent of those aged 60 and above and a mere 53 per cent of those aged under 20. If we examine the latter figure, we find a marked difference between males and females - 65 and 22 per cent respectively. Overall 83 per cent have an account.

Table 9.3 Questionnaire 2: Questions 1 to 6 by Age - (h_1 + h_2), etc

	% yes					
Age	Q1	Q2	Q3	Q4	Q5	Q6
<39	76.98	10.61	89.39	15.87	14.12	29.96
40+	86.33	12.46	92.73	32.59	15.83	27.52
<20	53.13	0	100	24	23.08	36.36
20+	83.93	11.88	91.08	25.93	14.83	28.18
<60	83.18	11.34	91.88	25.19	14.91	28.69
60+	67.74	20	78.26	45.45	21.74	22.73

Question 2 relates to reporting[9] and the results show that there is generally little attention paid to a society's Annual Accounts, particularly for those under 20 where the figure is zero. The overall positive response is a mere 12 per cent, but interestingly 20 per cent of those over 60 say

they read them before investing. Given that members of this age group are more likely to be net savers than net borrowers, this could be the explanation.

Table 9.4 Questionnaire 2: Questions 1 to 6 by Age and Sex - (h_1, h_2, h_3, h_4)

% yes

sex	age	Q1	Q2	Q3	Q4	Q5	Q6
male	<20	65.22	0	100	35.29	27.78	40
	20-39	82.88	10.40	88.79	21.24	18	26.32
	40-59	81.91	15.44	93.94	36	16.26	20.99
	60+	100	27.27	90.91	50	25	27.27
female	<20	22.22	0	100	0	12.50	28.57
	20-39	77.78	11.93	87.97	9.77	9.56	31.67
	40-59	94.32	8.92	93.26	27.22	14.53	35.37
	60+	52.38	11.11	66.67	41.67	18.18	18.18

Question 3 demonstrates a slightly higher penetration by banks than by building societies with an overall 92 per cent having a bank account. Taking all the age and sex permutations into account, the figures do not fall below 89 per cent except for aged 60 and over with only 78 per cent. The latter is caused by only 67 per cent of females having a bank account compared to 91 per cent of males and would appear to indicate that the former are more dependent upon

the building society sector.

Table 9.5 Questionnaire 2: Questions 1 to 6 by Age and Sex - (h_1 + h_2), etc

% yes

sex	age	Q1	Q2	Q3	Q4	Q5	Q6
male	<39	79.85	9.63	90.16	23.08	19.49	28.18
	40+	82.83	16.33	93.78	36.67	16.74	21.35
	<20	65.22	0	100	35.29	27.78	40
	20+	82.85	13.60	92.09	31.27	17.14	23.00
	<60	81.06	12.55	92.50	30.91	17.45	23.71
	60+	100	27.27	90.91	50	25	27.27
female	<39	74.31	11.82	88.73	9.22	9.72	31.50
	40+	89.85	9.04	91.58	28.13	14.75	34.29
	<20	22.22	0	100	0	12.50	28.57
	20+	84.94	10.18	90.09	20.62	12.54	33.22
	<60	85.31	10.11	91.25	19.31	12.34	33.68
	60+	52.38	11.11	66.67	41.67	18.18	18.18

There is a significant disparity in people's knowledge of investor protection in question 4, with figures ranging from 0 to 50 per cent. 35 per cent of males under 20 have heard of the scheme[10], but 0 per cent of females. The highest figure of 50 per cent is for males aged 60+ and this could

indicate a greater sophistication or that savings are relatively more important and they are consequently more likely to be more careful or risk averse.[11] The male figures are consistently higher than those for females in every age group, with an overall 32 and 20 per cent respectively.[12]

Table 9.6 Questionnaire 2: Questions 1 to 6 by Sex and Grand Totals

% yes

Sex	Q1	Q2	Q3	Q4	Q5	Q6
male (*n*)	271	37	306	107	59	72
male (%)	81.63	13.12	92.45	31.47	17.72	23.84
female *n*	284	28	300	67	41	100
female %	83.28	10.14	90.36	20.12	12.54	33.11
all (*n*)	555	65	606	174	100	172
all (%)	82.47	11.65	91.40	25.85	15.15	28.48

n = number of respondents in a particular 'cell'

Less awareness of the banks' deposit insurance scheme (question 5) seems to exist than of the building society scheme:[13] 15 per cent compared to 26 per cent. There is often a greater awareness among males than females, *eg* those under 20: 28 and 13 per cent respectively. This is a little surprising, given the large scale publicity afforded to the

BCCI collapse in 1991 when there was much discussion about the nature and coverage of the scheme.

It is accepted that the question 6 is technically incorrect or misleading because bank depositors already pay and building society savers may pay through the 0.3 per cent contingent liability call on a society's resources. The question, however, has to be simply as well as clearly phrased and it is intriguing that as many as 29 per cent are prepared to pay for such schemes, with the highest figure being those under 20 (37 per cent) and the lowest those aged 60+ (23 per cent). One might have expected the reverse.[14] With the exception of those under 20, females were more prepared to pay than males (33 and 24 per cent respectively).

The correlation matrices[15] for questions 1 to 6 reveal very high values for *r*, the coefficient of correlation, and the only areas where the figures are frequently out of the 0.9 to 1.0 range are: (i) questions 2 and 4; and (ii) questions 4 and 6. The age/sex permutations (using the four age groups of <20, 20-39, 40-59 and 60+) give *r* a value of 0.88 for questions 2 and 4, suggesting that some of those who do not look at the building society annual accounts have heard of the investor protection scheme. With regard to questions 4 and 6, the age/sex values for *r* are 0.77 (using the above four age groups) and 0.78 (using the six age groups of <20, 20+, <39, 40+, <60 and 60+) implying a less close relationship than for other combinations of questions. This,

in turn, infers that some of those who have not heard of the scheme are prepared to pay for it.

9.3 Questions 9 to 17

Question 9[16] asks respondents to assess the importance of safety[17] and the interesting features are: (i) that safety[18] is given a very high priority; and (ii) age and sex appear to be influencing factors. Those aged under 20 with building society accounts produce a value for the degree of agreement, u, of 4.51, slightly less than for the other age groups (4.61 to 4.68) and there is a general cluster in the v_1 and v_2 agreement classes ('1' and '2'), which is repeated for those without accounts although the lowest u is in the 40-59 age range with similar highs for those aged under 20 and 60+.

With male building society customers (Q1 'yes')[19] there is a clear under 40 and 40+ division with u, the degree of agreement, in the respective ranges of 4.51 to 4.53 and 4.58 to 4.60. However, the most significant element is that females in the four standard age groups (<20, 20-39, 40-59 and 60+) are more safety conscious than males with u stretching from 4.64 to 5.0 in contrast to 4.16 to 4.50 for males.[20]

The overall figures for question 10 imply that building society consumers consider banks to be somewhat safer than building societies,[21] *eg* u equalling 2.77 to 2.79 for those aged under 20, 20-39 and 40-59 and equalling 2.91 for those

aged 60+. This compares with respective data for non-building society customers (Q1 'no')[22] of 2.78 to 3.03 and 3.61, *ie* non-building society customers believe banks to be safer than do building society customers and the 60+ disparity is greater. This pattern applies to males, although the situation is more complicated for females where the value of u, the degree of agreement, for 60+ female building society savers is lower than the other age ranges but slightly higher for female non-building society savers. Overall though, females consider banks to be slightly safer than males (u = 2.82 and 2.79 respectively).

There is an inverse relationship between age and u, the degree of agreement, in question 11 for building society customers[23] with u ranging from 4.38 to 4.74 and a generally skewed distribution towards v_1 and v_2, the '1' and '2' agreement classes. There is an under/over 40 age split with males, whereas the split is 60+ for females. The pattern for non-building society customers is rather different in that gender has little effect and the break lies between those under 60 and those aged 60+, with u being 4.44 and 3.75 respectively.[24] If we total the data (Q1y + Q1n = building society + non-building society customers), there is virtually no difference between males and females where u, the degree of agreement, is equal to 4.46, returns being slightly less important than safety.[25]

There is a strong negative correlation with respect to age between questions 9 and 11 for both building society and

non-building society customer data[26] (-0.92 and-0.94 for the former and -0.83 for the latter). This clear evidence of a different pattern in the responses between questions 9 and 11 supports the case for the existence of a risk-return trade-off, despite the high overall importance given to both questions.[27]

There is a high degree of uniformity in the question 12 results, apart from non-building society customers generally yielding lower values than building society customers, *eg* males (3.15 and 3.59) and females (3.19 and 3.51) - *ie* building society customers believing the services and returns which they receive to be better than those offered by banks.[28] For 60+ building society customers the figure for u is 3.82, mainly because v_1 (the '1' agreement class) is 5 percentage points higher than the closest age group, those aged 40-59. The figures for the other age groups range from 3.59 to 3.64. The non-building society data (on lower figures for u) shows that the under twenties have a lower u than other age groups. Within building society and non-building society savers there are few differences although males aged 60 and over give a slightly higher u. (A number of criticisms of bank and building society interest rate policy and their profit-centred nature may be found in section 9.4 which deals with question 18.)

Little support from building society customers seems to exist for a reduced level of investor protection, as suggested in question 13, with total degree of agreement

(u) figures of 1.87 for males and 2.09 for females. The overall building society and non-building society customer figures are respectively 1.98 and 2.41 and what is evident is that there is a continuing theme of the under twenties being more in favour of the statement contained in question 13 than other age groups - 2.61 (v_3 = 39 per cent) compared to 1.92 (building society customers). The result from under 20 males is 2.57 and 2.75 from under 20 females. This pattern is repeated under non-building society customers.[29] With respect to age, there is an inverse correlation of -0.84 between questions 9 and 13, *ie* those favouring safety do not want less protection, and there is a high positive correlation of 0.86 between questions 13 and 11, the importance of returns.[30]

Question 14 refers to the banks' deposit insurance scheme[31] and, as might be expected from the vote against less building society investor protection cover, so there is a strong movement in favour of higher cover for the banks' scheme, with many u values (degree of agreement) exceeding 4. For building society customers there is little variation with respect to age (4 to 4.23) and the same applies to non-building society customers (4 to 4.15). The latter data shows a different pattern by age and sex, *eg* under 20 males where u is 3.67 and the other groups whose values range from 3.97 to 4.28. In contrast the under 20 male building society customers have the second highest u, while for female building society customers the lowest u of 3.25 is for those

aged under 20 and the highest of 4.22 for those aged 20-59. (The non-building society data is very close - 4 to 4.27). In other words, the distribution is markedly different between building society and non-building society customers, although the former's respective figures for males and females are 4.14 and 4.13 and the latter's 4.05 and 4.14. With respect to age there is a correlation of 0.86 between question 14 and question 9 for building society customers, compared to -0.78 for non-building society customers. This could imply that non-building society customers are higher risk-takers, not demanding the level of cover required by building society customers. The latter's data shows a negative correlation of -0.78 between questions 13 and 14.[32] A similar relationship applies to the age and sex data.

Question 15 indicates general support for a level playing field or competitive neutrality (j_3) with respect to deposit insurance,[33] although non-building society customers are not so much in favour as building society customers. There seems to be an across the board division between those under 20 and those aged 20+. The under 20 figures for building society and non-building society consumers are 3.89 and 3.44 respectively and closely clustered for the other three groups (4.17 to 4.24 and 4 to 4.04 respectively). The low figures for the under twenties apply separately to males and females with little difference between the other age groups and gender is basically irrelevant, the figures being 4.16 and 4.18 for male and female building society customers and

3.98 for both male and female non-building society customers.

With building society consumers there is a correlation of 0.98 between question 9 and question 15, but a figure of -0.95 between questions 11 and 15.[34] With non-building customers *r* equals 0.91 between questions 12 and 15, whilst both building society and non-building society customers indicate a large negative correlation between questions 13 and 15 (and *r* is 0.84 between questions 14 and 15 for building society customers). When the data is analysed by sex and age, the values for *r* are generally lower.

Question 18[35] indicates a frequent mistrust of banks and building societies and this can be supported by the generally poor degree of agreement figures, *u*, in questions 16 and 17.[36] In question 16 there is moderate trust of banks by both building society and non-building society customers but a clear age difference emerges with those aged under 20 and 60+ being more trusting than the other two groups.[37] With building society customers this applies[38] to all age and sex permutations, while this breaks down with non-building society customers where the second highest male figure is for those aged 40-59. Gender does not materially affect the building society customer result (nor the sum of building society and non-building society customers) but male non-building society customers prove more trusting than females (3.26 compared to 2.76) in contrast to respective

figures of 2.77 and 2.79 for building society customers. With building society customers there is a moderate positive correlation with questions 10, 12 and 13[39]. The same applies only for question 10 with the non-building society customers' age data and there are negative values for questions 11 and 14. The question 10 pattern is repeated for all question 11's age and sex permutations. The question 10 link could, of course, be predicted.

The picture in question 16 is largely repeated in question 17, except that in almost every category the values for *u*, the degree of agreement, are a little higher than in question 16 (the main exception being the 60+ non-building society customers) and this would suggest that consumers trust building societies more than banks[40]. The overall figures are 3.12 for building society customers and 3.14 for non-building society customers and there are generally high correlations between questions 16 and 17.

9.4 Question 18

Table 9.7 Questionnaire 2: Question 18 Response Rate

Age	Number male	Number female	% male	% female
<20	2	2	1.74	1.92
20-39	40	40	34.78	38.46
40-59	69	57	60.00	54.81
60+	4	5	3.48	4.81
Total	115	104	100.00	100.00

The response rate to the open-ended question 18 was 15.57 per cent and this meant that 219 people out of 1,407 were committed or interested enough to respond, in some cases at length. There was little difference in the response rate on the basis of gender within question 18 (Table 9.7) and on the basis of age compared to the response rate in other questions (Table 9.1).[41] The profit-centred nature of banks and building societies was the most frequently mentioned theme and second was the need for safety, with little difference being identified between the relative safety of banks and building societies.[42] The profit motive and the associated riskiness led some respondents to press for a 100 per cent investor protection scheme[43] and a significant number considered that banks and building societies were

less safe than previously and, more importantly, less trustworthy. The most common explanation offered for the latter with reference to building societies was a failure to communicate interest rate changes to savers, 'locked' into particular closed accounts.[44]

9.5 Conclusions

There was an excellent response rate to the second questionnaire[45] and safety emerged as a high priority for building society customers. There was evidence of a risk-return relationship but, despite a frequent distrust of building societies and banks,[46] customers generally paid little attention to building society Annual Accounts before investing. Knowledge of the building societies' investor protection scheme was decidedly patchy, with even less awareness of the banks' scheme. A surprising 27 per cent were prepared to pay the price of protection and so there was little support for reduced cover for building society savers,[47] some even suggesting 100 per cent cover. This was reinforced by strong support for a higher level of protection for bank depositors and competitive neutrality between the two schemes.

CHAPTER 10: COMPARATIVE ANALYSIS OF CHAPTERS 8 AND 9

10.1 Introduction

Questionnaire 1 was designed for experts and practitioners and question 1 enquired about the full range of supervisory objectives or criteria: safety, stability of the industry, level playing field, cost-effectiveness and flexibility (j_1 to j_5), while questions 2 and 3 related to the full of range supervisory techniques (i_1 to i_{24})[1]. The latter question is more sophisticated since it requires respondents to assess the techniques of supervision with respect to the above five criteria. With separate statistics for smaller, larger and all societies as well as two weights vectors, this gives us six permutations using the regime method.

Questionnaire 2, addressed to consumers, is necessarily simpler, shorter and narrower, focusing directly upon: safety (j_1); reporting (i_{15} and i_{18}); and deposit insurance (i_{22}, i_{23} and i_{24}). Other variables, such as stability of the industry and a level playing field, j_2 and j_3, surface indirectly. Only the views of building society customers will be examined in questions 9 to 17 in this chapter[2] and it is thus relevant to focus on the views of building societies and their customers by examining the intersection of the two questionnaires, *ie* safety, reporting and investor protection.[3]

Table 10.1 Intersection of Questionnaire 2 and Questionnaire 1

	Questionnaire 2 (Chapter 9)	Questionnaire 1 (Chapter 8)
Q1		
Q2	reading societies' annual accounts before investing	Q2/Q3: i_{15} and i_{18}, reporting and SFS
Q3		
Q4	knowledge of societies' investor protection scheme	Q2/Q3: i_{22}
Q5	knowledge of banks' investor protection scheme	
Q6	prepared to pay for investor protection	Q2/Q3: i_{22} to i_{24}
Q7-Q8		
Q9	safety, j_1	Q1: j_1
Q10	safety, j_1, banks v societies	(Q1: j_1)
Q11	returns	with Q1 j_1, leads to Q2/Q3, i_{15} and i_{18}
Q12	returns - banks v societies	
Q13	building societies' investor protection scheme - cover	Q2/Q3: i_{24} (i_{23})
Q14	banks' investor protection scheme - cover	Q2/Q3: i_{23}
Q15	investor protection schemes - banks v societies	Q2/Q3: i_{23} + j_3
Q16	trustworthiness of banks	
Q17	trustworthiness of societies	Q1 j_1 + j_2
Q18	other comments	Q4 other comments

10.2 Safety

Safety, j_1, is considered by building societies[4] to be very important with small and large societies differing only slightly in their conviction. Building society savers[5] similarly assign a very high priority to safety, although under 20 males less so in contrast to female building society customers who are generally more safety conscious or cautious than males. Notwithstanding the above, building society consumers are either neutral or feel banks to be a little safer than building societies.[7]

Given the high priority afforded to safety, it is interesting that societies are only moderately trusted[8] and the recurrent theme of question 18 is one of frequent mistrust. The young and the old, those aged less than 20 and 60+, are more trusting than other age groups and question 18 reveals that safety and trust are felt to be lower than previously.

10.3 Reporting

Building societies seem happy with the current reporting régime, i_{15} - placed first in the six regime method permutations of small, large and all societies - and do not wish to incur the extra costs of any tightening up or extension of the reporting system. The stress laid on safety by building society customers and the appearance of a risk-return tradeoff relationship would lead us to expect that some form of risk assessment would result. However,

question 2 shows that this does not occur at the institutional level, where a mere 12 per cent examine the annual accounts before investing. This would be compatible with societies[9] placing the current reporting system, i_{15}, in fourth and last place. There seems little point in producing more financial data, etc for investors when that already available is largely ignored. This is in line with a proposal in the Deregulation Bill to advertise such information instead of automatically dispatching it to members (Appendix 3.7).

10.4 Investor Protection

Smaller societies appear to be happy with the current system, i_{22}, while larger institutions place it second. Consumers demonstrated a wide disparity in the proportion who knew of the existence of investor protection schemes, ranging from 0 to 50 per cent. Males were consistently better informed than females, especially those aged less than 20 and 60+. It is interesting that some of those who had not previously heard of investor protection schemes were prepared to pay for them, generating a surprisingly high 29 per cent overall. The highest figures were those under 20 and the lowest those aged 60+, likely to be net savers.

The possibility of the same level of investor protection for bank and building society savers, i_{23} and j_3, is heavily favoured by the larger building societies, with smaller ones placing it second. Building society customers are also in

favour, particularly those aged 20+.[10] There is a high correlation with question 9, safety.

The option of increased building society cover, i_{24}, is placed last by small and large societies, while their customers are strongly approving alongside an (upward) equalisation of the bank and building society schemes.[11] Some[12] even suggest 100 per cent cover. Investors therefore seem very keen on returns (question 11), want more investor protection and are prepared to pay for it.

10.5 Conclusions

Table 10.2 Summary of Findings: Intersection of Questionnaire 1 and Questionnaire 2

i and *j*	Questionnaire 1	Questionnaire 2
j_1 safety	very important	very important (less so for males aged <20) - females more safety conscious than males - societies trusted only moderately (those aged <20 and 60+ more trusting than 20-59)
i_{15} reporting	satisfied with current régime	annual accounts largely ignored before investing
i_{18} Summary Financial Statement	placed last	little point in expanding Summary Financial Statement (see above)
i_{22} investor protection	small societies: 1st large societies: 2nd	wide disparity of views - surprisingly high % prepared to pay for protection
i_{23} + j_3 same protection for banks and societies	small societies: 2nd large societies: 1st	heavily favoured, especially by those aged 20+
i_{24} increased cover/ publicity	placed last	strong support - even suggestion of 100% cover

Building societies and their customers agree not only on the supreme importance of safety but also on the general

irrelevance of annual accounts for investors. They strongly disagree, however, when it comes to investor protection where smaller societies basically want no change and larger ones wish a reduction in cover to that of the banks' scheme. On the other hand, consumers seek more cover, competitive neutrality and are prepared to pay the price.

CHAPTER 11: CONCLUSIONS

11.1 Introduction

This chapter examines the recommendations from both questionnaires[1] and constructs an overall blueprint for reform. It should be remembered that the regime method results from the first questionnaire are derived from question 3, where respondents are required to assess various supervisory techniques with respect to a standard set of criteria or objectives of supervision.[2] In other words, the reasons for the results are built into the questionnaire. In order to let each group determine its own weights vector and in the interests of simplicity only four of the possible eight data/weights permutations will be used, *viz aa*, *bb*, *cb* and *db* where:[3]

aa = author's data, author's weights

bb = building society data, building society weights

cb = smaller societies' data, building society weights

db = larger societies' data, building society weights.

11.2 Questionnaire Results

Given that questionnaire 1 employs the regime method and relates the techniques of supervision to a standard set of five criteria, it is worthwhile firstly examining the latter. There is general agreement that safety is of supreme importance with stability of the industry in second position

(small building societies, large societies, all societies and the author in questionnaire 1[4] and building society consumers in questionnaire 2). Smaller and larger societies further concur by placing flexibility third, cost-effectiveness fourth and a level playing field fifth, with the degree of importance, *m*, being higher in each case for larger than smaller societies.[5] The author, however, puts cost-effectiveness in third place since this is the heart of supervision to be followed by a level playing field and flexibility.[6]

Table 11.1 Summary of Questionnaire Recommendations

Rank Order	Questionnaire 1 *aa*	*bb*	*cb*	*db*	Questionnaire 2
1	i_1	i_3	i_1	i_3	
2	i_3	i_2	i_2	i_1	
3	i_2	i_1	i_3	i_2	
1	i_7	i_4	i_4	i_5	
2	i_4	i_5	i_7	i_4	
3	i_6	i_7	i_5	i_6	
4	i_5	i_6	i_6	i_7	
1	i_{11}	i_8	i_8	i_8	
2	i_9	i_{10}	i_{10}	i_{10}	
3	i_{10}	i_{11}	i_9	i_{11}	
4	i_8	i_9	i_{11}	i_9	
1	i_{12}	i_{12}	i_{12}	i_{14}	
2	i_{13}	i_{14}	i_{13}	i_{12}	
3	i_{14}	i_{13}	i_{14}	i_{13}	
1	i_{17}	i_{15}	i_{15}	i_{15}	i_{15}
2	i_{16}	i_{17}	i_{17}	i_{16}	i_{18}
3	i_{18}	i_{16}	i_{16}	i_{17}	
4	i_{15}	i_{18}	i_{18}	i_{18}	
1	i_{20}	i_{19}	i_{21}	i_{19}	
2	i_{19}	i_{21}	i_{19}	i_{21}	
3	i_{21}	i_{20}	i_{20}	i_{20}	
1	i_{24}	i_{22}	i_{22}	i_{23}	i_{23}
2	i_{22}	i_{23}	i_{23}	i_{22}	i_{24}
3	i_{23}	i_{24}	i_{24}	i_{24}	i_{22}

Table 11.2 Details of Questionnaire Recommendations

i	Questionnaire 1 *aa*	*bb*	*cb*	*db*	Questionnaire 2
i_1 to i_3 Activity Restrictions	favours current system	one supervisory body	favour current system	one supervisory body	
	one supervisory body	more level playing field	a slightly more level playing field	possibly a more level playing field	
	more level playing field	dislike of current rules	not keen on one body		
i_4 to i_7 Capital	high degree of satisfaction with current rules	high degree of satisfaction with current rules	high degree of satisfaction with current rules	same rules for banks and building societies	
	reduce number of asset categories plus simplification	same rules for banks and building societies	publication of ratios	high degree of satisfaction with current rules	
i_8 to i_{11} Liquidity	lender of last resort	fairly happy with system	fairly happy with system	fairly happy with system	
	minimum cash requirement	standardising a minimum liquidity ratio	standardising a minimum liquidity ratio	standardising a minimum liquidity ratio	
i_{12} to i_{14} Funding & TRM	in favour of current system	in favour of current system	in favour of current system	level playing field	
	increase wholesale limit	level playing field	increase wholesale limit	in favour of current system	
i_{15} to i_{18} Reporting	slight changes/ spot checks	in favour of current system	in favour of current system	in favour of current system	annual accounts largely ignored
		some tightening up of rules	some tightening up of rules	some tightening up of rules	no point in expanding SFS
i_{19} to i_{21} Management & Systems	support for current régime	support for current régime	increase flexibility	support for current régime	
	some extension of system	increase flexibility	in favour of current system	increase flexibility	
i_{22} to i_{24} Investor Protection	more publicity and coverage	like current system	like current system	level playing field	level playing field (esp 20+)
	favours current system	level playing field	level playing field	like current system	increased cover (prepared to pay)

Smaller building societies favour the current system of activity restrictions mainly because of a high safety rating. The same set of rules for banks and building societies and the option of one supervisory body have very similar profiles with a lower level of safety than the current system, and high figures for competitive neutrality and flexibility.[7] Larger societies in contrast desire one supervisory body because of a very high level playing field rating plus high figures for the other criteria except cost-effectiveness. The same set of rules alternative is placed second with all the values for the criteria being less than those for one supervisory body and identical Adjusted Dominance Indicators (ADIs) for the same rules and the current rules.

The all building societies' data produces very close ADIs for each of the three supervisory alternatives with one supervisory body being ranked first, with each criterion generating higher values than the same set of rules option, apart from stability of the industry. There are high scores for safety and stability and lower ones for cost-effectiveness and flexibility. The same set of rules is second, although it possesses the same Adjusted Dominance Indicator as the current rules, and includes a high competitive neutrality rating as well as moderate safety and stability ratings. The current rules are ranked first by the author, attributable to a high safety and stability element, and one supervisory body comes second because of high

cost-effectiveness and moderate values for the other four criteria. The same set of rules has a high safety and level playing field rating, but fails because of poor values for the other criteria.

Despite a low level of competitive neutrality, smaller societies support the rules on capital principally because of high safety/stability ratings and a reasonable cost-effectiveness. The publication of ratios comes second also with a high safety factor, but with only moderate values for the other criteria. The rules on capital are also supported by larger societies with very high safety and stability ratings, both greater than the respective values for smaller institutions. The same set of rules for banks and building societies is next, naturally scoring well under competitive neutrality, but it additionally contains the same high figure for safety and stability and moderate values for cost-effectiveness and flexibility.

The all societies' data follows large societies with the rules on capital first because of high safety and stability and a middle ranking performance for cost-effectiveness. The same rules option is next and performs moderately well under the safety, stability and level playing field criteria. The rules on capital are also placed first by the author because of high safety and good stability factors. Reducing or removing the number of asset categories, viewed as being implemented prior to the same set of rules, follows because of a high competitive neutrality,

cost-effectiveness and flexibility performance. The same set of rules and reducing the number of categories should entail simplification.

The liquidity rules are placed first by small building societies because of high safety and moderate stability and this is followed by a minimum liquidity ratio demonstrating a similar (but lower) pattern. Larger societies repeat this order, but produce very high safety and high stability factors. A minimum liquidity ratio receives high and moderate figures for safety and stability respectively, but has a better level playing field rating than the liquidity rules.

The overall position for societies repeats the above rankings with the liquidity rules having high safety and stability with moderate and similar values for the other criteria, whilst the safety and stability elements of the minimum liquidity ratio option are moderate to high. The Adjusted Dominance Indicators of the liquidity rules and the minimum liquidity ratio are very close for larger societies. Access to a lender of last resort is in contrast put first by the author, where all the criteria have high values, except cost-effectiveness. A minimum cash ratio is second with moderate safety and stability, while the other options score badly.

The safety and stability values of the funding and treasury risk management (TRM) rules are identical and moderate when rated by smaller institutions and increasing the wholesale

limit is next with a moderate cost-effectiveness and flexibility, while the performance of the other criteria is fairly close. Larger societies agree with smaller societies by placing the TRM rules first because of high safety and middle ranking stability. The adoption of the same hedging rules as applies to banks follows with each criterion being in the moderate/high category, competitive neutrality and flexibility being the highest.

The all societies' data matches the ranking of larger societies where the TRM rules perform moderately well under safety and stability and the same hedging rules moderately well under competitive neutrality and flexibility (though lower than the TRM rules). The author, in contrast, matches the smaller societies and the TRM rules have high levels of safety, stability and cost-effectiveness. Increasing the wholesale limit is second with a middle range almost constant pattern for the five criteria, although stability is poor. The Adjusted Dominance Indicators for increasing the wholesale limit and the same hedging rules are close.

The reporting rules possess very high Adjusted Dominance Indicators (ADIs) and are placed first by small, large and all societies. Small building societies allocate the system a high degree of safety and moderate level of stability, while larger societies produce slightly higher values than smaller societies. The common feature among building societies is that there are low values for the other three criteria. Next for small and all societies come increased

data and more spot checks, although the ADIs are the same for the all societies' data. These positions are reversed by larger institutions and the common element here is one of low ratings for cost-effectiveness and flexibility. More spot checks are ranked first by the author because of a high safety, stability and level playing field performance with increased data second, showing good to moderate values for the five criteria.

The Adjusted Dominance Indicators are the same for the TRM rules (poor safety) and an expansion of the Summary Financial Statement (poor stability, level playing field and flexibility). It is interesting to note that the very poor overall performance of the latter option (by small, large and all societies as well as by the author) is mirrored in questionnaire 2 where building society annual accounts are largely ignored and there is therefore little purpose in expanding the Summary Financial Statement.

When we examine management and systems of control, we discover that a high value for flexibility and moderate/close values elsewhere contribute to smaller institutions placing increased flexibility first. Next comes the current system with its high safety and solid moderate performance with respect to the other criteria. It must be stressed that all the supervisory options assessed by small societies have very close Adjusted Dominance Indicators. Larger societies reverse the positions of the current system and increased flexibility, the former possessing high

safety and stability and the latter with the criteria values in a moderate to good, but narrow, range.[8]

The order of large societies is followed by the all societies' data where the current system has high safety and moderate stability. The increased flexibility alternative has each criterion in a moderate to good, but narrow, range. The author places increased requirements first because of high safety and stability and the current system second because of a high degree of cost-effectiveness,[9] though we must take into account identical Adjusted Dominance Indicators.

A high to moderate safety and stability performance contribute to preference being given to the current investor protection system by small societies and the alternative of the same rules as applies to banks is some way behind with only middle range values for the five criteria. The larger societies transpose this order where the same rules have high safety and competitive neutrality compared to the current system possessing a high degree of safety and stability, but with its safety and cost-effectiveness less than those of the current system.

The all societies' data matches smaller societies where the current system has a high to moderate safety and stability performance. The same set of rules is in second position, largely because of the low ratings given to increased publicity and coverage. The author gives high safety, stability and cost-effectiveness ratings which

result in increased coverage and publicity being ranked first and the consistently moderate performance of the current system pushes it into second place. The customer survey in questionnaire 2 yields some interesting results with effectively very strong support for the same rules option and increased cover, the former heavily favoured by those aged 20+, and this is compatible with the high level of importance given to safety by customers.

11.3 Blueprint for Reform

The blueprint is based upon:

(i) Section 11.2;

(ii) Tables 11.1 and 11.2; and

(iii) Chapters 3, 8, 9, and 10 where a detailed analysis and foundation may be found.

Table 11.3 Blueprint for Reform

Supervisory Techniques	Proposals
Activity Restrictions	one supervisory body for banks and building societies more level playing field retention of mutuality, leading to mutual banks
Capital (largely implemented)	reduce number of asset categories simplification
Liquidity	lender of last resort minimum cash requirement uniform liquidity ratio
Funding/Treasury Risk Management	wholesale limit to be 50% more flexibility
Reporting	slight improvements, *eg* (i) more spot checks; (ii) use of regular computer data link;
Management and Systems of Control	some intensification and extension of current system
Deposit Insurance	more publicity and increase in cover: (i) 100% for the first £100,000 and 95% up to £250,000 or £500,000 (annually reviewed) (ii) increase in maximum call on a society's resources or modified capital requirements (iii) same cover for banks and building societies

The building society activity restrictions demonstrate a lack of competitive neutrality vis-á-vis banks and limit the opportunity for diversification and risk reduction, *eg* the still heavy reliance upon the housing market which tends to reduce safety and stability. Additionally, conversion[10] may be viewed by some societies as a means of circumventing these restrictions. It would seem preferable to relax the restrictions and have one supervisory body for banks and building societies. This could then be followed by a more level playing field, which could in the long-run include the possibility of mutual banks.

The proposals on capital, stemming from questionnaire 1 - a reduction in the number of asset categories as well as a general simplification - have largely been implemented with the exclusive use of a solvency ratio or RAR régime from 1994. There remains, however, room for a diminution in the distinction between certain categories of Class 1 lending.[11] The speed with which problems can affect building societies suggests that the present liquidity system is deficient, *eg* the 'run' on the Southdown in 1991.[12] *Ad hoc* guarantees and voluntary or enforced mergers may not always work or even be possible and a lender of last resort facility may become appropriate. It is surprising, in this context, that there exists neither a minimum cash requirement for building societies nor a uniform liquidity ratio, the latter favoured by building societies.

With reference to funding and treasury risk management there is again a noticeable lack of competitive neutrality,[13] and it would be appropriate for the wholesale funding limit to be fifty per cent,[14] beyond which the principle of mutuality would be seriously impugned. Despite wholesale funding being able to reduce overall risk and cost[15] and the larger societies wanting a level playing field, there are potential dangers if we move into the realms of speculation and trading, which could for the moment perhaps be postponed on safety and stability grounds, especially when consumers so strongly desire safety.

The reporting rules require attention in two respects. Firstly, recent experience suggests the need for an increased frequency and volume of data to be passed to the Commission in order to identify 'problem' societies at an early stage. More spot checks could be carried out and more detailed data could be transmitted monthly (or more often) via a computer data link.[16] Secondly, since the evidence from questionnaire 2 suggests that consumers generally ignore the annual accounts of building societies, there is a case against an expansion of the Summary Financial Statement and, instead, contracting or even abandoning it,[17] notwithstanding that investors appear to follow a risk-return tradeoff. Recent experience and the questionnaire data again suggest the need for at least a minor intensification and expansion of the excellent management and systems régime, which could assist in problem

identification at an embryonic stage within a society.

The 'run' on the Southdown Building Society in 1991[18] occurred in the shaky period immediately following the BCCI collapse, when public awareness of the existence and deficiencies of bank and building society deposit insurance cover was at its height. Despite this, there appear to be varying levels of investor awareness of such schemes[19] and whether the desire is investor protection and/or to preserve the systemic interest, 100 per cent cover is more relevant and effective then 90 per cent.[20]

The selection of a maximum figure is likely to be arbitrary, but if £20,000 can be assumed to be appropriate when set in 1987, then this gives us an inflation-adjusted figure today of £26,600.[21] It should also be remembered that apart from 'normal' savings in accounts, an individual may be pooling resources in one account immediately prior to house purchase and this could well involve a sum in excess of even the inflation-adjusted figure. If we also take into account the strong investor support for increased cover, the cost and the moral hazard issue,[22] then 100 per cent cover up to £100,000 and 95 per cent of any excess over £100,000 up to £250,000 (thereby avoiding an excessive moral hazard risk) might be appropriate.[23] It is crucial that, once figures are set, they are at least annually reviewed.

Naturally, such a proposal would have to be underpinned by increasing the potential call on a society's share and deposit base from the current 0.3 per cent figure. Also, it

may be helpful to modify the capital requirements. For reasons of competitive neutrality and practicality the same cover should apply to banks where there is again a high level of consumer support.

The above recommendations are intended to improve the quality of supervision and create a more level playing field, an eventual extension of which would be to permit mutual banks.

[1] This often conflicts with other reasons, but a sound and efficient financial system may assist macro-economic policy (Onado, 1986, p 146).

[2] *Eg* an oligopolistic market structure.

[3] *Eg* the Liberator Building Society crash and the subsequent 1914 Act; the Securities and Exchange Commission (SEC) and the federal insurance of bank deposits in the wake of the Wall Street Crash of 1929 and the Great Depression; the UK secondary banking crisis and the Banking Act 1979; and the experience of the Wakefield, Grays and New Cross building societies being incorporated into the Building Societies Act 1986. For a fuller US list, see Kane (1981, p 364).

[4] See section 2.3.3.

[5] A discussion of typical market failures may be found in Stigler (1975, p 110 *ff)*.

[6] *Eg* an over-supply of market-makers post-Big Bang, leading to 'market fallout', which would probably have eventually occurred even without the 1987 crash.

[7] Hall and other commentators make use of the definition put forward by the Australian Campbell Committee (AGPS, 1981), which also delineates a comprehensive list of other types of efficiency.

[8] Gowland (1990, p 41), Hall (1987a, p 155), Hall (1989, pp 171-74 and 1991a, pp 174 & 201), Onado (1986, p 146-47) and Swann (1989, p 8).

[9] It is clearly not feasible to expect the average depositor to scrutinise every bank in order to determine the relative risk, given that there may be several hundred deposit-taking institutions in a country (or thousands in the case of the United States).

[10] See Breyer (1984, p 235), Capie & Wood (1991, p xv), Mayer (1993, pp 50-52), Miles (1992, p 165) and Quinn (1992, p 58).

[11] See also Papps (1975, pp 15-17) and Stigler (1975, pp 104-07).

[12] Doyle then set out a plan for the creation of an International Financial Services Centre in Dublin.

[13] *Eg* Kane (1981), Kling (1988), Llewellyn (1986), Mayer (1993), Miles (1990 and 1992), Stigler (1971) and Tiemstra (1992).

[14] For an analysis of the political significance of a wide range of benefits accruing from regulation, see Stigler (1975, pp 115-18).

[15] See also Button & Swann (1989b, p 329) and Rybczynski (1984, p 35).

[16] Also Mikdashi (1990b, p 253). For information on the ability of investors to make risk assessments and the matter of asymmetric information, see above and section 2.2.4.

[17] See also section 2.3.

[18] Also Llewellyn (1986).

[19] See section 2.2.2.

[20] Also Doyle (1988, p 54) and Miles (1990).

[21] Also Capie & Wood (1991, p xv) and Sinkey (1989, p 157-58).

[22] See section 4.5. For an examination of the systemic interest at the international level, see Corrigan (1990a, pp 175-76) and Lamfalussy (1989, p 3).

[23] Chapter 4.

[24] *Eg* general UK financial deregulation since 1986.

[25] Some of the public interest criticisms apply here too. For further information on the public good argument as a reason for the regulation of financial institutions, see also Corrigan (1990b, p 5 and 1991, pp 7-8), Baltensperger & Dermine (1993, p 27) and section 2.2.4.

[26] See public interest and systemic interest theories.

[27] One could view the theory as linked to or an extension of public interest theory.

[28] This results in a debate between capture and coalition theories.

[29] See Swann (1989, p 17).

[30] The Abbey's conversion in 1989 illustrates the difficulties and costs of leaving one sector and entering another. One could also consider the increase in the number of market-makers post-Big Bang and the resultant 'market fallout' which would probably have eventually occurred even without the 1987 crash.

[31] Very minimal.

[32] *Eg* British & Commonwealth, BCCI, the Southdown and the Town & Country.

[33] See Williamson (1993) on the future of payments systems.

[34] See Chapter 4.

[35] *Eg* to separate the dealing, corporate advice and personal client activities of a bank.

[36] The essence of fractional reserve banking is confidence (Gardener, 1991, p 111). See also Rybczynski (1985, p 34).

[37] See also Corrigan (1991) and Eisenbeis (1987).

[38] At one time the almost exclusive source.

[39] Also Gowland (1990, p 48) and Llewellyn (1987b).

[40] *Eg* Button (1985), Gardener (1986b, pp 30-31 and 34), Gowland (1990), Hall (1991a, pp 168-70), Kane (1981) and Van Cayseele (1992, pp 68-69).

[41] The BSA had only asked for 30 per cent and yet received the statutory maximum of 40 per cent.

[42] See coalition theories in section 2.3.2.

[43] Possibly akin to game theory.

[44] Also Gardener (1986e, p 51), Llewellyn (1986, p 28) and Scott (1991, pp 509-10).

[45] Gardener (1986b and 1986e) and Onado (1986).

[46] *Eg* the Class 1, 2 and 3 ratios of building societies.

[47] *Eg* US banks and S & Ls.

[48] Also Llewellyn (1986, p 69 and 1987b, p 35).

[49] Also Gardener (1986e, p 51), Llewellyn & Drake (1988b, p 122), Onado (1986, p 155), Scott (1991, pp 509-10) and Sinkey (1989, p 160).

[50] *Eg* Breyer (1984, p 234), Gardener (1986b, p 29), Keeley (1988, p 18), Kinsella (1988, p 10) and Llewellyn (1986).

[51] Or the dynamic costs of regulation (Gowland, 1990, p 24).

[52] Because these did not accept deposits from the general public, they did not come under the aegis of any supervisory agency (Jarman, 1987).

[53] *Eg* also the Financial Services Act 1986 and its compliance costs (Gowland, 1990, p 24).

[54] *Eg* building societies and the former calculus, relating capital adequacy to a complex range of asset categories.

[55] See also Gardener (1986b, p 29) and Gowland (1990, p 24).

[56] See also Brewer & Mondschean (1992, pp 6-7), Breyer (1984, pp 236-37), Lamfalussy (1989, p 4) and Rybczynski (1984, pp 34-35).

[57] CAMEL: C = Capital Adequacy; A = Asset Quality; M = Management; E = Earnings; and L = Liquidity. See also Carisano (1992, pp 120-23). See Sinkey (1989, pp 617-19) for the use of the Modigliani-Miller model to link deposit insurance to the value of a banking firm.

[58] See also section 4.7.

[59] See Gilbert (1991) for the relative success of closure versus forbearance. Also Mailath & Mester (1993 and 1994). See Carisano (1992) with respect to closure and deposit insurance. In the UK protecting the public interest and the systemic interest appear to constitute the rationale for forbearance in the building society sector (Chapter 4).

[60] For a contrasting view see the empirical study by Benston & Carhill (1992). For when regulators should close banks see Mailath & Mester (1993 and 1994).

[61] Also Nakamura (1990, p 21).

[62] The main changes introduced by FDICIA are: (i) recapitalisation of the Bank Insurance Fund; (ii) a least cost resolution method and prompt resolution approach; (iii) a new risk-based assessment and insurance coverage; (iv) new restrictions on the solicitation of deposits and on the activities of state-insured banks; (v) new supervisory, examination and audit standards; (vi) new categories of capital standards; (vii) new restrictions on bank insiders; (viii) a reduction of banking system risk; (ix) new regulation of foreign banks and branches; and (x) the Bank Enterprise Act 1991 and the Truth in Savings Act 1991 (Huber, 1992). See also Greenspan (1992), LaWare (1992) and Mailath & Mester (1993 and 1994).

[63] *Eg* Gilbert (1992).

[64] For literature on the general methods of regulation see, *inter alia*: Gowland (1990, Chapter 4), Hall (1987a, pp 156-62), Llewellyn (1986, pp 16-29) and Revell (1975 and 1986).

[1] Secondary legislation falls into three categories (Boléat *et al*, 1986, pp 14-15 and Appendix): (i) amendments made by the BSC (usually on points of detail); (ii) statutory instruments made by the BSC with the agreement of the Treasury and which, when laid before Parliament, become effective unless annulled; and (iii) statutory instruments made by the BSC with the agreement of the Treasury (or by the Treasury itself), which have to be approved by Parliament. Examples of the latter two categories are the wholesale funding limit, Class 2 and 3 limits and Schedule 8 variations.

[2] In contrast to secondary legislation it is not obligatory for a society to follow the guidelines in a Prudential Note (PN 1986/1, para 8), but the Commission expects societies to consult it before departing from them.

[3] Except where otherwise stated, this will represent the phrase 'safety for investors' as used in Table 2.1 and in the building society survey question 1.

[4] And section 9(4) specifies the conditions which societies should meet in order to satisfy the Commission.

[5] The Peckham Building Society was directed in April 1989 to apply to renew its authorisation by October 1989, but before then the board of the Peckham recommended a merger

with the Cheltenham & Gloucester, which was accepted by the BSC.

[6] Commission of the European Communities (1990a, Article 4). Article 4(2)a permits the UK authorities to reduce this to ECU1m (approximately £0.7m).

[7] See section 4.5.

[8] See also PN 1994/4.

[9] See Chapter 6.

[10] The parallel is the BOE's secret support operations for the banks affected by the 'flight to quality' in the wake of the BCCI collapse in 1991. See Atkinson (1993) and Whitebloom (1993).

[11] Not complete harmonisation. See also PN 1993/1.

[12] *Eg* the Bank of England's secret support operations after the BCCI crash in 1991.

[13] *Eg* allowing British & Commonwealth and BCCI to collapse.

[14] Instead of the previous traditional internal promotion route.

[15] Hall (1987d, p 18) and Goacher *et al* (1987, p 178).

[16] See also the 1994 proposals in Appendix 3.7.

[17] Boléat (1987, p 58) and BSA/CML (1990, p 55).

[18] Individual unsecured loans could not initially exceed £5,000, which was increased to £10,000 following the Schedule 8 Review, and in December 1992 to £25,000.

[19] The 'lead regulator' principle (Hall, 1987b, p 86) ensures that responsibility is clearly allocated to the 'lead regulator', generally the supervisory agency responsible

for the largest part of a firm's business, and the SIB has therefore delegated its responsibilities to the BSC.

[20] See Appendix 3.3.

[21] The new Schedule 8 merely lists six services - banking services, investment services, trusteeship, executorship and land services - and the Commission has prepared a detailed matrix of allowable services (Boléat, 1988, pp 36-37). Additional categories of Class 3 assets were created so that societies can purchase mortgage loans made by other lenders and mortgage-backed securities (*BSN*, 1988b). The unsecured lending limit was increased to £10,000 and the commercial asset limits were also raised to the statutory maxima as shown in Appendix 3.2.

[22] For further details see PNs 1988/4, 1989/1 and 1990/2.

[23] See Appendix 3.7.

[24] See Appendix 3.7.

[25] Brealey & Myers (1991), Ritter & Silber (1991) and Sinkey (1989).

[26] *Eg* a higher proportion of interest-sensitive investors.

[27] Noble (1988). This may be removed by the Deregulation Bill. See also PN 1993/3.

[28] Even the Abbey after conversion was not immediately permitted by the BOE to take up all the powers of a bank to the fullest extent.

[29] *Eg* as a bank.

[30] Individual unsecured loans could not initially exceed £5,000, which was increased to £10,000 following the Schedule 8 Review, and in December 1992 to £25,000.

[31] HMT, 1994a and 1994b. See also Appendix 3.7.

[32] It seems that regulations may have been framed without the systemic interest or a level playing field as paramount. Rather, the objective seems to have been related to the 'primary purpose' rule.

[33] To be amended by the 1994 proposals.

[34] See BSA (1990, p 7). *Eg* the 1994 proposals.

[35] See Appendix 3.2.

[36] As a secondary market develops, societies can sell a tranche of their unsecured loans to a third party, while continuing to service them (Boléat *et al*, 1986, pp 65-66).

[37] This should change if the 1994 proposals are implemented (Appendix 3.7).

[38] Gill Noble of HM Treasury has stated that in one step a full extension of powers was granted "which it was originally envisaged would be phased in over 5 to 10 years" (1988, p 3).

[39] See PN 1987/1 (paras 2.7-2.11) for an examination of the range of risks relevant to building societies.

[40] BSA (1991a, p 74).

[41] See PNs 1988/1, 1991/4 and 1994/3. Also Kraus (1992).

[42] See PN 1991/4 and Kraus (1992).

[43] At the time of writing, subordinated debt and PIBS count as part of the wholesale funding limit. The illustrative list of items, which could be changed by statutory instrument on the passage of the Deregulation Bill, includes removing these forms of capital from the definition of wholesale funding.

[44] The 'public measure' = Free Capital/Total Liabilities where Free Capital = Gross Reserves + General Bad Debt Provisions - Fixed Assets.

[45] Under PN 1987/1 the Commission sought to establish and agree two measures of capital required with each society:

(i) the minimum acceptable capital (MAC) - related to the current business of the society and below which the society would be at risk; and

(ii) the desired capital (DC) - the basis for planning and budgeting, etc. This is to be at least 0.5 per cent above the minimum, *ie*

DC = MAC = at least 0.5%

The calculus set out a continuous capital requirement, attributable to each specific group of assets. The required capital ratios were thus applied to the value of assets in a particular category and the MAC is the aggregate plus an additional requirement for small societies.

[46] See Appendix 3.4.

[47] For information on capital and off-balance sheet risks see PN 1988/2. For information on capital and the former calculus see PNs 1987/1, 1988/1, 1988/2, 1900/1, 1991/1, 1991/3, 1991/4 and 1992/1.

[48] The Commission has termed it "no science" (see Chapter 6).

[49] The calculus contained an extensive list of categories.

[50] 0.5 per cent "or such higher margin as a society may choose" (Boléat, 1988, p 52) or as imposed by the BSC.

[51] *Eg* 'mature mortgages' in Group 1 were subject to a one per cent capital requirement and refer to mortgages which have been outstanding for at least five years. Such borrowers may move house and redeem/replace the mortgage. This entails a doubling of the capital requirement, but it is highly unlikely that the risk would double.

[52] See Drake (1989, p 159).

[53] The Basle Accord (*ICR*, 1988) divides capital into Tier 1 and Tier 2. The former consists of equity capital, disclosed reserves and non-cumulative preference shares (including PIBS), and the latter is composed of undisclosed or hidden reserves, revaluation reserves, general provisions, certain equity-type hybrid instruments and certain subordinated debt. Tier 2 capital is limited to 100 per cent of Tier 1 capital. An important factor for building societies is that subordinated debt counts as Tier 2B, which can only be included up to 50 per cent of Tier 1 capital. Also Walsh (1994).

[54] See PNs 1992/1, 1993/1 and 1993/4.

[55] See French (1993) and PNs 1990/1 and 1991/1. Higher risk mortgages are weighted at 60 per cent and loans where arrears exceed 5 per cent of the balance outstanding are weighted at 75 per cent.

[56] French (1993).

[57] Identified by Hall (1987d, p 26) under the old calculus.

[58] See section 3.6.

[59] This fits in with the BOE's cash flow approach to liquidity.

[60] Although the Gap may be measured on the basis of maturity, duration analysis is often used instead. See below.

[61] Myers (1985, pp 7-9) and Sinkey (1989, pp 369-78).

[62] *Eg* US Mutual Savings Banks (MSBs) (Sinkey, 1989, pp 369-70).

[63] See also Sinkey (1989, pp 463-70 & 481).

[64] Sinkey (1989, pp 463-70).

[65] Liquid assets include cash, bank deposits/Certificates of Deposit (CDs), Treasury Bills, gilts, local authority loans/securities, certain building society CDs and certain foreign currency instruments (Appendix 3.5 and *BSG*, 1989d). See also PNs 1987/3, 1991/2 and 1991/5. Additions in 1991 and 1992 include sterling mortgage-backed securities and instruments in EC, EFTA and other G10 states.

[66] For standby facilities see Wylie (1991).

[67] See section 3.9.

[68] Although a distinction is made with respect to building society CDs. The specific 2.5 per cent limit has been removed, subject to prudential limits. See PNs 1991/2 and

1991/5. Furthermore, the use of credit ratings of banks or building societies would enable some risk assessment to be made.

[69] However, it would be difficult to determine the minimum percentage and, anyway, it has been abandoned for UK banks.

[70] See Appendix 3.6. PN 1987/3 requires the documentation to cover to cover objectives, policies, operational framework, the normal operating levels for gross liquidity, the appropriate categories of liquid assets and the procedures for monitoring the liquidity position. The Note has since been updated by PNs 1991/2 and 1991/5 to afford some extra flexibility.

[71] The ultimate example is if a minimum cash requirement existed.

[72] See Hall (1987a).

[73] See gap and duration management above.

[74] Not always so. See interviews in Chapter 6.

[75] Another approach is a minimum cash requirement but it would be difficult to determine the minimum percentage and, anyway, it has been abandoned for UK banks.

[76] See section 3.5.

[77] Defined in section 7(4) (as amended). The implications of the Deregulation Bill are that subordinated debt and PIBS will cease to be classified as wholesale funding.

[78] See also Tuke (1988, p 4).

[79] *Eg* 1973 and 1991, the secondary banking crisis and the BCCI collapse respectively.

[80] Appendix 3.7.

[81] Swaps represent agreements between two parties to exchange or 'swap' interest rate or currency payments for a predetermined period of time. A futures contract may be defined as a contract to buy or sell a quantity of a good at a specified future date for a fixed price (Breen, 1988, p 10). Options contracts provide the holder with the right (but not the obligation) to purchase ('call') or sell ('put') a pre-determined amount of foreign currency or debt instrument, *eg* gilts.

[82] For an analysis of the relative merits of hedging techniques see Breen (1988 and 1989), Goodman (1983), Koppenhaver (1986 and 1987), Lewis (1988a and 1988b), Morris (1989), Redhead (1985) and Wall & Pringle (1988).

[83] See PN 1994/1 for fixed rate mortgages and balance sheet risk.

[84] 1986/3, 1988/5, 1989/3 and 1993/2.

[85] See Clifford (1992). Ellis (1993), General Manager of Treasury and European Operations at the Halifax, has pointed out the problems that the 'risk reduction' clause has caused for societies.

[86] *Eg* also BCCI.

[87] As well as liability for the initial and variation margins for financial futures and options. See PN 1989/3.

[88] 1986/3, 1988/5, 1989/3 and 1993/2.

[89] See especially PN 1989/3 which lists three broad classes of risk management policies: (i) the minimal approach; (ii) the limited approach; and (iii) the full approach. See also Walsh (1993).

[90] Under PN 1989/3 the board of a society has to decide upon a treasury risk management policy and arrange for appropriate implementation, monitoring, reporting and settlement.

[91] There are also capital implications since additional capital has been required for an interest rate mismatch and societies involved in hedging have been required to provide additional capital to cover their maximum exposure.

[92] These comprise monthly returns, primarily directed to cash flow and margins, quarterly returns related to revenue budgets and outturns, the Annual Return (AR) and the Annual Capital Monitoring Return (ACMR).

[93] These are carried out, for reason or otherwise, by BSC staff or by accounting firms acting on its behalf.

[94] This is a brief document derived from the previous three and is devoid of significant financial or management information. The 1994 proposals (HMT, 1994a and 1994b) envisage the removal of the obligation to send copies of the Summary Financial Statement to members to be replaced by advertisements (Appendix 3.7).

[95] See Registry of Friendly Societies (1979) for the official report.

[96] The Summary Financial Statement is a brief document devoid of significant financial or management information.

[97] Section 45(3). See also PN 1994/4.

[98] Especially if we take into account the PN on systems, 1987/4.

[99] See section 45(3) of the 1986 Act.

[100] PN 1987/4, p 9.

[101] Advantages may be gained by integrating planning with the management and systems requirements (Venet, 1988). For information on the relevance of computer modelling see Myers (1985).

[102] Backup facilities may be expensive, if access to duplicate equipment is not easily available or if a duplicate system has to be purchased, *eg* if an unpopular mainframe manufacturer is used (See Chapter 6).

[103] The BSC requires fully tested contingency plans. For an analysis of the Britannia's experience see Goodier-Page (1991).

[104] Originally PN 1989/2, based on the Basle Committee principles (Annex to 1989/2). See also PN 1994/2.

[105] For a critique of UK deposit insurance see Hall (1987c).

[106] Although there are proposals to increase the former to 90 per cent (Wolf, 1993).

[107] Indeed, to the extent that investors are aware of the higher cover under the SIB compensation scheme then the latter, consisting of 100 per cent of the first £30,000 and 90 per cent of any excess up to £50,000 is also relevant (SIB, 1988, p 4). See also Questionnaire 2 (Chapter 10).

[108] Building Societies Ombudsman Council (1988).

[109] There are also special provisions in respect of 'disproportionate' mergers (effectively takeovers).

[110] Although it could be argued that the 75 per cent figure is too high.

[111] And have full information.

[112] The Town & Country's enforced merger with the Woolwich being hurriedly agreed when losses of £10m (quickly revised to £42m) were announced, notwithstanding reserves of £146m and assets of £2.2b. See Chapter 4.

[113] The merger with the Lancastrian in July 1992 caused a 60 per cent increase in the Northern Rock's specific provisions against mortgage losses in 1992, according to the 1992 Annual Report (1993).

[114] Though the latter was a possibility when Lloyds announced proposals to take over the Cheltenham & Gloucester in 1994. See section 3.10.

[115] The extra capital is needed for newer activities and acquisitions. Additionally, some societies face a higher overall capital requirement since the Basle Accord while, for banks, the opposite applies - see section 3.4. These

reasons have been somewhat diminished by the Schedule 8 Review, the increase in the wholesale funding limit and the provisions for subordinated debt and PIBS. They will be further diminished by the 1994 proposals.

[116] Effectively a takeover or merger, *eg* Lloyds and the C & G announcement in 1994.

[117] See Boléat *et al* (1988 and 1992).

[118] As with mergers.

[119] One possibility envisaged in the Treasury Review (1994b) is the granting of full banking status to building societies.

[120] At the time of writing the result of the vote in 1995 is not known.

[121] The Abbey was subsequently criticised by the Commission for allowing insufficient time for the conversion procedure (*BSG*, 1989a and 1989c). See also Chapter 6 - Interviews.

[1] Others include the Cheshunt, Lancastrian, Leamington Spa, Mornington and Peckham.

[2] There was an outside chance of this spreading to other societies.

[3] When no clear set of conditions or criteria exists to determine the initiation or extent of intervention. A specific set of tightly written rules would be impractical, but general guidelines might be appropriate.

[4] See Appendices 4.1 and 4.2. See also Registry of Friendly Societies (1979, p 165).

[5] Appendix 4.3.

[6] See Registry of Friendly Societies (1979, p 1).

[7] There was, however, some dispute about the correct interpretation of section 43 of the Building Societies Act 1962, whereby a rescue operation of no direct benefit to the rescuing societies might be ruled *ultra vires*. See *Halifax Building Society and another v Registry of Friendly Societies* [1978].

[8] But they do occur from time to time, *eg* the secondary banking crisis, JMB and the BOE's covert support operations after the BCCI collapse. See Atkinson (1993), Brummer (1993) and Whitebloom (1993).

[9] Although the investors in other societies were in effect subsidising them.

[10] For a full list of the reasons for intervention see Appendix 4.4.

[11] See Appendix 4.5 for the relevant statistics.

[12] The society successfully challenged the Orders in the Queen's Bench Division of the High Court, but the Registrar won in the Court of Appeal - judgement being given in January 1984. See *R v Chief Registrar of Friendly Societies ex parte New Cross Building Society* [1984].

[13] Or temptations.

[14] Or guesses.

[15] *R v Chief Registrar of Friendly Societies ex parte New Cross Building Society* [1984].

[16] See above and section 4.2.

[17] Over two days four hundred accounts were closed at six branches in Eastbourne and Hailsham and queues were beginning to develop. See Boliver (1991), Hughes (1991a and 1991b) and *MFG* (1991b).

[18] Not actually needed.

[19] See Boliver (1991), Hughes (1991a and 1991b) and *MFG* (1991b).

[20] £44m of the Southdown's £45m reserves being eaten up by provisions in the year after the merger (Boliver, 1992). See also *MFG* (1992a).

[21] See the New Cross for the dangers of an *ad hoc* approach (section 4.4).

[22] Hunter (1991a and 1991b) and Rankine (1991).

[23] *Eg* the Southdown's problems.

[24] See section 3.4 and PN 1987/1.

[25] Sometimes the BOE intervenes and sometimes it does not, *eg* JMB v British & Commonwealth.

[26] See section 2.3.

[27] Pivotal, *eg* JMB.

[28] Neither were insolvent, although in the former instance a classic 'run' appeared to be under way.

[29] Some banks are saved, *eg* JMB, and some are not, *eg* British & Commonwealth and BCCI, though the BOE did engage in secret support operations after the latter's collapse (Atkinson, 1993 and Whitebloom, 1993).

[30] Apparently in every situation.

[31] *Eg* Allowing an inefficiently managed society to continue, the 'burden' for the larger society involved in the 'merger' or a potential legal battle.

[32] There also exists the impact upon its competitors of keeping an inefficient society in business.

[33] See section 2.3.

[34] More than the slower rationalisation of branches following a merger.

[35] With reference to the US.

[36] *Eg* 90 per cent of the first £20,000 for building society investors.

[37] *Eg* also the Lancastrian. The Northern Rock announced in its 1992 Annual Report (1993, p 23) that over 60 per cent of its specific provisions were attributable to the Lancastrian and its mortgage losses.

[38] See Baer (1990), Benston & Carhill (1992), Brewer & Mondschean (1992) and Hall (1991b).

[39] And by reducing capital requirements to match the new lower levels of S & Ls' capital (Brewer & Mondschean, 1992). See also Benston & Carhill (1992). For forbearance and closure see Mailath & Mester (1993 and 1994).

[40] And others, *eg* the Cheshunt, Lancastrian, Leamington Spa, Mornington and Peckham.

[41] Or previously the Registry.

[42] See Baer (1990, p 2).

[43] No claims have been made under the Building Societies Investor Protection Fund (BSIPF) or the voluntary scheme prior to the 1986 Act.

[44] *Eg* (unused) standby facilities.

[1] See also Yang (1989) on the methodology of the mailed questionnaire.

[2] For depth interviews see Burgess (1982 and 1984), Hoinville *et al* (1978) and Oppenheim (1992). See also Chapter 6 (Interviews).

[3] *Eg* See Chapter 6.

[4] See Chapter 6.

[5] See Duncan (1993), Fink & Kosecoff (1985), Hartenian & Johnson (1991), Sykes (1990) and Sykes & Warren (1991).

[6] See Chapter 6.

[7] Duncan (1993).

[8] Sykes (1990).

[9] *Eg* question 3 in questionnaire 1.

[10] See 5.5, Chapter 6 and Motowidlo *et al* (1992).

[11] Especially with 'soft' data (Sykes, 1990).

[12] Hence with questionnaire 1 the reminder letter (Appendix 5.12), including an extra copy of the questionnaire. This yielded a useful increase in the response rate. For potential sampling pitfalls and errors see Bell *et al* (1993) and Kvanli *et al* (1992).

[13] *Eg* the covering letters for questionnaires 1 and 2 (Appendices 5.11 and 5.20).

[14] *Eg* questionnaire 1 - Appendix 5.11. For checklists or charts see Fink & Kosecoff (1985, p 46), Hoinville *et al* (1978, p 140) and Young (1966, pp 196-205). Also questionnaire 2.

[15] Hoinville *et al* (1978, p 127) and Sudman & Bradburn (1983, pp 230 and 263).

[16] *Eg* question 1 (questionnaire 1) and questions 1-6 (questionnaire 2).

[17] *Eg* questions 1-3 (questionnaire 1).

[18] *Eg* question 4 (questionnaire 1) and question 18 (questionnaire 2).

[19] *Eg* Fink & Kosecoff (1985, p 18), Oppenheim (1992, Chapter 4) and Sudman & Bradburn (1983, p 121).

[20] See also Fink & Kosecoff (1985, p 18).

[21] See Chapter 6 and section 5.5. A similar approach was followed with the consumer questionnaire.

[22] Also question 18 (questionnaire 2).

[23] See sections 5.1 and 5.4.

[24] Appendix 5.12.

[25] *Eg* questions 1-6 (questionnaire 2).

[26] Used in both questionnaires.

[27] Hence the importance of pilot testing and pre-survey interviews.

[28] Unless it is in standard use in the field and respondents could reasonably be expected to understand it.

[29] *Eg* questionnaire 2.

[30] *Eg* questions 9-17 (questionnaire 2) where careful phrasing is used to avoid this phenomenon with questions such as 10 and 12.

[31] See also Sudman & Bradburn (1983, p 121).

[32] *Eg* questions 9-17 (questionnaire 2).

[33] For types of scale see Fink & Kosecoff (1985, Chapter 2).

[34] Fink & Kosecoff (1985) and Hoinville *et al* (1978).

[35] Questions 1 and 2 (questionnaire 1) follow a combination of this approach and the use of category scales. See also questions 9-17 (questionnaire 2).

[36] There are also a number of specialist scales (Oppenheim, 1992, Ch 11): Bogardus, Thurstone, Likert (Singh *et al*, 1990) and Guttman. The first three are not relevant for either questionnaire because they involve respectively social distance scales, paired attitude statements/comparisons, and a system adding up the results for all questions. The latter scale uses yes/no responses and is partly employed in questions 1-6 (questionnaire 2).

[37] Drafts 1-9 are in Appendices 5.1-5.9 and the final version is in Appendix 5.10.

[38] Appendix 5.13

[39] See Chapter 7 for literature on the appropriate number of criteria to use when assessing a variable.

[40] Appendix 5.13

[41] See Appendices 5.14-5.20 for the various drafts.

[42] *Eg* safety, competitive neutrality and possibly stability.

[43] And perhaps even the systemic interest.

[44] This involved a selection of staff at the University of Central England.

[45] As used in question 1 (questionnaire 1).

[46] Approximately 1 in 20.

[47] See section 5.2 and Chapter 9.

[1] A list of interviewees may be found in Appendix 6.1.

[2] See Table 5.1 and section 5.5.

[3] Section 6.2 relates not only to the industry interviews but also to some extent to questionnaire 2, the customer survey (see section 5.6 and Chapter 9).

[4] See section 5.1. *Eg* Rea & Parker (1992), Rotondi (1989), Sanchez (1992), Sudman & Bradburn (1983) and Young (1966).

[5] See Burgess (1982, p 107).

[6] The original intention of questionnaire 2. See Motowidlo *et al* (1992) for an empirical study of structured interviews.

[7] *Eg* members of a school class or an office.

[8] Appendices 6.2 and 6.3.

[9] *Eg* when interviewing members of the building society industry.

[10] See sections 5.2-5.4.

[11] *Eg* questionnaire 1.

[12] See Chapter 5.

[13] The 1986 Act and Case Studies respectively.

[14] See section 6.4 and Appendices 6.2 and 6.3.

[15] See Chapter 2 and Table 2.1.

[16] *Eg* wholesale funding.

[17] *Eg* the former calculus.

[18] See section 5.5 and Appendices 5.1-5.10.

[19] Chapter 8.

[20] Increased to £25,000 in December 1992.

[21] See Appendix 3.7 for a summary of the Deregulation Bill and the Treasury Review 1994.

[22] See also Chapter 9 and the consumer survey.

[23] See PN 1987/4.

[24] The Isle of Man has since introduced 75 per cent cover for the first £20,000.

[25] Appendix 3.7.

[26] Appendix 3.7.

[1] Largely addressed in Chapter 5.

[2] Chapter 5.

[3] For problems see Whitener (1990).

[4] For potential sampling pitfalls see Bell *et al* (1993) and Kvanli *et al* (1992).

[5] Chapters 5 and 9.

[6] Instead of University of Central England staff.

[7] Chapters 5 and 8.

[8] See also Brown & Melnick (1984) and Wright (1992).

[9] Also at work in questionnaire 2.

[10] With respect to questionnaire 2 see Chapter 9.

[11] *ie* no attempt to predict the results of either questionnaire. Rather, the aim is to arrive at an optimal supervisory system from first principles (Chapter 2) and via an analysis of the questionnaire results.

[12] The discovery of predicted relationships should not be accepted as a proof of a true measure of validity (Van Auken *et al*, 1993).

[13] See also Ott & Hildebrand (1983) and Zuwaylif (1974).

[14] In practice eight basic results, four of which are partly dependent upon the other four.

[15] Holl (1987).

[16] See also Chatfield & Collins (1980), Manly (1986) and Maxwell (1977).

[17] Section 7.6.2.

[18] See also Zuwaylif (1974).

[19] Examples of application include Eastmond & Stoddard (1986), Mathews & Quinn (1981) and Schefczyk (1993).

[20] In theory sixteen sets.

[21] Correlation matrices (see above) involve a computation of r. Where rankings are concerned, $r = r_s$.

[22] For a comparison of r_s and T see Gilpin (1993) and Strahan (1992).

[23] For the three-attribute problem see also Hansotia (1992).

[24] For an examination of T and W see Degerman (1982).

[25] A development of the coefficient of concordance is the Friedman test, which employs an identical methodology, and uses a somewhat more complicated sampling model (Gibbons, 1976, p 310). However, it seeks causal relationships.

[26] Kendall's coefficient of concordance appears to be one of less irrelevance than the rest.

[27] The more complicated and lengthy first questionnaire will involve additional calculations - see sections 7.4 and 7.5.

[28] According to Phillips (1991).

[29] Nijkamp (1982b).

[30] Sometimes referred to as vertical data.

[31] See Saaty (1986c) and Zuwaylif (1974).

[32] See also Nijkanp & van Pelt (1989). For one way of converting ordinal into cardinal data see Nijkamp *et al* (1992).

[33] See Bamberger (1992) and Siefer & Latkiewicz (1992).

[34] Wilkerson & Kellogg (1992) and Zuwaylif (1974).

[35] *Eg* Gyimah Brempong & Gyapong (1991).

[36] See below and various sources including Subramanian & Gershon (1991).

[37] Questionnaires 1 and 2.

[38] See also Ghosh & Wabalickis (1991).

[39] See also Millett (1992).

[40] See also Koksalan & Taner (1992), Olson & Dorai (1992), Subramanian & Gershon (1991) and Taner & Koksalan (1991).

[41] See also Nijkanp (1982a).

[42] See Bishop *et al* (1991) for First Degree Stochastic Dominance.

[43] See also section 7.4.

[44] See also Koksalan & Taner (1992), Melachrinoudis & Rice (1991), Olson & Dorai (1992), Subramanian & Gershon (1991) and Taner & Koksalan (1991).

[45] *ie* respondents effectively being compelled to provide reasons when answering question 3.

[46] For an application in Multiple Objective Linear Programming (MOLP) see Marchi & Oviedo (1992).

[47] Or a panel of experts.

[48] Anderson (1990), Blair *et al* (1987), Fulmer (1989), Gibson & Miller (1990), Heaston (1990), Kacmar & Ferris (1993) and Scala & McGrath (1993).

[49] See also Blair *et al* (1987), Fichtner (1986) and Saaty (1986a, 1986b and 1986c).

[50] For conjoint analysis see Evans (1993), Louviere & Johnson (1990), Nataraajan (1993) and van der Lans & Heiser (1992).

[51] See also Chatfield & Collins (1980) and Manly (1986).

[52] Also education (Davison, 1981 and Koch, 1984); health (Raymond, 1989) and linguistics (Hill, 1992).

[53] Also Nijkamp (1978).

[54] See also Saaty (1986c).

[55] See earlier parts of this chapter.

[56] The exception being question 4, 'Other Comments'.

[57] *Eg* the 1-5 categories and the tie-breakers.

[58] Defined in Chapter 8.

[59] See below.

[60] For the basic algebra, see section 7.5.

[61] Rows.

[62] With the actual data, the number of permutations was only 8 because $W_{ka} = W_{kb} = W_{kc}$.

[63] For details see Chapter 9.

[64] As outlined above.

[65] Similar to *e*, *m* and *s* in section 7.6.1.

[1] For questionnaire design, validity and reliability see Chapters 5 and 7.

[2] The figure in the 1989 yearbook was adjusted to take account of subsequent mergers (BSA/CML, 1990). This comment applies throughout this section.

[3] To named individuals. See Chapter 5.

[4] For reliability see Chapters 5 and 7. For statistical techniques relevant to questionnaire 1 see section 7.6.1.

[5] With the Abbey's assets being added back for 1990 purposes (BSC, 1990, p 43).

[6] Adjusted because of mergers.

[7] Appendix 8.1.

[8] Appendices 8.8-8.19.

[9] For a further example of the diversity of views see question 4 in Appendices 8.2-8.7.

[10] Appendix 8.5.

[11] Appendix 8.7.

[12] 29 per cent for all societies.

[13] 31 per cent of all societies.

[14] Ranging from 0.960 to 0.998. See Appendix 8.11.

[15] Appendices 8.2-8.7 - Question 4.

[16] See Chapter 2.

[17] Also the Southdown and the Town & Country. See Chapter 4.

[18] See Chapter 3.

[19] Irrespective of the prudence or appropriateness of such undertakings.

[20] Appendix 3.7 contains a proposal for unsecured loans to businesses (HMT, 1994a and 1994b).

[21] Or the systemic interest.

[22] *Eg* 56 per cent for l_2 ('2').

[23] See the high l_2 and l_3 values.

[24] A bit confused even.

[25] There is a strong relative relationship. See Appendix 8.19. The negative views on flexibility for i_1 are mirrored in the interviews of Chapter 6.

[26] Note the '1' for i_1 and safety.

[27] j_4 and j_5 (cost-effectiveness and flexibility) being identical: '3,2,1'.

[28] See Chapters 2 and 3.

[29] Not necessarily in that a distinction is made between a level playing field as such, i_2, and a unified regulator, i_3.

[30] And between *aa* and *ab*.

[31] And thus *da*.

[32] Applying the author's weights causes r to equal -0.87.

[33] Chapter 7.

[34] Similarly, r_s = 1 for *aa* and *ab*.

[35] r_s = -1.

[36] *Eg* Because of the restrictions such as the unsecured loan limit. See Chapter 6.

[37] *NB* very close ADIs.

[38] See Appendix 8.36.

[39] Chapter 3.

[40] Including simplicity.

[41] Practical difficulties also, *eg* speculation, contagion, etc.

[42] *Eg* see Chapter 6.

[43] 0.74.

[44] See Chapter 3.

[45] See Chapter 3.

[46] Notwithstanding the Town & Country's experience. See Chapter 4.

[47] It could even trigger a destabilising effect.

[48] And the use of one tie-breaker. See above.

[49] s = 3.148.

[50] See j_1.

[51] 0.92 and 0.93 respectively.

[52] See Chapter 6 for a discussion of liquidity targets, etc.

[53] See targets in Chapters 3 and 6.

[54] Or freedom.

[55] See Chapters 2 and 3.

[56] See Chapter 3 for more details of i_8 to i_{11}.

[57] The 1986 Act merely states a maximum.

[58] See Chapter 3 for more details of i_8 to i_{11}.

[59] See above and Chapter 3.

[60] *Eg* collective 'bail outs' in Chapter 3.

[61] See earlier in this section and Chapter 3.

[62] See above.

[63] r_s = 0.40 for *a* and *aa*.

[64] See Chapter 3.

[65] s_c = 3.074.

[66] See BSA proposals (1991a and 1991b) and the Treasury Review (HMT 1994a and 1994b). Also Appendix 3.7.

[67] This also applies to i_{13}.

[68] r = 0.71.

[69] See Chapters 3 and 6.

[70] See Chapter 3.

[71] See Chapters 2, 3 and 4.

[72] Appendix 3.7.

[73] See BSA proposals (1991a and 1991b).

[74] See Chapter 3.

[75] See above.

[76] See Chapter 6 and question 4 (Appendices 8.2-8.7).

[77] Despite closeness r = -0.34.

[78] Even less than larger societies.

[79] r = 0.60.

[80] See Chapters 6 and 9.

[81] r = 0.03.

[82] The split between the first two and the other criteria is maintained.

[83] And the all societies' data (*b*).

[84] *Eg* see Chapter 4.

[85] And j3 to bring societies more in line with banks. See also Chapters 2 and 3.

[86] See questionnaire 2, the consumer survey, in Chapter 9.

[87] Chapter 2.

[88] The latter having r_s equal to -1.

[89] See above.

[90] Chapter 6.

[91] s = 3.6.

[92] This may be due to the interpretation of i_{21}.

[93] Chapters 3 and 4.

[94] Chapters 3 and 4.

[95] Chapters 3, 4 and 6.

[96] Strongly favoured by investors in questionnaire 2 (Chapter 9).

[97] Unlike the banks' deposit insurance scheme.

[98] Chapters 3 and 6.

[99] And consumers (Chapter 9).

[100] See i_4 to i_7 (capital).

[101] Appendices 8.2-8.7.

[102] For statistics and summaries see Appendices 8.2-8.7. The small raw numbers involved means that the reliability of the data may be questionable.

[103] For inconsistency between supervisors and the scale of BSC charges see Chapter 6.

[104] See also Chapter 6.

[105] Consumers also favour this option (Chapter 9).

[106] Chapter 9.

[1] Appendix 5.20.

[2] Chapters 5 and 8. For areas of commonality between the questionnaires see Table 10.1.

[3] In Birmingham, Loughborough and Tamworth.

[4] Also Chapter 5. For statistical techniques see Chapter 7.

[5] Obtained from questions 7 and 8.

[6] Obtained from questions 7 and 8.

[7] The original target for the aborted street survey.

[8] It is accepted that a weakness is that the unemployed are by definition excluded, but it is to be hoped that the scale and diversity of the survey will overcome this weakness.

[9] Especially i_{15} and i_{18} (Chapter 8).

[10] i_{22} and i_{24} - Chapters 3 and 8.

[11] Especially since the BCCI affair.

[12] It is likely that, prior to the collapse of BCCI and the associated public debate over investor protection, savers were less aware of the existence of such schemes.

[13] Question 4.

[14] See also question 2.

[15] Appendix 9.1

[16] Appendices 9.2-9.9.

[17] Frequently cited in question 18.

[18] j_1 (Chapter 8).

[19] Q1y.

[20] The overall u is 4.49 for males and 4.68 for females.

[21] The reverse in question 18.

[22] Q1n.

[23] Appendices 9.4-9.5.

[24] The 60+ non-building society customer data (Q1n h_4) is very small and should therefore be viewed with caution.

[25] See question 9.

[26] Appendices 9.2-9.3.

[27] Gender is either irrelevant (building society customers) or only demonstrates a weak negative relationship (non-building society customers).

[28] NB Gender is largely irrelevant.

[29] Younger people appear more likely to be higher risk-takers and less keen to want to rely on protection.

[30] Investor protection is mentioned several times in question 18.

[31] See also questions 5 and 6.

[32] As we might have expected. See above.

[33] i_{22} and i_{23} (Chapter 8).

[34] Indicating risk-taking is to be preferred over a level playing of protection.

[35] Section 9.4.

[36] See also question 9, safety.

[37] This could be attributable to the greater likelihood that the latter groups are net borrowers rather than net savers. See also question 18.

[38] Separately.

[39] Approximately 0.6.

[40] *NB* See also question 18.

[41] See Table 9.7. There are a number of comments not mentioned in the main text because they are less important or irrelevant for our purposes and these include: lack of branch privacy, an impersonal or poor service, phantom withdrawals, cheque clearing lag, more cash dispensers, Third World debt and charges.

[42] Although the latter were felt to be slightly safer.

[43] Some respondents demonstrated a lack of understanding of how a financial institution operates and this resulted in certain comments, *eg* the relationship between profits and margins.

[44] Some societies have reacted to complaints by offering to transfer investors locked into notice or term accounts when almost identical higher interest equivalents are introduced.

[45] And a reasonable 16 per cent for question 18.

[46] Which were interestingly considered to be slightly safer than the societies.

[47] Question 13.

[1] See Abbreviations and Chapter 8.

[2] For non-building society customers see Chapter 9.

[3] Table 10.1.

[4] Questionnaire 1.

[5] Questionnaire 2, Question 9 (building society customers: Question 1 'yes').

[7] Question 10. Although 60+ females are less convinced. In contrast, non-building society consumers consider them to be much safer.

[8] This may overlap with stability, j_2.

[9] All six permutations.

[10] Less preferred by males under 40.

[11] Negative correlation between questions 13 and 15. See also question 14.

[12] Question 18.

[1] Chapters 5, 8, 9 and 10.

[2] A detailed analysis of questionnaire 1 is contained in Chapter 8. See Chapter 3 for an analysis of the supervisory system.

[3] Chapters 7 and 8.

[4] Tables 8.4 and 8.8.

[5] *ie* $W_{kb} = W_{kc} = W_{kd}$.

[6] Chapter 8.

[7] Smaller societies are not very keen on one supervisory body.

[8] j_4 and j_5, cost-effectiveness and flexibility, being the higher ones.

[9] The rest being '2'.

[10] Including takeover.

[11] Section 3.4.

[12] Chapter 4.

[13] Even given the redefinition of wholesale funding in the Deregulation Bill to exclude subordinated debt and PIBS.

[14] Proposed in the Treasury Review (HMT 1994a and 1994b). See Appendix 3.7 for a summary of the Review and the Deregulation Bill.

[15] Chapter 3.

[16] Chapter 3.

[17] *Eg* the advertisement proposal in the Deregulation Bill.

[18] Chapter 4.

[19] Chapter 9.

[20] Chapter 3 and Hall (1987c).

[21] Calculated using the changes in the Retail Price Index between 1 October 1987 and 1 August 1994 (*Economic Trends*, CSO, HMSO, London, Nos 424 and 491, February 1989 and September 1994).

[22] Chapters 2 and 3.

[23] Or £500,000, the typical maximum in many building society accounts.

Abbreviations

1. Questionnaires

Questionnaire 1 = building society questionnaire

Questionnaire 2 = customer questionnaire

2. Variables

a = author's data

aa = author's data, author's weights

ab = author's data, building society weights

ac = author's data, smaller societies' weights

ad = author's data, larger societies' weights

b = building society data

ba = building society data, author's weights

bb = building society data, building society weights

bc = building society data, smaller societies' weights

bd = building society data, larger societies' weights

c = smaller societies' data

ca = smaller societies' data, author's weights

cb = smaller societies' data, building society weights

cc = smaller societies' data, smaller societies' weights

cd = smaller societies' data, larger societies' weights

d = larger societies' data

da = larger societies' data, author's weights

db = larger societies' data, building society weights

dc = larger societies' data, smaller societies' weights

dd = larger societies' data, larger societies' weights

e = degree of effectiveness

f = a class of effectiveness (questionnaire 1)

f = female (questionnaire 2)

F = upper limit of *f* (questionnaire 1)

h = age group

h_1 = under 20 years of age

h_2 = 20-39

h_3 = 40-59

h_4 = 60+

i = a policy or supervisory technique

i_1 = Activity Restrictions

i_2 = same set of rules for banks and building societies

i_3 = one supervisory body

i_4 = Capital Adequacy

i_5 = same set of rules for banks and building societies

i_6 = reduce/remove no of asset categories

i_7 = publication of min/actual ratios

i_8 = Liquidity

i_9 = minimum cash ratio

i_{10} = minimum liquidity ratio

i_{11} = access to lender of last resort

i_{12} = Funding/Treasury Risk Management

i_{13} = increase wholesale limit

i_{14} = hedging rules same as banks'

i_{15} = Reporting (to BSC and members)

i_{16} = increase data passed to BSC

i_{17} = increase spot checks by BSC

i_{18} = expand Summary Financial Statement

i_{19} = Management and Systems of Control

i_{20} = increase requirements

i_{21} = increase flexibility

i_{22} = Deposit Insurance/Investor Protection/Ombudsman

i_{23} = same set of rules under Banking/Building Societies/ Financial Services Acts

i_{24} = increase publicity/coverage

I = upper limit of i

j = a criterion

j_1 = safety for investors

j_2 = stability of the industry

j_3 = level playing field between lenders

j_4 = cost-effectiveness

j_5 = flexibility

J = upper limit of j

k = a scenario

K = upper limit of k

l = a class of importance or grading

L = upper limit of l

m = degree of importance (questionnaire 1)

m = male (questionnaire 2)

n = number of respondents in a particular 'cell'

P = an impact matrix

Q = question

Q1n = question 1 'no' (non-building society customers)

Q1y = question 1 'yes' (building society customers)

r = coefficient of correlation

r_s = Spearman rank correlation coefficient

s = degree of success

s_b = degree of success for b

s_c = degree of success for c

s_d = degree of success for d

u = degree of agreement

v = a class of agreement

V = upper limit of v

w = weight

w_k = a weights vector

W = a weights or preference matrix.

3. Acronyms

ACMR Annual Capital Monitoring Return

ADI Adjusted Dominance Indicator

AMAF Abbey Members Against Flotation

ANBS Abbey National Building Society

AR Annual Return

BCCI Bank of Credit and Commerce International

BEQB *Bank of England Quarterly Bulletin*

BOE Bank of England

BSA Building Societies Association

BSC Building Societies Commission

BSG *Building Societies' Gazette*

BSIPF	Building Societies Investor Protection Fund
BSN	*Building Society News*
CAB	Civil Aeronautics Board
CBA	Cost-Benefit Analysis
CBSI	Chartered Building Societies Institute
CD	Certificate of Deposit
CML	Council of Mortgage Lenders
DC	Desired Capital
EC	European Community
ECU	European Currency Unit
EPR	*Economic Progress Report*
FCC	Federal Communications Commission
FDIC	Federal Deposit Insurance Corporation
FDICIA	Federal Deposit Insurance Corporation Improvement Act 1991
FSA	Financial Services Act 1986
HMSO	Her Majesty's Stationery Office
HMT	HM Treasury
ICC	Interstate Commerce Commission
ICR	*International Currency Review*
IO	Industrial Organisation
JMB	Johnson Mathey Bankers
LIBOR	London Interbank Offered Rate
LIFFE	London International Financial Futures Exchange
LLR	Lender of Last Resort
MAC	Minimum Acceptable Capital

MDS	Multidimensional Scaling Analysis
MFG	*Mortgage Finance Gazette*
MMC	Monopolies & Mergers Commission
OFT	Office of Fair Trading
PEP	Personal Equity Plan
PIBS	Permanent Interest-bearing Shares
PN	Prudential Note
QAH	Qualifying Asset Holding
RAR	Risk Asset Ratio
RAW	Risk Asset Weight
RM	Regime Method
RSA	Rate-sensitive Assets
RSL	Rate-sensitive Liabilities
S & L	Savings & Loan Association
SDL	Share and Deposit Liabilities
SEC	Securities and Exchange Commission
SFS	Summary Financial Statement
SI	Statutory Instrument
SIB	Securities and Investments Board
SRO	Self-Regulatory Organisation
SSD	Second Degree Stochastic Dominance
TRM	Treasury Risk Management

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Appendix 3.1 Prudential Notes Issued by the Building Societies Commission

No	Title
1986/1	*General Introduction to the Series*
1986/2	*Relationships between Auditors and the Commission*
1986/3	*Interest Rate and Currency Swaps*
1987/1	*Capital Adequacy: A Framework for Assessment* plus complementary note: *Application of the Calculus and Completion of the ACMR*
1987/2	*Funding*
1987/3	*Liquidity*
1987/4	*Systems*
1987/4	Supplement: *Treasury Controls and Systems*
1988/1	*Subordinated Debt*
1988/2	*Capital Requirements for Off-Balance Sheet Lending*
1988/3	*Stockbrokers*
1988/4	*Business Developments and New Initiatives*
1988/5	*Balance Sheet Mismatch and Hedging*
1989/1	*Relationships with Associated Bodies*
1989/2	*Money Laundering*
1989/3	*Balance Sheet Mismatch and Hedging*
1990/1	*Capital Adequacy and Class 1 Advances*

1990/2	*Relationships with Associated Bodies*
1991/1	*Capital Adequacy and Class 1 Lending*
1991/2	*Holdings of Building Society CDs, FRNs and Deposits*
1991/3	*Lending Policy Statements*
1991/4	*Permanent Interest Bearing Shares*
1991/5	*Liquid Asset Regulations*
1992/1	*Implementation of EC Own Funds and Solvency Ratio Directives*
1992/2	*New Business Developments and New Initiatives*
1993/1	*EC Second Banking Coordination Directive*
1993/2	*Prescribed Contracts: Hedging*
1993/3	*Designated Bodies*
1993/4	*Capital Adequacy*
1993/5	*Large Exposures*
1994/1	*Fixed Rate Mortgages and Balance Sheet Risk*
1994/2	*Money Laundering*
1994/3	*Undated Subordinated Debt*
1994/4	*Boards and Management*

Appendix 3.2 Progressive Increases in Class 2 & 3 Limits

Class	Maximum %			
	1986 Act	Jan 1990	Jan 1991	Jan 1993
2	10	17.5	20	25
3	of which:			
	5	7.5	10	15

Source: Compiled from *Economic Progress Report*, February 1988, No 184, p 11

Appendix 3.3 Schedule 8 (as amended): Before the Schedule 8 Review

1. Money transmission services.
2. Foreign exchange services.
3. Making or receiving of payments, as agents.
4. Management, as agents, of mortgage investments.
5. Management, as agents, of land.
6. Arranging for the provision of services relating to the acquisition or disposal of investments, whether on behalf of the investor or the person providing the service.

6A. Giving investment advice.

6B. Arranging for the provision of units in a unit trust scheme.

7. Establishment and management of personal equity plans. Arranging for the provision of credit, whether on behalf of the borrower or the person providing credit, and providing services in connection with current loan agreements to the party providing credit.

9. Establishment and management of unit trust schemes for the provision of pensions.

10. Establishment and, as regards the contributions and benefits, administration, of pension schemes.

11. Arranging for the provision of insurance of any description, whether on behalf of the person effecting

or the person providing the insurance.

12. Giving advice as to insurance of any description.
13. Estate agency services.
14. Surveys and valuation of land.
15. Conveyancing services.

Sources: Building Societies Act 1986

Mark Boléat, *Building Societies: The Regulatory Framework*, Building Societies Association, London, (1st edition), 1987, pp 33 & 37

NB The Building Societies (Provision of Services) (No 3) Order 1987 (SI 1987 No 1976) meant the addition of paragraphs 6A and 6B.

Appendix 3.4 Capital Adequacy Requirements: The Calculus

Asset Group	Capital Ratio	Amount to which the ratio is to be applied if not standard value
Mainstream business		
(a) Mortgage book		
Group 1: "mature mortgages"	1%	
Group 2: "core business"	2%	Aggregate balances due or outstanding at the relevant date plus any unused drawing facility
Group 3: high percentage advances and "arm's length" advances to housing associations	4%	
Group 4: other advances	6%	
(b) Liquid Assets		
(i) Interest rate mismatch		
- fixed interest rate assets with period to maturity exceeding three months	1% or more according to specified maturity bands	
- variable rate instruments	1%	
(ii) Credit risk		
- all liquid assets except cash, deposits with central bank, central government instruments and assets guaranteed by central government. This is in addition to the provision for interest rate mismatch.	2%	
(c) Fixed Assets		
(i) Land and buildings		
- Freehold	50%	
- Leasehold		
- Sale and lease back	50%	Freehold value
Other	50%	Standard and/or NPV of rental obligations.
(ii) Other fixed assets	50%	

Asset Group	Capital Ratio: Initial	Capital Ratio: Long term	Amount to which the ratio is to be applied if not standard value
New activities			
(a) Class 3 lending:			
(i) Loan schemes linked to existing or new Class 1 or 2 borrowers	15%	7½%	Aggregate balance due or outstanding plus any unused drawing facility
(ii) Mobile home loans	10%		
(iii) Other Class 3 loans	20%	10%	
(b) Development and residential property			
(i) Land acquired for site assembly	—50%—		Book value
(ii) Development projects: Society only projects:			
(a) Major projects	— ad hoc —		Total cost to completion of project or of phases to which committed
(b) Minor projects	30%		
Joint projects:			
(a) Major projects	— ad hoc —		Total committed investment of all the participants in respect of either the complete project or of phases to which committed
(b) Minor projects	30%		
(iii) Housing for rent:			
(a) With appropriate specific long term finance	20%		Book value
(b) other projects	40%		Book value
(iv) Equity interest in shared ownership schemes			
(a) with appropriate specific long term finance	10%		Book value
(b) other	30%		
(c) services: foreign exchange	—10%—		Limit set for net exposure
Additional requirement for very small societies			
(a) Under £25 million commercial assets	—1%—		Total share, deposit and loan liabilities
(b) £25 million or more but less than £50 million commercial assets	—½%—		

Source: Mark Boléat, *Building Societies: The Regulatory Framework*, BSA, London, (1st edition), 1987, p 49

Appendix 3.5 Categories of Liquid Assets

The Building Societies (Liquid Asset) Regulations 1987 (1987 SI No 1499) were made in August 1987 and came into effect on 1 October 1987. The regulations set out the liquid assets which a building society may hold under section 21 of the Act.

The main types of asset covered by the regulations are those which have long been available to societies under previous provisions, that is gilt edged securities, bank deposits and CDs, treasury bills, local authority loans and securities. There are a number of additional assets which societies are able to hold (certain deposits and CDs, unsubordinated floating rate notes issued by banking institutions, and unsubordinated floating rate notes issued by building societies), and a number of assets which societies will no longer be able to hold (certain securities issued by Commonwealth governments, long term local authority and bank loans, and certain national savings and other instruments which are no longer issued). A society may continue to hold liquid assets acquired in accordance with previous regulations but which are not included in the Liquid Asset Regulations. The regulations do not have any maturity bandings as the previous regulations did and there are no maximum maturity periods for holdings of marketable securities.

Twenty five categories of liquid assets are set out in Part I of the Schedule to the Regulations. They can usefully be subdivided as follows -

(a) Cash.

(b) Deposits with the Bank of England.

(c) Certificates of tax deposit issued by the Treasury, and Treasury Bills.

(d) Marketable securities issued in the United Kingdom by the Government or issued by any issuer whose obligations are guaranteed by the Government.

(e) National Savings Deposit Bonds, National Savings Income Bonds and deposits with the National Savings Bank.

(f) Loan stock of the Bank of Ireland and loans to the Department of Finance and Personnel (Northern Ireland).

(g) Marketable securities issued by any of the following international bodies -

The African Development Bank
The Asian Development Bank
The Caribbean Development Bank
The European Atomic Energy Community
The European Coal and Steel Community
The European Economic Community
The European Investment Bank
The Inter-American Development Bank
The International Bank for Reconstruction and Development (World Bank)
The International Finance Corporation
The International Monetary Fund

(h) Deposits with, or certificates of deposit issued by, any institution authorised under the Banking Act 1987. (This is a wider power than the previous one. Under section 59 of the 1962 Act, a society could deposit funds with a bank only where it had been designated for this purpose by the Chief Registrar. At 31 December 1986 there were 186 institutions so authorised. Under the Banking Act 1987 there are 600 authorised institutions, and societies can therefore deposit funds with, or purchase the certificates of deposit of, all of these institutions.)

(i) Deposits with gilt edged market makers and stock exchange money brokers. These deposits must be secured by the transfer to the society of marketable securities which societies are entitled to hold.

(j) Stock lending rights against any stock exchange money broker. The effect of this power is to enable a society to lend on a secured basis marketable securities issued by the Government to a stock exchange money broker, provided the society has the right to receive in return from the money broker the same amount of the same security. This is effectively a power to engage in stock lending, something which is important for the liquidity of the gilt edged market.

(k) Certificates of deposit issued by a building society which has total assets of at least £1,000 million (under the previous regulations the threshold was £2,000 million). A society is not allowed to hold building society certificates of deposit (and also floating rate notes) amounting to more than 2½% of its total assets.

(l) Marketable securities issued by and loans to any relevant authority or nationalised industry. Relevant authorities are local authorities and certain other authorities, such as a water authority, passenger transport executive and the Inner London Education Authority.

(m) Bills of exchange issued by a local authority or other relevant authority.

(n) Floating rate notes issued by any institution authorised under the Banking Act.

(o) Floating rate notes issued by any building society with total assets of at least £1,000 million. It has already been noted that a society cannot hold the CDs and floating rate notes of other societies amounting to more than 2% of its total assets.

The Liquid Asset Regulations effectively apply to most associated bodies although those bodies are able to deposit money with their parent society without that having to be prescribed in the Regulations.

Source: Mark Boléat, *Building Societies: The Regulatory Framework*, Building Societies Association, London, 2nd edition, 1988, pp 46-47

Appendix 3.6 Annex from Prudential Note 1987/3

POLICY STATEMENT OF LIQUIDITY

(i) **Policy**

(a) the society's principal business and operational characteristics relevant to the amounts and composition of liquid assets;

(b) liquidity objectives, related to the business and operating characteristics;

(c) liquid asset portfolio requirements for marketability, residual maturity structures, encashability over time bands, maturity matching, credit risk, yield and interest rate basis;

(d) exposure policies for individual institutions, sectors of institutions and instruments/markets;

(e) operating levels and ratios, base and range, for total liquid assets, and for appropriate categories of liquid assets by reference to their quality as liquidity;

(f) liquidity implications and role of stand-by facilities and other committed funding lines;

(g) in-house management capability and framework for use of external professional lines;

(h) capital backing for interest rate mismatch, credit risk (including additional capital requirement for concentration, if appropriate) and any other features of liquidity policy.

(ii) **Operational limits and authorities**

(a) framework of board authorisations, delegations and operating limits for implementing, monitoring and controlling the application of policies established under (i);

(b) rules for in-house management team;

(c) procedures and criteria for exceptional overrides to standard rules and authorities.

(iii) **Review**

Regular and systematic review by board and management of policy and operational limits and authorities.

CONTROL AND INSPECTION

(a) controls over functions of authorisation, execution, custody and recording of transactions;

(b) recording and verification of income receipts independently from management of liquid assets portfolio;

(c) settlement and documentation procedures;

(d) systems for budgeting and monitoring cash flow;

(e) systems for relevant and timely reporting to board and management of liquidity position, including anticipated calls on liquidity as well as amount and mix of liquid assets;

(f) coverage of liquidity management control system by the system of inspection and report.

Source: Mark Boléat, *Building Societies: The Regulatory Framework*, Building Societies Association, London, 2nd edition, 1988, p 48

Appendix 3.7 Proposed 1994 Reforms

Deregulation and Contracting Out Bill	Specifics to permit: - lending on security of third parties - syndicated lending Illustrative list including: - option to advertise instead of sending notices for meetings and Summary Financial Statements - adoption of new powers by resolution of board rather than by a special resolution of members - definition of wholesale funding to exclude subordinated debt and PIBS - removal of obligation to stand behind bodies to which societies are linked by resolution
HM Treasury Review, First Stage July 1994	- wholesale funding up to 50% (requires passage and use of general power of Deregulation Bill) - unsecured loans to businesses (SI) - own 100% of general insurance companies (SI)
HM Treasury Review, Second Stage September 1994 (Significant changes would require primary legislation)	- possibility of full (mutual) banking status - greater member representation on boards - distribution of reserves (dividend)

Appendix 4.1 Letter to the Secretary of the Grays Building Society from the Secretary-General of the Building Societies Association - dated 27 June 1974

Private & Confidential
Your Ref: HPJ/SR

27th June 1974

Dear Mr. Jaggard,

I have talked over with Shears what you told me in your letter of 24th June, and we both feel that the Registry is pushing matters too hard. Although the Chief Registrar does have an overriding authority to revoke designation (even if the arithmetical requirements are met), it seems unlikely to us that he would do so in your case.

We suggest that you make an effort to build up your Society's liquidity so that you have more latitude above the minimum for trustee status. We also suggest that you do everything possible to bring down the average age of your Board.

If your present accountancy system is working well, there seems no point in the Registry's insistence on further reorganisation.

With regard to a merger with one or both of the other Societies in Grays, we think you should see the implications for the reserve ratio of the new enlarged Society.

Our advice, therefore, is to get your house completely in order, after which the pressure from the Registry should die down.

Perhaps you would be kind enough to treat this letter in confidence where the Registry is concerned.

Yours sincerely,

Secretary-General

H.P. Jaggard, Esq., FCIS,
Secretary,
Grays Building Society.

Source: Registry of Friendly Societies, *Grays Building Society*, HMSO, London, 1979, Cmnd 7557, p 88

Appendix 4.2 Letter to the Secretary of the Grays Building Society from the Secretary-General of the Building Societies Association - dated 30 June 1976

THE BUILDING SOCIETIES ASSOCIATION

SECRETARY GENERAL
NORMAN E GRIGGS

14 PARK STREET · MAYFAIR
LONDON · W1Y 4AL

TELEPHONE
01-629 0515
01-499 6540
01-491 3366

PRIVATE & CONFIDENTIAL

30th June 1976

Dear Mr. Jaggard,

I have been looking at the letter which you recently received from Walter at the Registry and it does seem to me that, apart from the liquidity question, he is probably exceeding his authority. There is nothing in the Statutes which would enable him to express concern about the age of your Board, the question of succession and your book-keeping system although I suppose this could come under the Registry's general purview where trustee status is concerned.

Currently, your Society's gross liquidity seems to be running at just under 15 per cent. which is lower than the national average but nowhere near the minimum required for trustee status. Walter admits that it is giving the Registry less concern that it was previously. As you know, the "terms of trade" have turned rather sharply against building societies in recent weeks so liquidity is a most important consideration over the months ahead. I am sure your Board has this well in mind and will not over-reach itself on the lending side.

I note that you are taking steps to appoint one or two more Directors in a lower age band.

With regard to your system of book-keeping, the proof of the pudding is in the eating. No complaints about errors ever reach the Association and your management expenses have been kept very low.

My advice would be to play along gently with the Registry on the assumption that they are taking a paternalistic attitude towards your Society rather than one of criticism.

No doubt you will keep this letter confidential as far as the Registry is concerned.

Yours sincerely,

Secretary-General

Harold P. Jaggard Esq., FCIS,
Secretary,
Grays Building Society.

Source: Registry of Friendly Societies, *Grays Building Society*, HMSO, London, 1979, Cmnd 7557, p 94

Appendix 4.3 Letter to Building Societies from the Registry of Friendly Societies - dated 16 September 1976

REGISTRY OF FRIENDLY SOCIETIES
17 North Audley Street London W1Y 2AP

Telephone 01-629 7001 ext

Please reply to The Registrar
Your reference

Our reference

Date 16 September 1976

Dear Sir

Although defalcations of any size by building society employees are relatively rare, instances have recently come to my notice in which the sums were misappropriated over periods of years without detection. I have no doubt that directors of building societies are fully conscious of their general duty to safeguard a society's funds. It seems to me appropriate however to draw your Board's attention to the particular duties expressly imposed upon a society and on its directors by section 76 of the Building Societies Act 1962 and in particular section 76(1)(b).

Under section 76(1)(b) it is the duty of a society to establish and maintain -

(1) a system of control and inspection of its books of account, and

(2) a system for supervising its cash holdings and all remittances and receipts.

By virtue of section 76(5) directors are required to take all reasonable steps to ensure that a society has established and maintains these systems.

The establishment and maintenance of these systems is intended to prevent, so far as is practicably possible, misappropriations and other misuses of a society's funds. Whilst I appreciate that it may be impossible to prevent all misappropriations, the systems mentioned should be such that if unfortunately money is misappropriated the matter will be brought to light within a short time.

I do not think it is practical for me to suggest the lines on which these systems should operate as so much depends on a society's size and number of staff. It is for directors to satisfy themselves that whatever systems they maintain are effective to disclose irregularities, whether in books of account or the handling of cash and cheques and by whomsoever committed. No one handling books or cash should escape this system, however senior or trusted he may be.

Directors will have noted that auditors are required under section 87(4) of the Act to consider, amongst other matters, whether a society has maintained a satisfactory system of control so as to comply with s.76(1)(b) and to report if in their opinion it has not. In this connexion I ought to emphasise that directors should not consider that s.76(1) has been complied with merely because the auditors have not reported to the contrary. It is the director's responsibility and not the auditor's to ensure that compliance is effective.

I am writing in similar terms to all Chairmen of societies and would ask you to bring this letter to the attention of the Board when it next meets. In the course of the next few months I will be approaching a number of societies for information about how they are meeting the requirements of the Building Societies Act 1962 in the matter of control.

Yours faithfully

K Harding

Source: Registry of Friendly Societies, *Grays Building Society*, HMSO, London, 1979, Cmnd 7557, p 75

Appendix 4.4 New Cross Building Society: Reasons for Intervention by the Chief Registrar

(i) A failure to meet the requirements of the regulations for trustee designation in three of the previous four years;

(ii) As a result, it was ineligible to join the investors' protection scheme at its inception in 1982;

(iii) The society had broken the Special Advance provisions in 1981 and 1982 (loans to corporate bodies and loans over £37,500);

(iv) A projected 60 per cent growth in assets would mean a significant fall in the reserve ratio;

(v) The arrangements for control of the society's business by the full board were inadequate;

(vi) The management had failed to meet a previous request that every building society should have properly documented systems of control (drawn up in the wake of the Grays affair);

(vii) The society was continuing to employ excessive liquidity, even beyond the limit previously agreed with the Registrar after he had expressed his concerns to the society that it might be in contravention of the 'primary purpose' rule; and

(viii) The society and its auditors had supplied incorrect information to the Registry.

Source: Registry of Friendly Societies, *New Cross Building Society*, HMSO, London, 1984, Cmnd 9033, pp (iii)-(iv), 19 & 23

Appendix 4.5 Mortgage Arrears as a % of Trustee Status Reserves

Institution	1980	1981	1982
New Cross	4.46	14.57	23.01
All societies	1.06	1.69	3.25

Source: Compiled from Registry of Friendly Societies, *New Cross Building Society*, HMSO, 1984, Annex 6(ii), p 83

Appendix 5.1 Questionnaire 1: Draft 1

1. When considering the techniques of supervision, how important is each of the following? (Circle appropriate number.)

	very important	important	neutral	unimportant	very unimportant
	1	2	3	4	5
(a) simplicity					
(b) safety for investors					
(c) competitive neutrality					
(d) cost-effectiveness					
(e) flexibility					

2. Supervisory Techniques

	Criteria				
Techniques	simplicity	investor protection	competitive neutrality	cost-effectiveness	flexibility
Authorisation - increase minimum capital - increase vetting of personnel					
Activity Restrictions - same set of rules for banks and building societies - one 'super-agency'					

Techniques	Criteria: simplicity	investor protection	competitive neutrality	cost-effectiveness	flexibility
Capital - same set of rules for banks and building societies - reduce number of asset categories - publication of minimum/ actual ratios					
Liquidity - minimum cash requirement - minimum liquidity ratio - lender of last resort					
Funding/ Treasury Risk Management - increase wholesale limit - remove wholesale limit - hedging rules same as banks'					
Reporting (to BSC and members) - increase data passed to BSC - increase spot checks by BSC - send (full) Annual Report to all members					
Management and Systems					

Criteria

Techniques	simplicity	investor protection	competitive neutrality	cost-effectiveness	flexi-bility
Deposit Insurance and Ombudsman - increase limit/ coverage - increase publicity (eg branches, statements)					

Other Techniques (Please insert)

- . . . . . .
. . . . . .

- . . . . . .
. . . . . .

3. Size of Building Society

Into which group do the assets of your building society lie?

less than £100m	less than £500m	less than £1,000m	less than £5,000m	£5,000m or more

NB

Section 2:

(a) The current system is in bold type and the alternatives are in normal type.

(b) Either rank each technique and its alternatives against the criteria (eg 1-3) or
award points for the extent to which each technique or alternative meets a particular criteria.

Appendix 5.2 Questionnaire 1: Draft 2

1. When considering the techniques of supervision, how important is each of the following? (Circle appropriate number.)

	very important	important	neutral	unimportant	very unimportant
	1	2	3	4	5
(a) simplicity					
(b) safety for investors					
(c) competitive neutrality					
(d) cost-effectiveness					
(e) flexibility					

2. Current Supervisory Techniques

How successful is each of the following techniques? (Circle appropriate number.)

	very successful	successful	neutral	unsuccessful	very unsuccessful
	1	2	3	4	5
Authorisation					
Activity					
Capital					
Liquidity					
Funding/ Treasury Risk Management					
Reporting					
Management and Systems					
Deposit Insurance/ Ombudsman					

3. Alternative Supervisory Techniques

Do the following alternatives/modifications represent an improvement? (Circle appropriate number.)

	major improvement	improvement	neutral	worsening	major worsening
	1	2	3	4	5
Authorisation					
- increase minimum capital					
- increase vetting of personnel					
Activity Restrictions					
- same set of rules for banks and building societies					
- one 'super-agency'					
Capital					
- same set of rules for banks and building societies					
- reduce number of asset categories					
- publication of minimum/ actual ratios					
Liquidity					
- minimum cash requirement					
- minimum liquidity ratio					
- lender of last resort					

	major improve-ment 1	improve-ment 2	neutral 3	worsen-ing 4	major worsen-ing 5
Funding/ Treasury Risk Management - increase wholesale limit - remove wholesale limit - hedging rules same as banks'					
Reporting (to BSC and members) - increase data passed to BSC - increase spot checks by BSC - send (full) Annual Report to all members					
Management and Systems					
Deposit Insurance and Ombudsman - increase limit/ coverage - increase publicity (eg branches, statements)					

Other Techniques (Please insert)

- . . . . . .
. . . . . .

- . . . . . .
. . . . . .

3. Size of Building Society

Into which group do the assets of your building society lie?

less than £100m	less than £500m	less than £1,000m	less than £5,000m	£5,000m or more

NB
Section 3:

The current system is in **bold** type and the alternatives are in normal type. Answers relate only to the alternatives.

Appendix 5.3 Questionnaire 1: Draft 3

1. When considering the techniques of supervision, how important is each of the following? (Circle the appropriate number - eg If you consider simplicity to be "important", please circle number 2.)

	very important 1	important 2	neutral 3	unimportant 4	very unimportant 5
(a) simplicity	1	2	3	4	5
(b) safety for investors	1	2	3	4	5
(c) stability of the industry	1	2	3	4	5
(d) competitive neutrality	1	2	3	4	5
(e) cost-effectiveness	1	2	3	4	5
(f) flexibility	1	2	3	4	5
(g) other(s) (please insert)					
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5

2. For each technique, rank the following criteria (1-6) in order of their success in satisfying that particular technique. Circle the appropriate number in each column, eg

Capital 123456 : 123456 : 123456 : 123456 : 123456 : 123456

(The current system is in bold type and the alternatives are in normal type.)

	Criteria					
	simplicity	investor protection	stability of the industry	competitive neutrality	cost-effectiveness	flexibility
TECHNIQUES						
Authorisation	123456	123456	123456	123456	123456	123456
-increase minimum capital	123456	123456	123456	123456	123456	123456
-increase vetting of staff	123456	123456	123456	123456	123456	123456
Activity Restrictions	123456	123456	123456	123456	123456	123456
-same set of rules for banks and building societies	123456	123456	123456	123456	123456	123456
-one 'super-agency'	123456	123456	123456	123456	123456	123456
Capital	123456	123456	123456	123456	123456	123456
-same set of rules for banks and building societies	123456	123456	123456	123456	123456	123456

Criteria

	simplicity	investor protec-tion	stability of the industry	competitive neutrality	cost-effective-ness	flexi-bility
-reduce number of asset cate-gories	123456	123456	123456	123456	123456	123456
-publi-cation of minimum/ actual ratios	123456	123456	123456	123456	123456	123456
Liquidity	123456	123456	123456	123456	123456	123456
-minimum cash require-ment	123456	123456	123456	123456	123456	123456
-minimum liquidity ratio	123456	123456	123456	123456	123456	123456
-lender of last resort	123456	123456	123456	123456	123456	123456
Funding/ Treasury Risk Manage-ment	123456	123456	123456	123456	123456	123456
-increase wholesale limit	123456	123456	123456	123456	123456	123456
-remove wholesale limit	123456	123456	123456	123456	123456	123456
-hedging rules same as banks'	123456	123456	123456	123456	123456	123456
Reporting	123456	123456	123456	123456	123456	123456
(to BSC and members)	123456	123456	123456	123456	123456	123456
-increase data passed to BSC	123456	123456	123456	123456	123456	123456

Criteria

	simplicity	investor protec-tion	stability of the industry	competitive neutrality	cost-effective-ness	flexi-bility
-increase spot checks by BSC	123456	123456	123456	123456	123456	123456
-send (full) Annual Report to all members	123456	123456	123456	123456	123456	123456
Management and Systems	123456	123456	123456	123456	123456	123456
-increase require-ments	123456	123456	123456	123456	123456	123456
-decrease require-ments	123456	123456	123456	123456	123456	123456
Deposit Insurance and Ombuds-man	123456	123456	123456	123456	123456	12345c
-increase limit/ coverage	123456	123456	123456	123456	123456	123456
-increase publicity (eg branches, state-ments)	123456	123456	123456	123456	123456	123456
Other Techniques (Please insert)						
-.....						
.....123456		123456	123456	123456	123456	123456
-.....						
.....123456		123456	123456	123456	123456	123456
-.....						
.....123456		123456	123456	123456	123456	123456
-.....						
.....123456		123456	123456	123456	123456	123456

3. Have you any other comments on the supervision of building societies? (Continue on separate sheets if necessary.)

Appendix 5.4 Questionnaire 1: Draft 4

1. When considering the techniques of supervision, how important is each of the following? (Circle the appropriate number - eg If you consider simplicity to be "important", please circle number 2.)

	very important 1	important 2	neutral 3	unimportant 4	very unimportant 5
(a) simplicity	1	2	3	4	5
(b) safety for investors	1	2	3	4	5
(c) stability of the industry	1	2	3	4	5
(d) competitive neutrality	1	2	3	4	5
(e) cost-effectiveness	1	2	3	4	5
(f) flexibility	1	2	3	4	5
(g) other(s) (please insert)					
....	1	2	3	4	5
....	1	2	3	4	5
....	1	2	3	4	5
....	1	2	3	4	5

2. For each technique, tick the three (3) criteria which satisfy that particular technique best, eg

Capital	✓	✓		✓		

(The current system is in bold type and the alternatives are in normal type.)

	Criteria					
	simplicity	investor protec-tion	stability of the industry	competitive neutrality	cost-effective-ness	flexi-bility
TECHNIQUES						
Author-isation -increase minimum capital -increase vetting of staff						
Activity Restric-tions -same set of rules for banks and building socie-ties -one 'super-agency'						
Capital -same set of rules for banks and building socie-ties						

Criteria

	simplicity	investor protec- tion	stability of the industry	competitive neutrality	cost- effective- ness	flexi- bility
-reduce number of asset cate- gories -publi- cation of minimum/ actual ratios						
Liquidity -minimum cash require- ment -minimum liquidity ratio -lender of last resort						
Funding/ Treasury Risk Manage- ment -increase wholesale limit -remove wholesale limit -hedging rules same as banks'						
Reporting (to BSC and members) -increase data passed to BSC						

Criteria

	simplicity	investor protec-tion	stability of the industry	competitive neutrality	cost-effective-ness	flexi-bility
-increase spot checks by BSC -send (full) Annual Report to all members						
Management and Systems -increase require-ments -decrease require-ments						
Deposit Insurance and Ombuds-man -increase limit/ coverage -increase publicity (eg branches, state-ments)						
Other Techniques (Please insert) -..... ..... -..... ..... -..... ..... -.....						

3. Have you any other comments on the supervision of building societies? (Continue on separate sheets if necessary.)

Appendix 5.5 Questionnaire 1: Draft 5

1. When considering the techniques of supervision, how important is each of the following? (Circle the appropriate number - eg If you consider simplicity to be "important", please circle number 2.)

	very important 1	important 2	neutral 3	unimportant 4	very unimportant 5
(a) simplicity	1	2	3	4	5
(b) safety for investors	1	2	3	4	5
(c) stability of the industry	1	2	3	4	5
(d) competitive neutrality	1	2	3	4	5
(e) cost-effectiveness	1	2	3	4	5
(f) flexibility	1	2	3	4	5
(g) other(s) (please insert)					
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5

2. For each technique, tick the two (2) criteria which satisfy that particular technique best, eg

Capital		✓		✓	

(The current system is in bold type and the alternatives are in normal type.)

Criteria

	simplicity	investor protection	stability of the industry	competitive neutrality	cost-effectiveness	flexibility
TECHNIQUES						
Authorisation -increase minimum capital -increase vetting of staff						
Activity Restrictions -same set of rules for banks and building societies -one 'super-agency'						
Capital -same set of rules for banks and building societies						

Criteria

	simplicity	investor protec-tion	stability of the industry	competitive neutrality	cost-effective-ness	flexi-bility
-reduce number of asset cate-gories -publi-cation of minimum/ actual ratios						
Liquidity -minimum cash require-ment -minimum liquidity ratio -lender of last resort						
Funding/ Treasury Risk Manage-ment -increase wholesale limit -remove wholesale limit -hedging rules same as banks'						
Reporting (to BSC and members) -increase data passed to BSC						

Criteria

	simplicity	investor protec-tion	stability of the industry	competitive neutrality	cost-effective-ness	flexi-bility
-increase spot checks by BSC -send (full) Annual Report to all members						
Management and Systems -increase require-ments -decrease require-ments						
Deposit Insurance and Ombuds-man -increase limit/ coverage -increase publicity (eg branches, state-ments)						
Other Techniques (Please insert) -..... ..... -..... ..... -..... ..... -.....						

3. Have you any other comments on the supervision of building societies? (Continue on separate sheets if necessary.)

Appendix 5.6 Questionnaire 1: Draft 6

1. When considering the techniques of supervision, how important is each of the following? (Circle the appropriate number.)

	very important 1	important 2	neutral 3	unimportant 4	very unimportant 5
(a) simplicity	1	2	3	4	5
(b) safety for investors	1	2	3	4	5
(c) stability of the industry	1	2	3	4	5
(d) competitive neutrality	1	2	3	4	5
(e) cost-effectiveness	1	2	3	4	5
(f) flexibility	1	2	3	4	5
(g) other(s) (please insert)					
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5

2. How successful is each of the following techniques? (Circle the appropriate number.)

	very successful 1	successful 2	neutral 3	unsuccessful 4	very unsuccessful 5
Authorisation	1	2	3	4	5
Activity Restrictions	1	2	3	4	5
Capital	1	2	3	4	5
Liquidity	1	2	3	4	5

	very successful 1	successful 2	neutral 3	unsuccessful 4	very unsuccessful 5
Funding/ Treasury Risk Management	1	2	3	4	5
Reporting	1	2	3	4	5
Management and Systems	1	2	3	4	5
Deposit Insurance/ Ombudsman	1	2	3	4	5

3. Do the following alternatives/modifications represent an improvement? (Circle the appropriate number.)

(The current system is in bold type and the alternatives are in normal type.)

	major improve-ment 1	improve-ment 2	neutral 3	worsen-ing 4	major worsen-ing 5
Authorisation					
- increase minimum capital	1	2	3	4	5
- increase vetting of personnel	1	2	3	4	5
Activity Restrictions	1	2	3	4	5
- same set of rules for banks and building societies	1	2	3	4	5
- one 'super-agency'	1	2	3	4	5
Capital					
- same set of rules for banks and building societies	1	2	3	4	5

	major improve-ment	improve-ment	neutral	worsen-ing	major worsen-ing
	1	2	3	4	5
- reduce number of asset categories	1	2	3	4	5
- publication of minimum/ actual ratios	1	2	3	4	5
Liquidity					
- minimum cash requirement	1	2	3	4	5
- minimum liquidity ratio	1	2	3	4	5
- lender of last resort	1	2	3	4	5
Funding/ Treasury Risk Management					
- increase wholesale limit	1	2	3	4	5
- remove wholesale limit	1	2	3	4	5
- hedging rules same as banks'	1	2	3	4	5
Reporting (to BSC and members)	1	2	3	4	5
- increase data passed to BSC	1	2	3	4	5
- increase spot checks by BSC	1	2	3	4	5
- send (full) Annual Report to all members	1	2	3	4	5
Management and Systems					
- increase requirements	1	2	3	4	5
- increase requirements	1	2	3	4	5

	major improve-ment 1	improve-ment 2	neutral 3	worsen-ing 4	major worsen-ing 5
Deposit Insurance and Ombudsman					
- increase limit/ coverage	1	2	3	4	5
- increase publicity (eg branches, statements)	1	2	3	4	5
Other Techniques (Please insert)					
-	1	2	3	4	5
-	1	2	3	4	5
-	1	2	3	4	5
-	1	2	3	4	5

4. Have you any other comments on the supervision of building societies? (Continue on separate sheets if necessary.)

Appendix 5.7 Questionnaire 1: Draft 7

1. When considering the techniques of supervision, how important is each of the following? (Circle the appropriate number.)

	very important	important	neutral	unimportant	irrelevant
	1	2	3	4	5
(a) safety for investors	1	2	3	4	5
(b) stability of the industry	1	2	3	4	5
(c) competitive neutrality	1	2	3	4	5
(d) cost-effectiveness	1	2	3	4	5
(e) flexibility	1	2	3	4	5
(f) other(s) (please insert)					
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5

2. How successful is each of the following current techniques? (Circle the appropriate number.)

	very successful	successful	neutral	unsuccessful	very unsuccessful
	1	2	3	4	5
Authorisation	1	2	3	4	5
Activity Restrictions	1	2	3	4	5
Capital	1	2	3	4	5
Liquidity	1	2	3	4	5
Funding/ Treasury Risk Management	1	2	3	4	5
Reporting	1	2	3	4	5

	very successful 1	successful 2	neutral 3	unsuccessful 4	very unsuccessful 5
Management and Systems	1	2	3	4	5
Investor Protection/ Ombudsman	1	2	3	4	5

3. Do the following alternatives/modifications represent an improvement? (Circle the appropriate number.)

(The current system is in bold type and the alternatives are in normal type.)

	major improve-ment 1	improve-ment 2	neutral 3	worsen-ing 4	major worsen-ing 5
Authorisation					
- increase minimum capital	1	2	3	4	5
- increase vetting of personnel	1	2	3	4	5
Activity Restrictions	1	2	3	4	5
- same set of rules for banks and building societies	1	2	3	4	5
- one 'super-agency'	1	2	3	4	5
Capital					
- same set of rules for banks and building societies	1	2	3	4	5
- reduce number of asset categories	1	2	3	4	5
- publication of minimum/actual ratios	1	2	3	4	5
Liquidity					
- minimum cash requirement	1	2	3	4	5
- minimum liquidity ratio	1	2	3	4	5
- access to lender of last resort	1	2	3	4	5

	major improve-ment 1	improve-ment 2	neutral 3	worsen-ing 4	major worsen-ing 5
Funding/ Treasury Risk Management					
- increase wholesale limit	1	2	3	4	5
- hedging rules same as banks'	1	2	3	4	5
Reporting (to BSC and members)					
- increase data passed to BSC	1	2	3	4	5
- increase spot checks by BSC	1	2	3	4	5
- send (full) Annual Report to all members	1	2	3	4	5
Management and Systems					
- increase requirements	1	2	3	4	5
- increase flexibility	1	2	3	4	5
Investor Protection/ Ombudsman					
- increase limit/ coverage	1	2	3	4	5
- increase publicity (eg branches, statements)	1	2	3	4	5
Other Techniques (Please insert)					
-					
. . . . .	1	2	3	4	5
-					
. . . . .	1	2	3	4	5
-					
. . . . .	1	2	3	4	5
-					
. . . . .	1	2	3	4	5

4. Rank each current technique, according to how far it meets the following criteria (1-5). Circle the appropriate number in each column, eg

Capital	1(2)345	(1)2345	12(3)45	123(4)5	1234(5)
	Criteria				
Techniques	investor protec-tion	stability of the industry	competitive neutrality	cost-effective-ness	flexi-bility
Authorisation	12345	12345	12345	12345	12345
Activity Restrictions	12345	12345	12345	12345	12345
Capital	12345	12345	12345	12345	12345
Liquidity	12345	12345	12345	12345	12345
Funding/ Treasury Risk Management	12345	12345	12345	12345	12345
Reporting	12345	12345	12345	12345	12345
Management and Systems	12345	12345	12345	12345	12345
Investor Protection/ Ombudsman	12345	12345	12345	12345	12345
Other Techniques (Please insert)					
-.....	12345	12345	12345	12345	12345
-.....	12345	12345	12345	12345	12345
-.....	12345	12345	12345	12345	12345
-.....	12345	12345	12345	12345	12345

5. Rank each alternative/modification, according to how far it meets the following criteria (1-5). Circle the appropriate number in each column, eg

Capital -same set of rules for banks and building societies	12345	12345	12345	12345	12345

(The current system is in bold type and the alternatives are in normal type.)

	Criteria				
Techniques	investor protec-tion	stability of the industry	competitive neutrality	cost-effective-ness	flexi-bility
Authorisation					
-increase minimum capital	12345	12345	12345	12345	12345
-increase vetting of personnel	12345	12345	12345	12345	12345
Activity Restrictions					
-same set of rules for banks and building societies	12345	12345	12345	12345	12345
-one 'super-agency'	12345	12345	12345	12345	12345
Capital					
-same set of rules for banks and building societies	12345	12345	12345	12345	12345
-reduce number of asset categories	12345	12345	12345	12345	12345
-publication of minimum/actual ratios	12345	12345	12345	12345	12345
Liquidity					
-minimum cash requirement	12345	12345	12345	12345	12345
-minimum liquidity ratio	12345	12345	12345	12345	12345
-access to lender of last resort	12345	12345	12345	12345	12345

Techniques	Criteria: investor protection	stability of the industry	competitive neutrality	cost-effectiveness	flexibility
Funding/ Treasury Risk Management					
-increase wholesale limit	12345	12345	12345	12345	12345
-hedging rules same as banks'	12345	12345	12345	12345	12345
Reporting (to BSC and members)					
-increase data passed to BSC	12345	12345	12345	12345	12345
-increase spot checks by BSC	12345	12345	12345	12345	12345
-send (full) Annual Report to all members	12345	12345	12345	12345	12345
Management and Systems					
-increase requirements	12345	12345	12345	12345	12345
-increase flexibility	12345	12345	12345	12345	12345
Investor Protection/ Ombudsman					
-increase limit/coverage	12345	12345	12345	12345	12345
-increase publicity (eg branches, statements)	12345	12345	12345	12345	12345
Other Techniques (Please insert)					
-.....	12345	12345	12345	12345	12345
-.....	12345	12345	12345	12345	12345
-.....	12345	12345	12345	12345	12345
-.....	12345	12345	12345	12345	12345

6. Have you any other comments on the supervision of building societies? (Continue on separate sheets if necessary.)

Appendix 5.8 Questionnaire 1: Draft 8

1. When considering the techniques of supervision, how important is each of the following? (Circle the appropriate number.)

	very important	important	neutral	unimportant	irrelevant
	1	2	3	4	5
(a) safety for investors	1	2	3	4	5
(b) stability of the industry	1	2	3	4	5
(c) level playing field between lenders	1	2	3	4	5
(d) cost-effectiveness	1	2	3	4	5
(e) flexibility	1	2	3	4	5
(f) other(s) (please insert)					
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5

2. How effective is each of the following techniques of supervision? (Circle the appropriate number.)

(The current system is in bold type and the alternatives are ir normal type.)

	very effective	effective	neutral	not effective	negative effects
Formation/ Establishment	1	2	3	4	5
- increase minimum capital	1	2	3	4	5
- increase vetting of personnel	1	2	3	4	5
Activity Restrictions	1	2	3	4	5
- same set of rules for banks and building societies	1	2	3	4	5

	very effective	effective	neutral	not effective	negative effects
- one supervisory body for banks and building societies	1	2	3	4	5
Capital Adequacy	1	2	3	4	5
- same set of rules for banks and building societies	1	2	3	4	5
- reduce number of asset categories	1	2	3	4	5
- publication of minimum/actual ratios	1	2	3	4	5
Liquidity	1	2	3	4	5
- minimum cash requirement	1	2	3	4	5
- minimum liquidity ratio	1	2	3	4	5
- access to lender of last resort	1	2	3	4	5
Funding/Treasury Risk Management	1	2	3	4	5
- increase wholesale limit	1	2	3	4	5
- hedging rules same as banks'	1	2	3	4	5
Reporting (to BSC and members)	1	2	3	4	5
- increase data passed to BSC	1	2	3	4	5
- increase spot checks by BSC	1	2	3	4	5
- send (full) Annual Report to members	1	2	3	4	5
Management and Systems of Control	1	2	3	4	5
- increase requirements	1	2	3	4	5
- increase flexibility	1	2	3	4	5
Investor Protection/ Ombudsman	1	2	3	4	5
- increase limit/ coverage	1	2	3	4	5
- increase publicity (eg branches, statements)	1	2	3	4	5

	very effective	effective	neutral	not effective	negative effects
Other Techniques (Please insert)					
-					
. . . . .	1	2	3	4	5
-					
. . . . .	1	2	3	4	5
-					
. . . . .	1	2	3	4	5
-					
. . . . .	1	2	3	4	5

3. Rank each technique, according to how far it meets the following criteria (1-5). Circle the appropriate number in each column, eg

Capital Adequacy	12345	12345	12345	12345	12345

(1 = best 5 = worst)

(The current system is in bold type and the alternatives are in normal type.)

	Criteria				
Techniques	investor protec-tion	stability of the industry	level playing field	cost-effective-ness	flexi-bility
Formation/ Establishment	12345	12345	12345	12345	12345
-increase minimum capital	12345	12345	12345	12345	12345
-increase vetting of personnel	12345	12345	12345	12345	12345
Activity Restrictions	12345	12345	12345	12345	12345
-same set of rules for banks and building societies	12345	12345	12345	12345	12345
-one super-visory body for banks and building societies	12345	12345	12345	12345	12345

Techniques	Criteria				
	investor protec-tion	stability of the industry	level playing field	cost-effective-ness	flexi-bility
Capital Adequacy	12345	12345	12345	12345	12345
-same set of rules for banks and building societies	12345	12345	12345	12345	12345
-reduce number of asset categories	12345	12345	12345	12345	12345
-publication of minimum/actual ratios	12345	12345	12345	12345	12345
Liquidity	12345	12345	12345	12345	12345
-minimum cash requirement	12345	12345	12345	12345	12345
-minimum liquidity ratio	12345	12345	12345	12345	12345
-access to lender of last resort	12345	12345	12345	12345	12345
Funding/ Treasury Risk Management	12345	12345	12345	12345	12345
-increase wholesale limit	12345	12345	12345	12345	12345
-hedging rules same as banks'	12345	12345	12345	12345	12345
Reporting (to BSC and members)	12345	12345	12345	12345	12345
-increase data passed to BSC	12345	12345	12345	12345	12345
-increase spot checks by BSC	12345	12345	12345	12345	12345
-send (full) Annual Report to all members	12345	12345	12345	12345	12345
Management and Systems of Control	12345	12345	12345	12345	12345
-increase requirements	12345	12345	12345	12345	12345
-increase flexibility	12345	12345	12345	12345	12345

Techniques	Criteria: investor protection	stability of the industry	level playing field	cost-effectiveness	flexibility
Investor Protection/ Ombudsman					
-increase limit/coverage	12345	12345	12345	12345	12345
-increase publicity (eg branches, statements)	12345	12345	12345	12345	12345
Other Techniques (Please insert)					
-.....	12345	12345	12345	12345	12345
-.....	12345	12345	12345	12345	12345
-.....	12345	12345	12345	12345	12345
-.....	12345	12345	12345	12345	12345

4. Have you any other comments on the supervision of building societies? (Continue on separate sheets if necessary.)

Appendix 5.9 Questionnaire 1: Draft 9

1. When considering the techniques of supervision, how important is each of the following? (Circle the appropriate number.)

	very important	important	neutral	unimportant	irrelevant
	1	2	3	4	5
(a) safety for investors	1	2	3	4	5
(b) stability of the industry	1	2	3	4	5
(c) level playing field between lenders	1	2	3	4	5
(d) cost-effectiveness	1	2	3	4	5
(e) flexibility	1	2	3	4	5
(f) other(s) (please insert)					
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5

2. How effective is each of the following techniques of supervision? (Circle the appropriate number.)

(The current system is in bold type and the alternatives are in normal type.)

	very effective	effective	neutral	not effective	negative effects
Activity Restrictions	1	2	3	4	5
- same set of rules for banks and building societies	1	2	3	4	5

	very effective	effective	neutral	not effective	negative effects
- one supervisory body for banks and building societies	1	2	3	4	5
Capital Adequacy	1	2	3	4	5
- same set of rules for banks and building societies	1	2	3	4	5
- reduce/remove number of asset categories	1	2	3	4	5
- publication of minimum/actual ratios	1	2	3	4	5
Liquidity	1	2	3	4	5
- minimum cash ratio	1	2	3	4	5
- minimum liquidity ratio	1	2	3	4	5
- access to lender of last resort	1	2	3	4	5
Funding/Treasury Risk Management	1	2	3	4	5
- increase wholesale limit (ie >40%)	1	2	3	4	5
- hedging rules same as banks'	1	2	3	4	5
Reporting (to BSC and members)	1	2	3	4	5
- increase data passed to BSC	1	2	3	4	5
- increase spot checks by BSC	1	2	3	4	5
- expand Summary Financial Statement	1	2	3	4	5
Management and Systems of Control	1	2	3	4	5
- increase requirements	1	2	3	4	5
- increase flexibility	1	2	3	4	5
Investor Protection/ Ombudsman	1	2	3	4	5
- same set of rules under Building Societies/Financial Services Act	1	2	3	4	5
- increase publicity/ coverage	1	2	3	4	5

	very effective	effective	neutral	not effective	negative effects
Other Techniques (Please insert)					
-					
. . . . .	1	2	3	4	5
-					
. . . . .	1	2	3	4	5
-					
. . . . .	1	2	3	4	5
-					
. . . . .	1	2	3	4	5

3. Rank each technique, according to how far it meets the following criteria (1-5). Circle the appropriate number in each column, eg

	Criteria				
Techniques	investor protec-tion	stability of the industry	level playing field	cost-effective-ness	flexi-bility
Capital Adequacy	12345	12345	12345	12345	12345

(1 = best 5 = worst)

(The current system is in bold type and the alternatives are in normal type.)

If you feel question 3 is too long, please go to question 4.

	Criteria				
Techniques	investor protec-tion	stability of the industry	level playing field	cost-effective-ness	flexi-bility
Activity Restrictions	12345	12345	12345	12345	12345
-same set of rules for banks and building societies	12345	12345	12345	12345	12345
-one super-visory body for banks and building societies	12345	12345	12345	12345	12345

Techniques	Criteria: investor protection	stability of the industry	level playing field	cost-effectiveness	flexibility
Capital Adequacy	12345	12345	12345	12345	12345
-same set of rules for banks and building societies	12345	12345	12345	12345	12345
-reduce/remove number of asset categories	12345	12345	12345	12345	12345
-publication of minimum/actual ratios	12345	12345	12345	12345	12345
Liquidity	12345	12345	12345	12345	12345
-minimum cash ratio	12345	12345	12345	12345	12345
-minimum liquidity ratio	12345	12345	12345	12345	12345
-access to lender of last resort	12345	12345	12345	12345	12345
Funding/ Treasury Risk Management	12345	12345	12345	12345	12345
-increase wholesale limit (ie >40%)	12345	12345	12345	12345	12345
-hedging rules same as banks'	12345	12345	12345	12345	12345
Reporting (to BSC and members)	12345	12345	12345	12345	12345
-increase data passed to BSC	12345	12345	12345	12345	12345
-increase spot checks by BSC	12345	12345	12345	12345	12345
-expand Summary Financial Statement	12345	12345	12345	12345	12345
Management and Systems of Control	12345	12345	12345	12345	12345
-increase requirements	12345	12345	12345	12345	12345
-increase flexibility	12345	12345	12345	12345	12345

Techniques	Criteria: investor protec-tion	stability of the industry	level playing field	cost-effective-ness	flexi-bility
Investor Protection/ Ombudsman -same set of rules under Building Societies/ Financial Services Acts	12345	12345	12345	12345	12345
-increase publicity (eg branches, statements)	12345	12345	12345	12345	12345
Other Techniques (Please insert)					
-.....					
.....	12345	12345	12345	12345	12345
-.....					
.....	12345	12345	12345	12345	12345
-.....					
.....	12345	12345	12345	12345	12345
-.....					
.....	12345	12345	12345	12345	12345

4. Have you any other comments on the supervision of building societies? - eg mutuality, Annual Review Meetings, non-executive directors, best/least liked aspects of supervision (Continue on separate sheets if necessary.)

Appendix 5.10 Questionnaire 1: Final Version

1. When considering the techniques of supervision, how important is each of the following? (Circle the appropriate number.)

	very important	important	neutral	unimportant	irrelevant
(a) safety for investors	1	2	3	4	5
(b) stability of the industry	1	2	3	4	5
(c) level playing field between lenders	1	2	3	4	5
(d) cost-effectiveness	1	2	3	4	5
(e) flexibility	1	2	3	4	5
(f) other(s) (please insert)					
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5

2. How effective is each of the following techniques of supervision? (Circle the appropriate number.)

(The **current** system is in **bold** type and the alternatives are in normal type.)

	very effective	effective	neutral	not effective	negative effects
Activity Restrictions	1	2	3	4	5
- same set of rules for banks and building societies	1	2	3	4	5
- one supervisory body for banks and building societies	1	2	3	4	5

	very effective	effective	neutral	not effective	negative effects
Capital Adequacy	1	2	3	4	5
- same set of rules for banks and building societies	1	2	3	4	5
- reduce/remove number of asset categories	1	2	3	4	5
- publication of minimum/actual ratios	1	2	3	4	5
Liquidity	1	2	3	4	5
- minimum cash ratio	1	2	3	4	5
- minimum liquidity ratio	1	2	3	4	5
- access to lender of last resort	1	2	3	4	5
Funding/Treasury Risk Management	1	2	3	4	5
- increase wholesale limit (ie >40%)	1	2	3	4	5
- hedging rules same as banks'	1	2	3	4	5
Reporting (to BSC and members)	1	2	3	4	5
- increase data passed to BSC	1	2	3	4	5
- increase spot checks by BSC	1	2	3	4	5
- expand Summary Financial Statement	1	2	3	4	5
Management and Systems of Control	1	2	3	4	5
- increase requirements	1	2	3	4	5
- increase flexibility	1	2	3	4	5

Deposit Insurance/ Investor Protection/ Ombudsman	1	2	3	4	5
- same set of rules under Banking/ Building Societies/ Financial Services Acts	1	2	3	4	5
- increase publicity/ coverage	1	2	3	4	5
Other Techniques (Please insert)					
-	1	2	3	4	5
-	1	2	3	4	5
-	1	2	3	4	5

3. Rank each technique, according to how far it meets the following criteria (1-5: Circle the appropriate number in each column, eg

	Criteria				
Techniques	safety for investors	stability of the industry	level playing field	cost-effective-ness	flexibility
Capital Adequacy	12345	12345	12345	12345	12345

(1 = best 5 = worst)

(The **current** system is in **bold** type and the alternatives are in normal type.

	Criteria				
Techniques	safety for investors	stability of the industry	level playing field	cost-effective-ness	flexibility
Activity Restrictions	12345	12345	12345	12345	12345
- same set of rules for banks and building societies	12345	12345	12345	12345	12345
- one super-visory body for banks and building societies	12345	12345	12345	12345	12345

Techniques	Criteria: safety for investors	stability of the industry	level playing field	cost-effective-ness	flexibility
Capital Adequacy	12345	12345	12345	12345	12345
- same set of rules for banks and building societies	12345	12345	12345	12345	12345
- reduce/remove number of asset categories	12345	12345	12345	12345	12345
- publication of minimum/actual ratios	12345	12345	12345	12345	12345
Liquidity	12345	12345	12345	12345	12345
- minimum cash ratio	12345	12345	12345	12345	12345
- minimum liquidity ratio	12345	12345	12345	12345	12345
- access to lender of last resort	12345	12345	12345	12345	12345
Funding/ Treasury Risk Management	12345	12345	12345	12345	12345
- increase wholesale limit (ie >40%)	12345	12345	12345	12345	12345
- hedging rules same as banks'	12345	12345	12345	12345	12345
Reporting (to BSC and members)	12345	12345	12345	12345	12345
- increase data passed to BSC	12345	12345	12345	12345	12345
- increase spot checks by BSC	12345	12345	12345	12345	12345
- expand Summary Financial Statement	12345	12345	12345	12345	12345
Management and Systems of Control	12345	12345	12345	12345	12345
- increase requirements	12345	12345	12345	12345	12345
- increase flexibility	12345	12345	12345	12345	12345

Deposit Insurance/Investor Protection/ Ombudsman	12345	12345	12345	12345	12345
- same set of rules under Banking/Building Societies/ Financial Services Acts	12345	12345	12345	12345	12345
- increase publicity/ coverage	12345	12345	12345	12345	12345
Other Techniques (Please insert)					
-	12345	12345	12345	12345	12345
-	12345	12345	12345	12345	12345
-	12345	12345	12345	12345	12345

4. Have you any other comments on the supervision of building societies? - eg mutuality, Annual Review Meetings, non-executive directors, best/least liked aspects of supervision (Continue on separate sheets if necessary.)

(Leave blank if preferred)

Name ..... Position .....

Society ..... Date .....

Signature .....

Appendix 5.11 Questionnaire 1: Covering Letter

(On Birmingham Polytechnic headed notepaper)

Dear .....,

Prudential Supervision of Building Societies

I am conducting research for a part-time MPhil/Phd at Loughborough University with the objective of assessing the supervision of building societies.

I have already interviewed several societies and the BSA, who have been most helpful, including commenting on earlier drafts of the questionnaire.

Therefore, as part of further eliciting the views of the building society industry, I would be most grateful if you could complete the enclosed confidential questionnaire.

If you consider it appropriate, please feel free to pass this letter on to a colleague.

Yours sincerely,

Howard Jarman

(Senior Lecturer in Economics)

Appendix 5.12 Questionnaire 1: Reminder Letter

(On Birmingham Polytechnic headed notepaper)

Dear .....,

Prudential Supervision of Building Societies

As part of my research for a part-time MPhil/Phd at Loughborough University, I posted copies of a questionnaire to all building societies on 23 April.

There has been a very good response and, if your reply has crossed in the post with this letter or you have preferred to offer your views anonymously, then please accept my thanks and disregard the rest of the letter.

If you have not yet replied, I would be very interested in including your views in the study and would therefore be most grateful if you could complete the enclosed confidential questionnaire.

Yours sincerely,

Howard Jarman

(Senior Lecturer in Economics)

Appendix 5.13 Comments of Interviewees and Resultant Modifications to Questionnaire 1

Question	Comments of Interviewees	Resultant Modifications
1	One interviewee suggested omitting (c)	No change - because considered important
2	Formation - omit (almost unanimous)	Omit
	Capital - amend to read "Remove asset categories"	"Reduce/remove . . ."
	Liquidity - minimum cash ratio	Yes
	Funding- ". . . (ie >40%)"	Yes
	Reporting (3rd item) - "Expand Summary Financial Statement"	Yes

Question	Comments of Interviewees	Resultant Modifications
2 (contd)	Investor Protection (varied comments) - one suggestion: Deposit Insurance (increase limit/coverage) Ombudsman (ditto plus publicity) Investor Protection/ Financial Services Act (equity with building society deposit insurance)	- same set of rules under BS Act and Financial Services Act - increase publicity/ coverage
	A range of extra questions - mutuality - Annual Review Meetings - executive/non-executive directors - best/least liked aspects of supervision	Incorporated into Q4 as examples, then removed because of length and confusion
	Use of boxes to tick instead of "circling" numbers	Circling considered simpler/shorter

Question	Comments of Interviewees	Resultant Modifications
3	Comments re Q2 apply to apply to Q3 because column 1 is common to both questions	Repeat changes to Q2 in column 1 of Q3
	General comments from most parties: too long simplify "Give reasons for answers to Q2 in Q3"	Make Q3 optional, direct respondents to Q4 and amend to include "Give reasons" - later dropped because too complicated and difficult to compute Q3 = implicit reasons
	Insert criteria headings example used at beginning of Q3	Yes
4	See comments towards end of Q2	

Appendix 5.14 Questionnaire 2: Draft 1

(Leave space for status of interviewee, *eg* sex and age, and number of refusals.)

Introduction: Doing research on building societies (univ). Would you mind answering a few questions?

1(a) When saving or investing how important is safety of your money?

1	2	3	4	5
very important	important	neutral	unimportant	irrelevant

1(b) When saving or investing how important are the returns (or interest rates)?

1	2	3	4	5
very important	important	neutral	unimportant	irrelevant

1(c) If you compare building societies and banks, are building societies...

1	2	3	4	5
much safer	a little safer	same	slightly less safe	much less safe

1(d) If you compare building societies and banks, are the returns in building societies...

1	2	3	4	5
much higher	a little higher	same	a little less	a lot less

2(a) Do you know about the building society deposit insurance scheme?

yes no

2(b) The scheme offers compensation of 90% of the first £20,000.
Should the cover be

1	2	3	4	5
much higher	a little higher	unchanged	a little less	a lot less

2(c) Did you know that banks have a deposit insurance scheme?

yes no

2(d) The banks' scheme is 75% of the first £20,000. Should the cover be

1	2	3	4	5
much higher	a little higher	unchanged	a little less	a lot less

2(e) Should deposit insurance be the same for banks and building societies?

yes no

3(a) Do you have any accounts with a building society?

yes no

If no, go to end = Thanks.

3(b) If yes, do have you ever read the Summary Financial statement?

yes no

3(c) Have you ever asked for or read the full Annual Report?

yes no

Thanks

27.10.93

Appendix 5.15 Questionnaire 2: Draft 2

(Leave space for status of interviewee, *eg* sex and age, and number of refusals.)

Introduction: Doing research on building societies (univ). Would you mind answering a few questions?

1(a) When saving or investing how important is safety of your money?

1	2	3	4	5
very important	important	neutral	unimportant	irrelevant

1(b) When saving or investing how important are the returns (or interest rates)?

1	2	3	4	5
very important	important	neutral	unimportant	irrelevant

1(c) If you compare building societies and banks, are building societies...

1	2	3	4	5
much safer	safer	same	less safe	much less safe

1(d) If you compare building societies and banks, are the returns and services in building societies...

1	2	3	4	5
much higher	a little higher	same	a little lower	a lot lower

2(a) Do you know about the building society protection insurance scheme?

yes no

2(b) The scheme offers compensation of 90% of the first £20,000.
Should the cover be

1	2	3	4	5
much higher	a little higher	unchanged	a little less	a lot less

2(c) Did you know that banks have a deposit protection scheme?

yes no

2(d) The banks' scheme is 75% of the first £20,000. Should the cover be

1	2	3	4	5
much higher	a little higher	unchanged	a little less	a lot less

2(e) Should deposit protection be the same for banks and building societies?

yes no

2(f) Are you prepared to pay for deposit protection?

yes no

3(a) Do you have any money with a building society?

yes no

If no, go to end = Thanks.

3(b) Do you read building society accounts before investing?

yes no

Thanks

05.11.93

Appendix 5.16 Questionnaire 2: Draft 3

(Leave space for status of interviewee, *eg* sex and age, and number of refusals.)

Introduction: Doing research on building societies (univ). Would you mind answering a few questions?

1(a) When saving or investing how important is safety of your money?

1	2	3	4	5
very important	important	neutral	unimportant	irrelevant

1(b) When saving or investing how important are the returns (or interest rates)?

1	2	3	4	5
very important	important	neutral	unimportant	irrelevant

1(c) If you compare building societies and banks, are building societies...

1	2	3	4	5
much safer	safer	same	less safe	much less safe

1(d) If you compare building societies and banks, are the returns and services in building societies...

1	2	3	4	5
much higher	higher	same	lower	much lower

2(a) Do you know about the building society protection insurance scheme?

yes no

2(b) The scheme offers compensation of 90% of the first £20,000.
Should the cover be

1	2	3	4	5
much higher	higher	unchanged	lower	much lower

2(c) Did you know that banks have a deposit protection scheme?

yes no

2(d) The banks' scheme is 75% of the first £20,000.
Should the cover be

1	2	3	4	5
much higher	higher	unchanged	lower	much lower

2(e) Should deposit protection be the same for banks and building societies?

yes no

2(f) Are you prepared to pay for deposit protection?
yes no

3(a) Do you have any money with a building society?
yes no

If no, go to end = Thanks.

3(b) Do you read building society accounts before investing?
yes no

Thanks

24.11.93

Appendix 5.17 Questionnaire 2: Draft 4

sex · age
m f

Introduction: Doing research on building societies (univ). Would you mind answering a few questions?

1(a) When saving or investing is safety of your money...
important unimportant don't know

1(b) When saving or investing how important are the returns (or interest rates)?
important unimportant don't know

1(c) If you compare building societies and banks, are building societies...
safer same less safe

1(d) If you compare building societies and banks, are the returns and services in building societies...
better same worse

2(a) Do you know about the building society deposit protection scheme?
yes no don't know

2(b) The scheme offers compensation of 90% of the first £20,000.
Should the cover be
higher unchanged lower

2(c) Did you know that banks have a deposit protection scheme?
yes no don't know

2(d) The banks' scheme is 75% of the first £20,000.
Should the cover be
higher unchanged lower

2(e) Should deposit protection be the same for banks and building societies?
yes no don't know

2(f) Are you prepared to pay for deposit protection?
yes no don't know

3 Do you read building society annual accounts before investing?
yes no don't know

Thanks 25.01.94

Appendix 5.18 Questionnaire 2: Draft 5

Please circle the appropriate responses, eg

important unimportant don't know

1. When saving or investing is safety of your money

important unimportant don't know

2. When saving or investing how important are the returns (or interest rates)

important unimportant don't know

3. If you compare building societies and banks, are building societies

safer same less safe

4. If you compare building societies and banks, are the returns and services in building societies

better same worse

5. Do you know about the building society deposit protection scheme?

yes no don't know

6. The scheme offers compensation of 90% of the first £20,000. Do you think the cover be

higher unchanged lower

7. Did you know that banks have a deposit protection scheme?

yes no don't know

8. The banks' scheme is 75% of the first £20,000. Do you think the cover be

higher unchanged lower

9. Should deposit protection be the same for banks and building societies?

yes no don't know

10. Are you prepared to pay for deposit protection?

yes no don't know

11. Do you read building society annual accounts before investing?

yes no don't know

08.02.94

Appendix 5.19 Questionnaire 2: Draft 6

Please circle the appropriate responses:

1. Do you have a building society account? If yes, then go to question 2. If no, then go to question 3.	yes	no
2. Do you read building society annual accounts before investing?	yes	no
3. Do you have a bank account?	yes	no
4. Have you heard about the scheme to compensate building society savers, if a society goes bust?	yes	no
5. Have you heard about the similar scheme to compensate bank savers, if a bank goes bust?	yes	no
6. Are you prepared to pay for such schemes?	yes	no
7. Please state your sex.	male	female
8. Please state your age.	under 20 20-39	40-59 60+

P.T.O.

Please circle the appropriate responses:

strongly agree	agree	neutral	disagree	strongly disagree
1	2	3	4	5

To what extent do you agree with the following statements?

9. When saving or investing, safety of my money is important.	1	2	3	4	5
10. Banks are safer than building societies.	1	2	3	4	5
11. When saving or investing, the returns (or interest rates) are important.	1	2	3	4	5
12. The returns and services of building societies are better than banks.	1	2	3	4	5
13. (If a building society goes bust, there is a scheme to offer compensation of 90% of the first £20,000 to savers.) This compensation should be lower.	1	2	3	4	5
14. (If a bank goes bust, there is a scheme to offer compensation of 75% of the first £20,000 to savers.) This compensation should be higher.	1	2	3	4	5
15. The compensation schemes should be the same for banks and building societies.	1	2	3	4	5
16. Banks can be trusted.	1	2	3	4	5
17. Building societies can be trusted.	1	2	3	4	5

18. Have you any other comments you would like to make about building societies or banks?

11.02.94

Appendix 5.20 Questionnaire 2: Final Version

(On University of Central England headed notepaper)

Dear colleague,

I am conducting research on building societies for a part-time PhD and the final phase involves obtaining the views of building society customers.

Therefore, I would be most grateful if you could complete this confidential questionnaire and return it in the envelope provided. Please do not write your name on the questionnaire.

Thank you for your assistance.

Yours sincerely,

Howard Jarman

(Senior Lecturer in Economics)

QUESTIONNAIRE

Please circle the appropriate responses:

1. Do you have a building society account? If yes, then go to question 2. If no, then go to question 3.	yes	no
2. Do you read building society annual accounts before investing?	yes	no
3. Do you have a bank account?	yes	no
4. Have you heard about the scheme to compensate building society savers, if a society goes bust?	yes	no
5. Have you heard about the similar scheme to compensate bank savers, if a bank goes bust?	yes	no
6. Are you prepared to pay for such schemes?	yes	no
7. Please state your sex.	male	female
8. Please state your age.	under 20 / 20-39	40-59 / 60+

P.T.O.

P.T.O.

Please circle the appropriate responses:

strongly agree	agree	neutral	disagree	strongly disagree
1	2	3	4	5

To what extent do you agree with the following statements?

9. When saving or investing, safety of my money is important.	1	2	3	4	5
10. Banks are safer than building societies.	1	2	3	4	5
11. When saving or investing, the returns (or interest rates) are important.	1	2	3	4	5
12. The returns and services of building societies are better than banks.	1	2	3	4	5
13. (If a building society goes bust, there is a scheme to offer compensation of 90% of the first £20,000 to savers.) This compensation should be lower.	1	2	3	4	5
14. (If a bank goes bust, there is a scheme to offer compensation of 75% of the first £20,000 to savers.) This compensation should be higher.	1	2	3	4	5
15. The compensation schemes should be the same for banks and building societies.	1	2	3	4	5
16. Banks can be trusted.	1	2	3	4	5
17. Building societies can be trusted.	1	2	3	4	5

18. Have you any other comments you would like to make about building societies or banks?

Please return in the envelope provided to Howard Jarman, Dept of Financial Services, University of Central England.

Appendix 6.1 Interviewees

1. Roger Hollick, Chief Executive, Derbyshire Building Society, Duffield, Derby - 23 October 1989
2. Gary Marsh, Group Planning and Research Department, Halifax Building Society, Halifax - 31 October 1989 (by telephone)
3. A J Payne, Chief Executive, Hinckley & Rugby Building Society, Hinckley, Leics - 4 December 1989
4. Mark Boléat, Director-General, Building Societies Association, London - 8 January 1990
5. Charles Dickie, Group Secretary, Birmingham Midshires Building Society, Wolverhampton - 22 January 1990
6. Dr Steven Martin, Corporate Planning Manager, Woolwich Equitable Building Society, Bexleyheath, Kent - 24 January 1990
7. J A Thompson, Assistant General Manager, Coventry Building Society, Coventry - 25 January 1990
8. Geoff Caves, Assistant General Manager, Loughborough Building Society, Loughborough - 29 January 1990
9. Gill Noble, Assistant Secretary, HM Treasury, London - 26 April 1990
10. Norman Digance, Secretary, Building Societies Commission, London - 11 May 1990

11. Mark Boléat, Director-General, Building Societies Association, London - 17 May 1991
12. Norman Digance, Secretary, Building Societies Commission, London - 14 June 1991

Appendix 6.2 Standard Questions/Topics: Building Societies Interviewees Nos 1-3 and 5-8 (See Appendix 6.1)

1. How do you assess the success/failure of supervision? - the criteria
2. Supervisory Techniques:

   authorisation

   capital - a constraint?

   liquidity - targets

   treasury risk management - incl.wholesale limit

   reporting - cost-effectiveness

   management & systems

   investor protection

   mergers and conversion (occasionally asked)
3. General/philosophical issues:

   mutuality

   Your views of supervision?

   Your views of the BSC?

   Any changes you want?

   Any forecasts?
4. Questionnaire 1 drafts (See Table 5.1)

Appendix 6.3 Standard Questions/Topics: BSA, BSC and HM Treasury

Questions/Topics	BSA and BSC	HMT
How do you assess the success/ failure of supervision? - the criteria	Yes	Yes
Supervisory Techniques:		
authorisation	Yes	Yes
capital - a constraint?	Yes	Yes*
liquidity - targets	Yes	
treasury risk management - incl wholesale limit	Yes	
reporting - cost-effectiveness	Yes	
management & systems	Yes	
investor protection	Yes	Yes
mergers and conversion	Yes	
General/philosophical issues:		
mutuality	Yes	Yes
long-run forecasts	Yes	Yes*
changes?	Yes	Yes

* Especially EC and harmonisation

NB Appendix 6.3 is similar to Appendix 6.2 except that it is more concerned with the philosophy and application of supervision and long-run forecasts.

Appendix 8.1 Questionnaire 1, Data *a*

1. When considering the techniques of supervision, how important is each of the following: (Circle the appropriate number.)

	very important	important	neutral	unimportant	irrelevant
(a) safety for investors	1	2	3	4	5
(b) stability of the industry	1	2	3	4	5
(c) level playing field between lenders	1	2	3	4	5
(d) cost-effectiveness	1	2	3	4	5
(e) flexibility	1	2	3	4	5
(f) other(s) (please insert)					
Simplicity	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5

2. How effective is each of the following techniques of supervision? (Circle the appropriate number.)

(The **current** system is in **bold** type and the alternatives are in normal type.)

	very effective	effective	neutral	not effective	negative effects
Activity Restrictions	1	2	3	4	5
- same set of rules for banks and building societies	1	2	3	4	5
- one supervisory body for banks and building societies	1	2	3	4	5

	very effective	effective	neutral	not effective	negative effects
Capital Adequacy	1	2	3	4	5
- same set of rules for banks and building societies	1	2	3	4	5
- reduce/remove number of asset categories	1	2	3	4	5
- publication of minimum/actual ratios	1	2	3	4	5
Liquidity	1	2	3	4	5
- minimum cash ratio	1	2	3	4	5
- minimum liquidity ratio	1	2	3	4	5
- access to lender of last resort	1	2	3	4	5
Funding/Treasury Risk Management	1	2	3	4	5
- increase wholesale limit (ie >40%)	1	2	3	4	5
- hedging rules same as banks'	1	2	3	4	5
Reporting (to BSC and members)	1	2	3	4	5
- increase data passed to BSC	1	2	3	4	5
- increase spot checks by BSC	1	2	3	4	5
- expand Summary Financial Statement	1	2	3	4	5
Management and Systems of Control	1	2	3	4	5
- increase requirements	1	2	3	4	5
- increase flexibility	1	2	3	4	5

Deposit Insurance/ Investor Protection/ Ombudsman	1	2	3	4	5
- same set of rules under Banking/ Building Societies/ Financial Services Acts	1	2	3	4	5
- increase publicity/ coverage	1	2	3	4	5
Other Techniques (Please insert)					
-	1	2	3	4	5
-	1	2	3	4	5
-	1	2	3	4	5

3. Rank each technique, according to how far it meets the following criteria (1-5). Circle the appropriate number in each column, eg

Criteria

Techniques	safety for investors	stability of the industry	level playing field	cost-effective-ness	flexibility
Capital Adequacy	12345	12345	12345	12345	12345

(1 = best 5 = worst)

(The **current** system is in **bold** type and the alternatives are in normal type.)

Criteria

Techniques	safety for investors	stability of the industry	level playing field	cost-effective-ness	flexibility
Activity Restrictions	12345	12345	12345	12345	12345
- same set of rules for banks and building societies	12345	12345	12345	12345	12345
- one super-visory body for banks and building societies	12345	12345	12345	12345	12345

Techniques	Criteria: safety for investors	stability of the industry	level playing field	cost-effectiveness	flexibility
Capital Adequacy	12345	12345	12345	12345	12345
- same set of rules for banks and building societies	12345	12345	12345	12345	12345
- reduce/remove number of asset categories	12345	12345	12345	12345	12345
- publication of minimum/actual ratios	12345	12345	12345	12345	12345
Liquidity	12345	12345	12345	12345	12345
- minimum cash ratio	12345	12345	12345	12345	12345
- minimum liquidity ratio	12345	12345	12345	12345	12345
- access to lender of last resort	12345	12345	12345	12345	12345
Funding/ Treasury Risk Management	12345	12345	12345	12345	12345
- increase wholesale limit (ie >40%)	12345	12345	12345	12345	12345
- hedging rules same as banks'	12345	12345	12345	12345	12345
Reporting (to BSC and members)	12345	12345	12345	12345	12345
- increase data passed to BSC	12345	12345	12345	12345	12345
- increase spot checks by BSC	12345	12345	12345	12345	12345
- expand Summary Financial Statement	12345	12345	12345	12345	12345
Management and Systems of Control	12345	12345	12345	12345	12345
- increase requirements	12345	12345	12345	12345	12345
- increase flexibility	12345	12345	12345	12345	12345

Deposit Insurance/Investor Protection/ Ombudsman	12345	12345	12345	12345	12345
- same set of rules under Banking/Building Societies/ Financial Services Acts	12345	12345	12345	12345	12345
- increase publicity/ coverage	12345	12345	12345	12345	12345
Other Techniques (Please insert)					
-	12345	12345	12345	12345	12345
-	12345	12345	12345	12345	12345
-	12345	12345	12345	12345	12345

4. Have you any other comments on the supervision of building societies? - eg mutuality, Annual Review Meetings, non-executive directors, best/least liked aspects of supervision (Continue on separate sheets if necessary.)

(Leave blank if preferred)

Name ..... **Position** .....

Society ..... **Date** .....

Signature .....

Appendix 8.2 Question 4, Data *b* Summary

Number of Comments	Category/Group of Comments
3	non-executive directors
2	small societies' supervision
4	close liaison between supervisors and the supervised
3	mutuality
2	practicality
2	excessive time spent on providing information for the BSC
2	supervision gone too far/not fair
2	supervision "valuable"/ "must be relatively strict"
4	level playing field: yes/no
2	BSC - secondment of staff
1	should be adequate consultation before publication of PNs
1	external auditors
3	interested in results of the research

Appendix 8.3 Question 4, Data *b* Details

Response Rate to Question 4

Response	Number	%
Positive Response	18	36.73
No Comments	31	63.27
Total	49	100.00

Data *b* Question 4: Details

Number of Comments	Category/Group of Comments	Details of Comments
3	non-executive directors	-must be prepared to devote time and contribute professionally -"face an enormous burden"/ "Many were not selected on the basis of experience of the scale and diversity of business operations being experienced." -"useful"
2	small societies' supervision	-"would appear to be at almost the right level" -small societies face different risks from large ones: concept seemingly not

Data *b* Q4

Number of Comments	Category/Group of Comments	Details of Comments
		understood by BSC -"small societies don't want complex systems" -need to compete internationally - therefore, "sensible to eliminate small societies through stringent requirements"
4	close liaison between supervisors and the supervised	-for "mutual confidence" -supervisors = "a sounding board" -Annual Review Meetings (ARMs) "useful"/constructive"/ "depend on personalities"
3	mutuality	-"traditional access to capital limits a mutual" -will continue -"now irrelevant"
2	practicality	-"the more practical experience supervisors have of industry, the better" -supervisors show a "lack of detailed understanding of a particular business style"

Data *b* Q4

Number of Comments	Category/Group of Comments	Details of Comments
2	excessive time spent on providing information for the BSC	-need for "more specialist knowledge for regulators" -same load for large/small societies, the latter having "less resources" -"duplication of returns": least liked aspect
2	supervision gone too far/not fair	-"now firmly into the area of regulation" -BSC powers "based on subjective assessments"
2	supervision "valuable"/ "must be relatively strict"	-valuable during developmental period -strict because of substantial changes in the financial world over previous two years
4	level playing field: yes/no	-"We don't have the same rules for banks and building societies and I don't think we should." -Even the BSC does not have a "level playing field" attitude between societies.

Data *b* Q4

Number of Comments	Category/Group of Comments	Details of Comments
		-In order to "protect fully the position of investors", mortgage providers "should operate under the same rules" -"need for supervision by what an institution actually does".
2	BSC - secondment of staff	-"worst aspect" because of lack of continuity, learning curve and confidentiality problem -need for more permanent staff
1	should be adequate consultation before publication of PNs	
1	external auditors	-"exorbitant costs for extremely limited benefit"
3	interested in results of the research	

Appendix 8.4 Question 4, Data *c* Summary

Number of Comments	Category/Group of Comments
3	non-executive directors
2	small societies' supervision
4	close liaison between supervisors and the supervised
3	mutuality
1	practicality
1	excessive time spent on providing information for the BSC
1	supervision gone too far/not fair
2	supervision "valuable"/ "must be relatively strict"
2	level playing field: yes/no
1	BSC - secondment of staff
1	should be adequate consultation before publication of PNs
1	external auditors
3	interested in results of the research

Appendix 8.5 Question 4, Data *c* Details

Response Rate to Question 4

Response	Number	%
Positive Response	12	37.50
No Comments	20	62.50
Total	32	100.00

Data *c* Question 4: Details

Number of Comments	Category/Group of Comments	Details of Comments
3	non-executive directors	-must be prepared to devote time and contribute professionally -"face an enormous burden"/ "Many were not selected on the basis of experience of the scale and diversity of business operations being experienced." -"useful"
2	small societies' supervision	-"would appear to be at almost the right level"

Data *c* Q4

Number of Comments	Category/Group of Comments	Details of Comments
		-small societies face different risks from large ones: concept seemingly not understood by BSC -"small societies don't want complex systems" -need to compete internationally - therefore, "sensible to eliminate small societies through stringent requirements"
4	close liaison between supervisors and the supervised	-for "mutual confidence" -supervisors = "a sounding board" -Annual Review Meetings (ARMs) "useful"/constructive"/ "depend on personalities"
3	mutuality	-"traditional access to capital limits a mutual" -will continue -"now irrelevant"
1	practicality	-supervisors show a "lack of detailed understanding of a particular business style"

Data *c*

Q4

Number of Comments	Category/Group of Comments	Details of Comments
1	excessive time spent on providing information for the BSC	-need for "more specialist knowledge for regulators" -"duplication of returns": least liked aspect
1	supervision gone too far/not fair	-BSC powers "based on subjective assessments"
2	supervision "valuable"/ "must be relatively strict"	-valuable during developmental period -strict because of substantial changes in the financial world over the last two years
2	level playing field: yes/no	-"We don't have the same rules for banks and building societies and I don't think we should." -In order to "protect fully the position of investors", mortgage providers "should operate under the same rules"

Data *c*

Q4

Number of Comments	Category/Group of Comments	Details of Comments
1	BSC - secondment of staff	-"worst aspect" because of lack of continuity, learning curve and confidentiality problem
1	should be adequate consultation before publication of PNs	
1	external auditors	-"exorbitant costs for extremely limited benefit"
3	interested in results of the research	

Appendix 8.6 Question 4, Data *d* Summary

Number of Comments	Category/Group of Comments
1	practicality
1	excessive time spent on providing information for the BSC
1	supervision gone too far/not fair
2	supervision "valuable"/ "must be relatively strict"
2	level playing field: yes/no
1	BSC - secondment of staff

Appendix 8.7 Question 4, Data *d* Details

Response Rate to Question 4

Response	Number	%
Positive Response	6	35.29
No Comments	9	64.71
Total	17	100.00

Data *d* Question 4: Details

Number of Comments	Category/Group of Comments	Details of Comments
1	practicality	-"the more practical experience supervisors have of industry, the better"
1	excessive time spent on providing information for the BSC	-same load for large/small societies, the latter having "less resources"
1	supervision gone too far/not fair	-"now firmly into the area of regulation"
1	supervision "valuable"/ "must be relatively strict"	-strict because of substantial changes in the financial world over previous two years
2	level playing field: yes/no	-Even the BSC does not have a "level playing field" attitude between societies.

Data *d* Q4

Number of Comments	Category/Group of Comments	Details of Comments
1	BSC - secondment of staff	-"need for supervision by what an institution actually does". -need for more permanent staff

Appendix 8.8 Question 1 Calculations, Data *b*

Criteria	Response	Classes of Importance (l) l_1	l_2	l_3	l_4	l_5	Total	Degree of Importance (m)	Criteria Rankings (via m)
	w_l:	5	4	3	2	1			
safety	n_l	47	2	0	0	0	49		
	n_l^2	2209	4	0	0	0	2213		
for	$n_l w_l$	235	8	0	0	0	243		
investors	n_l (%)	95.92	4.08	0	0	0	100		
j_1		$N\Sigma X^2 - (\Sigma X)^2 =$		8664				4.96	1
stability	n_l	23	16	10	0	0	49		
	n_l^2	529	256	100	0	0	885		
of the	$n_l w_l$	115	64	30	0	0	209		
industry	n_l (%)	46.94	32.65	20.41	0	0	100.00		
j_2		$N\Sigma X^2 - (\Sigma X)^2 =$		2024				4.27	2
level	n_l	14	18	10	2	4	48		
	n_l^2	196	324	100	4	16	640		
playing	$n_l w_l$	70	72	30	4	4	180		
field	n_l (%)	29.17	37.50	20.83	4.17	8.33	100		
j_3		$N\Sigma X^2 - (\Sigma X)^2 =$		896				3.75	5
cost-	n_l	14	20	9	4	1	48		
	n_l^2	196	400	81	16	1	694		
effect-	$n_l w_l$	70	80	27	8	1	186		
iveness	n_l (%)	29.17	41.67	18.75	8.33	2.08	100		
j_4		$N\Sigma X^2 - (\Sigma X)^2 =$		1166				3.88	4
flexi-	n_l	15	22	7	4	0	48		
	n_l^2	225	484	49	16	0	774		
bility	$n_l w_l$	75	88	21	8	0	192		
j_5	n_l (%)	31.25	45.83	14.58	8.33	0	100.00		
		$N\Sigma X^2 - (\Sigma X)^2 =$		1566				4	3
		N = 5							

Appendix 8.9 Question 1 Calculations, Data c

Criteria	Response	Classes of Importance (I) I_1	I_2	I_3	I_4	I_5	Total	Degree of Importance (m)	Criteria Rankings (via m)
	w_i:	5	4	3	2	1			
safety	n_i	32	0	0	0	0	32		
	n_i^2	1024	0	0	0	0	1024		
for	$n_i w_i$	160	0	0	0	0	160		
investors	n_i (%)	100	0	0	0	0	100		
j_1		$N\Sigma X^2 - (\Sigma X)^2 =$		4096				5	1
stability	n_i	15	11	6	0	0	32		
	n_i^2	225	121	36	0	0	382		
of the	$n_i w_i$	75	44	18	0	0	137		
industry	n_i (%)	46.88	34.38	18.75	0	0	100		
j_2		$N\Sigma X^2 - (\Sigma X)^2 =$		886				4.28	2
level	n_i	6	13	8	1	3	31		
	n_i^2	36	169	64	1	9	279		
playing	$n_i w_i$	30	52	24	2	3	111		
field	n_i (%)	19.35	41.94	25.81	3.23	9.68	100		
j_3		$N\Sigma X^2 - (\Sigma X)^2 =$		434				3.58	5
cost-	n_i	6	15	6	4	0	31		
	n_i^2	36	225	36	16	0	313		
effect-	$n_i w_i$	30	60	18	8	0	116		
iveness	n_i (%)	19.35	48.39	19.35	12.90	0	100		
j_4		$N\Sigma X^2 - (\Sigma X)^2 =$		604				3.74	4
flexi-	n_i	8	15	5	3	0	31		
	n_i^2	64	225	25	9	0	323		
bility	$n_i w_i$	40	60	15	6	0	121		
j_5	n_i (%)	25.81	48.39	16.13	9.68	0	100		
		$N\Sigma X^2 - (\Sigma X)^2 =$		654				3.90	3
		N = 5							

Appendix 8.10 Question 1 Calculations, Data d

Criteria	Response	Classes of Importance (I)					Total	Degree of Importance (m)	Criteria Rankings (via m)
		w_1: I_1 5	I_2 4	I_3 3	I_4 2	I_5 1			
safety	n_1	15	2	0	0	0	17		
	n_1^2	225	4	0	0	0	229		
for	n_1w_1	75	8	0	0	0	83		
investors	n_1 (%)	88.24	11.76	0	0	0	100		
j_1		$N\Sigma X^2 - (\Sigma X)^2 =$		856				4.88	1
stability	n_1	8	5	4	0	0	17		
	n_1^2	64	25	16	0	0	105		
of the	n_1w_1	40	20	12	0	0	72		
industry	n_1 (%)	47.06	29.41	23.53	0	0	100		
j_2		$N\Sigma X^2 - (\Sigma X)^2 =$		236				4.24	2
level	n_1	8	5	2	1	1	17		
	n_1^2	64	25	4	1	1	95		
playing	n_1w_1	40	20	6	2	1	69		
field	n_1 (%)	47.06	29.41	11.76	5.88	5.88	100		
j_3		$N\Sigma X^2 - (\Sigma X)^2 =$		186				4.06	5
cost-	n_1	8	5	3	0	1	17		
	n_1^2	64	25	9	0	1	99		
effect-	n_1w_1	40	20	9	0	1	70		
iveness	n_1 (%)	47.06	29.41	17.65	0	5.88	100		
j_4		$N\Sigma X^2 - (\Sigma X)^2 =$		206				4.12	4
flexi-	n_1	7	5	2	1	0	15		
	n_1^2	49	25	4	1	0	79		
bility	n_1w_1	35	20	6	2	0	63		
j_5	n_1 (%)	46.67	33.33	13.33	6.67	0	100		
		$N\Sigma X^2 - (\Sigma X)^2 =$		170				4.20	3
		N = 5							

Appendix 8.11 Correlation Matrix: Questionnaire 1, Q1 - *b*, *c*, *d*

Data	Data *b*	*c*	*d*
b	1	.998	.976
c	.998	1	.960
d	.976	.960	1

Appendix 8.12 Question 1: Others Continued - Data *b*

Others	Classes of Importance (l)				
	l_1	l_2	l_3	l_4	l_5
practicality j_6		1			
profitability j_6	1				
understanding the commercial realities of the business j_6	1				
supervising not managing j_6	1				
trends j_7		1			
ability to react j_7	1				
legal interpretation j_8		1			
technology j_9	1				
customer service j_{10}	1				
capital adequacy (?) j_{11}	1				
others j_{11}		1			

Appendix 8.13 Question 1: Others Continued - Data *c*

Others	Classes of Importance (l)				
	l_1	l_2	l_3	l_4	l_5
practicality j_6		1			
profitability j_6	0				
understanding the commercial realities of the business j_6	0				
supervising not managing j_6	1				
trends j_7		1			
ability to react j_7	0				
legal interpretation j_8		0			
technology j_9	0				
customer service j_{10}	0				
capital adequacy (?) j_{11}	1				
others j_{11}		1			

Appendix 8.14 Question 1: Others Continued - Data *d*

Others	Classes of Importance (I)				
	I_1	I_2	I_3	I_4	I_5
practicality j_6		0			
profitability j_6	1				
understanding the commercial realities of the business j_6	1				
supervising not managing j_6	0				
trends j_7		0			
ability to react j_7	1				
legal interpretation j_8		1			
technology j_9	1				
customer service j_{10}	1				
capital adequacy (?) j_{11}	0				
others j_{11}		0			

Appendix 8.15 Correlation Matrices: Questionnaire 1, Q3 (j_1) - *b*, *c*, *d*

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_1) (i_1, i_2, i_3)

Data	Data *b*	*c*	*d*
b	1	.99	.92
c	.99	1	.84
d	.92	.84	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_1) (i_4, i_5, i_6, i_7)

Data	Data *b*	*c*	*d*
b	1	.98	.91
c	.98	1	.81
d	.91	.81	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_1) (i_8, i_9, i_{10}, i_{11})

Data	Data *b*	*c*	*d*
b	1	.93	.85
c	.93	1	.58
d	.85	.58	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_1)
(i_{12}, i_{13}, i_{14})

Data	Data *b*	*c*	*d*
b	1	.99	.93
c	.99	1	.85
d	.93	.85	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_1)
(i_{15}, i_{16}, i_{17}, i_{18})

Data	Data *b*	*c*	*d*
b	1	.99	.97
c	.99	1	.94
d	.97	.94	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_1)
(i_{19}, i_{20}, i_{21})

Data	Data *b*	*c*	*d*
b	1	.96	.86
c	.96	1	.68
d	.86	.68	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_1)
(i_{22}, i_{23}, i_{24})

Data	Data *b*	*c*	*d*
b	1	1.00	.83
c	1.00	1	.79
d	.83	.79	1

Appendix 8.16 Correlation Matrices: Questionnaire 1, Q3 (j_2) - *b*, *c*, *d*

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_2) (i_1, i_2, i_3)

Data	Data *b*	*c*	*d*
b	1	-.01	.23
c	-.01	1	-.98
d	.23	-.98	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_2) (i_4, i_5, i_6, i_7)

Data	Data *b*	*c*	*d*
b	1	.81	.89
c	.81	1	.45
d	.89	.45	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_2) (i_8, i_9, i_{10}, i_{11})

Data	Data *b*	*c*	*d*
b	1	.92	.93
c	.92	1	.71
d	.93	.71	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_2)
(i_{12}, i_{13}, i_{14})

Data	Data *b*	*c*	*d*
b	1	1.00	.43
c	1.00	1	.36
d	.43	.36	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_2)
(i_{15}, i_{16}, i_{17}, i_{18})

Data	Data *b*	*c*	*d*
b	1	.99	.98
c	.99	1	.95
d	.98	.95	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_2)
(i_{19}, i_{20}, i_{21})

Data	Data *b*	*c*	*d*
b	1	-.85	1.00
c	-.85	1	-.81
d	1.00	-.81	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_2)
(i_{22}, i_{23}, i_{24})

Data	Data *b*	*c*	*d*
b	1	.79	1.00
c	.79	1	.73
d	1.00	.73	1

Appendix 8.17 Correlation Matrices: Questionnaire 1, Q3 (j_3) - *b*, *c*, *d*

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_3)
(i_1, i_2, i_3)

Data	Data *b*	*c*	*d*
b	1	.99	.96
c	.99	1	.90
d	.96	.90	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_3)
(i_4, i_5, i_6, i_7)

Data	Data *b*	*c*	*d*
b	1	.98	.95
c	.98	1	.88
d	.95	.88	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_3)
(i_8, i_9, i_{10}, i_{11})

Data	Data *b*	*c*	*d*
b	1	.92	-.03
c	.92	1	-.42
d	-.03	-.42	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_3)
(i_{12}, i_{13}, i_{14})

Data	Data *b*	*c*	*d*
b	1	.99	.99
c	.99	1	.98
d	.99	.98	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_3)
(i_{15}, i_{16}, i_{17}, i_{18})

Data	Data *b*	*c*	*d*
b	1	-.91	.48
c	-.91	1	-.34
d	.48	-.34	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_3)
(i_{19}, i_{20}, i_{21})

Data	Data *b*	*c*	*d*
b	1	.49	.98
c	.49	1	.32
d	.98	.32	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_3)
(i_{22}, i_{23}, i_{24})

Data	Data *b*	*c*	*d*
b	1	.91	.91
c	.91	1	.66
d	.91	.66	1

Appendix 8.18 Correlation Matrices: Questionnaire 1, Q3 (j_4) - *b*, *c*, *d*

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_4)
(i_1, i_2, i_3)

Data	Data *b*	*c*	*d*
b	1	.50	.95
c	.50	1	.21
d	.95	.21	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_4)
(i_4, i_5, i_6, i_7)

Data	Data *b*	*c*	*d*
b	1	.91	.95
c	.91	1	.74
d	.95	.74	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_4)
(i_8, i_9, i_{10}, i_{11})

Data	Data *b*	*c*	*d*
b	1	.91	.81
c	.91	1	.49
d	.81	.49	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_4)
(i_{12}, i_{13}, i_{14})

Data	Data *b*	*c*	*d*
b	1	.94	.91
c	.94	1	.71
d	.91	.71	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_4)
(i_{15}, i_{16}, i_{17}, i_{18})

Data	Data *b*	*c*	*d*
b	1	.93	.85
c	.93	1	.60
d	.85	.60	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_4)
(i_{19}, i_{20}, i_{21})

Data	Data *b*	*c*	*d*
b	1	.99	1.00
c	.99	1	.98
d	1.00	.98	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_4)
(i_{22}, i_{23}, i_{24})

Data	Data *b*	*c*	*d*
b	1	.99	.82
c	.99	1	.72
d	.82	.72	1

Appendix 8.19 Correlation Matrices: Questionnaire 1, Q3 (j_5) - *b*, *c*, *d*

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_5)
(i_1, i_2, i_3)

Data	Data *b*	*c*	*d*
b	1	1.00	1.00
c	1.00	1	1.00
d	1.00	1.00	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_5)
(i_4, i_5, i_6, i_7)

Data	Data *b*	*c*	*d*
b	1	.72	.89
c	.72	1	.33
d	.89	.33	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_5)
(i_8, i_9, i_{10}, i_{11})

Data	Data *b*	*c*	*d*
b	1	.87	.82
c	.87	1	.43
d	.82	.43	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_5)
(i_{22}, i_{23}, i_{24})

Data	Data *b*	*c*	*d*
b	1	.99	1.00
c	.99	1	.98
d	1.00	.98	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_5)
(i_{19}, i_{20}, i_{21})

Data	Data *b*	*c*	*d*
b	1	.99	.99
c	.99	1	.97
d	.99	.97	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_5)
(i_{15}, i_{16}, i_{17}, i_{18})

Data	Data *b*	*c*	*d*
b	1	.95	.34
c	.95	1	.03
d	.34	.03	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*, *c*, *d* (j_5)
(i_{12}, i_{13}, i_{14})

Data	Data *b*	*c*	*d*
b	1	.99	.97
c	.99	1	.91
d	.97	.91	1

Appendix 8.20 Correlation Matrices: via *s*, Data *b*

Correlation Matrix: Questionnaire 1, Q3 - Data *b*
(i_1, i_2, i_3)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	-.51	-1.00	-1.00	-.96
j_2	-.51	1	.43	.43	.27
j_3	-1.00	.43	1	1	.99
j_4	-1.00	.43	1	1	.99
j_5	-.96	.27	.99	.99	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*
(i_4, i_5, i_6, i_7)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.78	-.67	-.53	-.99
j_2	.78	1	-.62	-.23	-.84
j_3	-.67	-.62	1	.89	.74
j_4	-.53	-.23	.89	1	.56
j_5	-.99	-.84	.74	.56	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*
(i_8, i_9, i_{10}, i_{11})

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.95	.06	.11	-.81
j_2	.95	1	-.12	.02	-.61
j_3	.06	-.12	1	.95	-.24
j_4	.11	.02	.95	1	-.11
j_5	-.81	-.61	-.24	-.11	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*
(i_{12}, i_{13}, i_{14})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	.99	-.96	-.97	-1.00
j_2	.99	1	-.93	-.99	-.99
j_3	-.96	-.93	1	.86	.97
j_4	-.97	-.99	.86	1	.96
j_5	-1.00	-.99	.97	.96	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*
(i_{15}, i_{16}, i_{17}, i_{18})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	.97	-.78	.69	.30
j_2	.97	1	-.80	.62	.11
j_3	-.78	-.80	1	-.09	.22
j_4	.69	.62	-.09	1	.77
j_5	.30	.11	.22	.77	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*
(i_{19}, i_{20}, i_{21})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	.40	-.44	-.40	-.57
j_2	.40	1	.65	.68	.52
j_3	-.44	.65	1	1.00	.99
j_4	-.40	.68	1.00	1	.98
j_5	-.57	.52	.99	.98	1

Correlation Matrix: Questionnaire 1, Q3 - Data *b*
(i_{22}, i_{23}, i_{24})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	.99	.00	.39	.60
j_2	.99	1	.12	.49	.70
j_3	.00	.12	1	.92	.80
j_4	.39	.49	.92	1	.97
j_5	.60	.70	.80	.97	1

Appendix 8.21 Correlation Matrices: via *s*, Data *c*

Correlation Matrix: Questionnaire 1, Q3 - Data *c*
(i_1, i_2, i_3)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.94	-.98	-.44	-.99
j_2	.94	1	-.84	-.09	-.97
j_3	-.98	-.84	1	.62	.95
j_4	-.44	-.09	.62	1	.35
j_5	-.99	-.97	.95	.35	1

Correlation Matrix: Questionnaire 1, Q3 - Data *c*
(i_4, i_5, i_6, i_7)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.98	-.47	-.07	-.71
j_2	.98	1	-.57	-.08	-.80
j_3	-.47	-.57	1	.74	.24
j_4	-.07	-.08	.74	1	-.44
j_5	-.71	-.80	.24	-.44	1

Correlation Matrix: Questionnaire 1, Q3 - Data *c*
(i_8, i_9, i_{10}, i_{11})

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.92	.65	.62	-.96
j_2	.92	1	.29	.36	-.98
j_3	.65	.29	1	.87	-.46
j_4	.62	.36	.87	1	-.54
j_5	-.96	-.98	-.46	-.54	1

Correlation Matrix: Questionnaire 1, Q3 - Data c
(i_{12}, i_{13}, i_{14})

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	.98	-.98	-.71	-.96
j_2	.98	1	-.92	-.83	-1.00
j_3	-.98	-.92	1	.55	.88
j_4	-.71	-.83	.55	1	.88
j_5	-.96	-1.00	.88	.88	1

Correlation Matrix: Questionnaire 1, Q3 - Data c
(i_{15}, i_{16}, i_{17}, i_{18})

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	.91	.64	.59	.29
j_2	.91	1	.73	.44	-.03
j_3	.64	.73	1	-.23	-.51
j_4	.59	.44	-.23	1	.84
j_5	.29	-.03	-.51	.84	1

Correlation Matrix: Questionnaire 1, Q3 - Data c
(i_{19}, i_{20}, i_{21})

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	-.62	-.97	-.74	-.85
j_2	-.62	1	.79	-.07	.12
j_3	-.97	.79	1	.56	.70
j_4	-.74	-.07	.56	1	.98
j_5	-.85	.12	.70	.98	1

Correlation Matrix: Questionnaire 1, Q3 - Data c
(i_{22}, i_{23}, i_{24})

j	j j_1	j_2	j_3	j_4	j_5
j_1	1	.97	.34	.17	.45
j_2	.97	1	.56	.40	.65
j_3	.34	.56	1	.98	.99
j_4	.17	.40	.98	1	.96
j_5	.45	.65	.99	.96	1

Appendix 8.22 Correlation Matrices: via *s*, Data *d*

Correlation Matrix: Questionnaire 1, Q3 - Data *d*
(i_1, i_2, i_3)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	-.76	-.70	-.68	-.77
j_2	-.76	1	1.00	.99	1.00
j_3	-.70	1.00	1	1.00	.99
j_4	-.68	.99	1.00	1	.99
j_5	-.77	1.00	.99	.99	1

Correlation Matrix: Questionnaire 1, Q3 - Data *d*
(i_4, i_5, i_6, i_7)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.67	-.77	-.70	-.86
j_2	.67	1	-.18	.02	-.22
j_3	-.77	-.18	1	.96	.94
j_4	-.70	.02	.96	1	.96
j_5	-.86	-.22	.94	.96	1

Correlation Matrix: Questionnaire 1, Q3 - Data *d*
(i_8, i_9, i_{10}, i_{11})

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.95	-.55	-.59	.17
j_2	.95	1	-.40	-.31	.31
j_3	-.55	-.40	1	.59	.73
j_4	-.59	-.31	.59	1	.22
j_5	.17	.31	.73	.22	1

Correlation Matrix: Questionnaire 1, Q3 - Data d
(i_{12}, i_{13}, i_{14})

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	.66	-.85	-.85	-.77
j_2	.66	1	-.17	-.17	-.03
j_3	-.85	-.17	1	1	.99
j_4	-.85	-.17	1	1	.99
j_5	-.77	-.03	.99	.99	1

Correlation Matrix: Questionnaire 1, Q3 - Data d
(i_{15}, i_{16}, i_{17}, i_{18})

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	.96	.43	.87	.28
j_2	.96	1	.17	.70	-.01
j_3	.43	.17	1	.80	.94
j_4	.87	.70	.80	1	.71
j_5	.28	-.01	.94	.71	1

Correlation Matrix: Questionnaire 1, Q3 - Data d
(i_{19}, i_{20}, i_{21})

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	.76	.25	.19	.05
j_2	.76	1	.82	.79	.69
j_3	.25	.82	1	1.00	.98
j_4	.19	.79	1.00	1	.99
j_5	.05	.69	.98	.99	1

Correlation Matrix: Questionnaire 1, Q3 - Data d
(i_{22}, i_{23}, i_{24})

j	j				
	j_1	j_2	j_3	j_4	j_5
j_1	1	.84	.16	1.00	.97
j_2	.84	1	-.39	.85	.70
j_3	.16	-.39	1	.14	.39
j_4	1.00	.85	.14	1	.97
j_5	.97	.70	.39	.97	1

Appendix 8.23 Impact Matrices

i	*j*	*a* 1	2	3	4	5	*b* 1	2	3	4	5	*c* 1	2	3	4	5	*d* 1	2	3	4	5
i_1		1	1	3	2	3	1	2	3	3	3	1	1	3	2	3	1	3	3	3	3
i_2		3	3	1	3	1	3	1	1	2	2	2	2	1	1	2	3	2	2	2	2
i_3		2	2	2	1	2	2	3	2	1	1	3	3	2	3	1	2	1	1	1	1
i_4		1	2	3	3	3	1	1	4	4	4	1	1	4	4	3	1	1	4	4	4
i_5		4	4	1	4	1	3	2	1	1	3	3	2	1	1	4	2	2	1	1	2
i_6		3	3	2	2	2	4	4	3	2	1	4	4	3	3	1	4	3	2	2	1
i_7		2	1	4	1	4	2	3	2	3	2	2	3	2	2	2	3	4	3	3	3
i_8		4	4	4	1	2	1	1	4	3	3	1	1	3	2	4	1	1	4	4	2
i_9		2	2	3	4	3	3	3	2	4	4	3	2	2	4	2	3	4	3	3	4
i_{10}		3	3	2	3	4	2	2	3	1	2	2	3	1	1	3	2	2	2	1	3
i_{11}		1	1	1	2	1	4	4	1	2	1	4	4	4	3	1	4	3	1	2	1
i_{12}		1	1	3	1	3	1	1	3	3	3	1	1	3	3	3	1	2	3	3	3
i_{13}		2	3	2	2	2	3	3	2	1	1	2	3	2	1	1	3	3	1	1	2
i_{14}		3	2	1	3	1	2	2	1	2	2	3	2	1	2	2	2	1	2	2	1
i_{15}		4	3	2	3	1	1	1	3	1	1	1	1	3	1	1	1	1	1	1	1
i_{16}		2	2	3	2	2	3	2	2	3	4	3	2	1	4	4	2	3	3	2	2
i_{17}		1	1	1	4	3	2	3	4	4	3	2	3	2	3	3	3	2	4	3	4
i_{18}		3	4	4	1	4	4	4	1	2	2	4	4	4	2	2	4	4	2	4	3
i_{19}		2	2	2	1	2	1	1	2	2	2	1	3	3	2	2	1	1	2	2	2
i_{20}		1	1	3	3	3	2	3	3	3	3	2	1	2	3	3	3	3	3	3	3
i_{21}		3	3	1	2	1	3	2	1	1	1	3	2	1	1	1	2	2	1	1	1
i_{22}		2	2	3	2	1	1	1	2	2	2	1	1	2	2	2	2	1	3	2	2
i_{23}		3	3	1	3	3	2	2	1	1	1	2	2	1	1	1	1	2	1	1	1
i_{24}		1	1	2	1	2	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3

Appendix 8.24 Correlation Matrices: via Impact Matrices, Data *a*

Data *a* Correlation Matrix: via Impact Matrix (i_1, i_2, i_3)

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	1	-1	.50	-1
j_2	1	1	-1	.50	-1
j_3	-1	-1	1	-.50	1
j_4	.50	.50	-.50	1	-.50
j_5	-1	-1	1	-.50	1

Data *a* Correlation Matrix: via Impact Matrix (i_4, i_5, i_6, i_7)

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	.80	-.80	.40	-.80
j_2	.80	1	-1	.80	-1
j_3	-.80	-1	1	-.80	1
j_4	.40	.80	-.80	1	-.80
j_5	-.80	-1	1	-.80	1

(i_8, i_9, i_{10}, i_{11})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	1	.80	-.40	.40
j_2	1	1	.80	-.40	.40
j_3	.80	.80	1	-.20	.20
j_4	-.40	-.40	-.20	1	.60
j_5	.40	.40	.20	.60	1

(i_{12}, i_{13}, i_{14})

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	.50	-1	1	-1
j_2	.50	1	-.50	.50	-.50
j_3	-1	-.50	1	-1	1
j_4	1	.50	-1	1	-1
j_5	-1	-.50	1	-1	1

Data *a* Correlation Matrix: via Impact Matrix
(i_{15}, i_{16}, i_{17}, i_{18})

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	.80	.40	-.40	-.40
j_2	.80	1	.80	-.80	.20
j_3	.40	.80	1	-1	.40
j_4	-.40	-.80	-1	1	-.40
j_5	-.40	.20	.40	-.40	1

Data *a* Correlation Matrix: via Impact Matrix
(i_{19}, i_{20}, i_{21})

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	1	-1	-.50	-1
j_2	1	1	-1	-.50	-1
j_3	-1	-1	1	.50	1
j_4	-.50	-.50	.50	1	.50
j_5	-1	-1	1	.50	1

Data *a* Correlation Matrix: via Impact Matrix
(i_{22}, i_{23}, i_{24})

j	j				
	j_1	j_2	j_3	j_4	j_5
j_1	1	1	-.50	1	.50
j_2	1	1	-.50	1	.50
j_3	-.50	-.50	1	-.50	-1
j_4	1	1	-.50	1	.50
j_5	.50	.50	-1	.50	1

Appendix 8.25 Correlation Matrices: via Impact Matrices, Data *b*

Data *b* Correlation Matrix: via Impact Matrix (i_1, i_2, i_3)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	-.50	-1	-.50	-.50
j_2	-.50	1	.50	-.50	-.50
j_3	-1	.50	1	.50	.50
j_4	-.50	-.50	.50	1	1
j_5	-.50	-.50	.50	1	1

Data *b* Correlation Matrix: via Impact Matrix (i_4, i_5, i_6, i_7)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.80	-.40	-.80	-.80
j_2	.80	1	-.20	-.40	-1
j_3	-.40	-.20	1	.80	.20
j_4	-.80	-.40	.80	1	.40
j_5	-.80	-1	.20	.40	1

Data *b* Correlation Matrix: via Impact Matrix (i_8, i_9, i_{10}, i_{11})

j	j_1	j_2	j_3	j_4	j_5
j_1	1	1	-1	0	-.40
j_2	1	1	-1	0	-.40
j_3	-1	-1	1	0	.40
j_4	0	0	0	1	.80
j_5	-.40	-.40	.40	.80	1

Data *b* Correlation Matrix: via Impact Matrix
(i_{12}, i_{13}, i_{14})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	1	-.50	-1	-1
j_2	1	1	-.50	-1	-1
j_3	-.50	-.50	1	.50	.50
j_4	-1	-1	.50	1	1
j_5	-1	-1	.50	1	1

Data *b* Correlation Matrix: via Impact Matrix
(i_{15}, i_{16}, i_{17}, i_{18})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	.80	-.80	.20	.40
j_2	.80	1	-.40	.40	.20
j_3	-.80	-.40	1	.40	0
j_4	.20	.40	.40	1	.80
j_5	.40	.20	0	.80	1

Data *b* Correlation Matrix: via Impact Matrix
(i_{19}, i_{20}, i_{21})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	.50	-.50	-.50	-.50
j_2	.50	1	.50	.50	.50
j_3	-.50	.50	1	1	1
j_4	-.50	.50	1	1	1
j_5	-.50	.50	1	1	1

Data *b* Correlation Matrix: via Impact Matrix
(i_{22}, i_{23}, i_{24})

j	j: j_1	j_2	j_3	j_4	j_5
j_1	1	1	.50	.50	.50
j_2	1	1	.50	.50	.50
j_3	.50	.50	1	1	1
j_4	.50	.50	1	1	1
j_5	.50	.50	1	1	1

Appendix 8.26 Correlation Matrices: via Impact Matrices, Data *c*

Data *c* Correlation Matrix: via Impact Matrix (i_1, i_2, i_3)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	1	-.50	.50	-1
j_2	1	1	-.50	.50	-1
j_3	-.50	-.50	1	.50	.50
j_4	.50	.50	.50	1	-.50
j_5	-1	-1	.50	-.50	1

Data *c* Correlation Matrix: via Impact Matrix (i_4, i_5, i_6, i_7)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.80	-.40	-.40	-.40
j_2	.80	1	-.20	-.20	-.80
j_3	-.40	-.20	1	1	-.40
j_4	-.40	-.20	1	1	-.40
j_5	-.40	-.80	-.40	-.40	1

Data *c* Correlation Matrix: via Impact Matrix (i_8, i_9, i_{10}, i_{11})

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.80	.40	.60	-1
j_2	.80	1	.20	0	-.80
j_3	.40	.20	1	.40	-.40
j_4	.60	0	.40	1	-.60
j_5	-1	-.80	-.40	-.60	1

Data c Correlation Matrix: via Impact Matrix
(i_{12}, i_{13}, i_{14})

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.50	-1	-.50	-.50
j_2	.50	1	-.50	-1	-1
j_3	-1	-.50	1	.50	.50
j_4	-.50	-1	.50	1	1
j_5	-.50	-1	.50	1	1

Data c Correlation Matrix: via Impact Matrix
$(i_{15}, i_{16}, i_{17}, i_{18})$

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.80	.20	.40	.40
j_2	.80	1	.40	.20	.20
j_3	.20	.40	1	-.80	-.80
j_4	.40	.20	-.80	1	1
j_5	.40	.20	-.80	1	1

Data c Correlation Matrix: via Impact Matrix
(i_{19}, i_{20}, i_{21})

j	j_1	j_2	j_3	j_4	j_5
j_1	1	-.50	-1	-.50	-.50
j_2	-.50	1	.50	-.50	-.50
j_3	-1	.50	1	.50	.50
j_4	-.50	-.50	.50	1	1
j_5	-.50	-.50	.50	1	1

Data c Correlation Matrix: via Impact Matrix
(i_{22}, i_{23}, i_{24})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	1	.50	.50	.50
j_2	1	1	.50	.50	.50
j_3	.50	.50	1	1	1
j_4	.50	.50	1	1	1
j_5	.50	.50	1	1	1

Appendix 8.27 Correlation Matrices: via Impact Matrices, Data *d*

Data *d* Correlation Matrix: via Impact Matrix (i_1, i_2, i_3)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	-.50	-.50	-.50	-.50
j_2	-.50	1	1	1	1
j_3	-.50	1	1	1	1
j_4	-.50	1	1	1	1
j_5	-.50	1	1	1	1

Data *d* Correlation Matrix: via Impact Matrix (i_4, i_5, i_6, i_7)

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.80	-.40	-.40	-.80
j_2	.80	1	-.20	-.20	-.40
j_3	-.40	-.20	1	1	.80
j_4	-.40	-.20	1	1	.80
j_5	-.80	-.40	.80	.80	1

Data *d* Correlation Matrix: via Impact Matrix (i_8, i_9, i_{10}, i_{11})

j	j_1	j_2	j_3	j_4	j_5
j_1	1	.80	-.80	-.40	-.20
j_2	.80	1	-.40	-.20	.40
j_3	-.80	-.40	1	.80	.40
j_4	-.40	-.20	.80	1	0
j_5	-.20	.40	.40	0	1

Data d Correlation Matrix: via Impact Matrix
(i_{12}, i_{13}, i_{14})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	.50	-1	-1	-.50
j_2	.50	1	-.50	-.50	.50
j_3	-1	-.50	1	1	.50
j_4	-1	-.50	1	1	.50
j_5	-.50	.50	.50	.50	1

Data d Correlation Matrix: via Impact Matrix
(i_{15}, i_{16}, i_{17}, i_{18})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	.80	.40	1	.80
j_2	.80	1	.20	.80	.40
j_3	.40	.20	1	.40	.80
j_4	1	.80	.40	1	.80
j_5	.80	.40	.80	.80	1

Data d Correlation Matrix: via Impact Matrix
(i_{19}, i_{20}, i_{21})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	1	.50	.50	.50
j_2	1	1	.50	.50	.50
j_3	.50	.50	1	1	1
j_4	.50	.50	1	1	1
j_5	.50	.50	1	1	1

Data *d* Correlation Matrix: via Impact Matrix
(i_{22}, i_{23}, i_{24})

j	j_1	j_2	j j_3	j_4	j_5
j_1	1	.50	.50	1	1
j_2	.50	1	-.50	.50	.50
j_3	.50	-.50	1	.50	.50
j_4	1	.50	.50	1	1
j_5	1	.50	.50	1	1

Appendix 8.28 Correlation Matrices: via Impact Matrices, (j_1)

Correlation Matrix: via Impact matrix (j_1) - Data *a*, *b*, *c*, *d*
(i_1, i_2, i_3)

Data	Data *a*	*b*	*c*	*d*
a	1	1	.50	1
b	1	1	.50	1
c	.50	.50	1	.50
d	1	1	.50	1

Correlation Matrix: via Impact matrix (j_1) - Data *a*, *b*, *c*, *d*
(i_4, i_5, i_6, i_7)

Data	Data *a*	*b*	*c*	*d*
a	1	.80	.80	.40
b	.80	1	1	.80
c	.80	1	1	.80
d	.40	.80	.80	1

Correlation Matrix: via Impact matrix (j_1) - Data *a*, *b*, *c*, *d*
(i_8, i_9, i_{10}, i_{11})

Data	Data *a*	*b*	*c*	*d*
a	1	-1	-1	-1
b	-1	1	1	1
c	-1	1	1	1
d	-1	1	1	1

Correlation Matrix: via Impact matrix (j_1) - Data *a*, *b*, *c*, *d*
(i_{12}, i_{13}, i_{14})

Data	Data *a*	*b*	*c*	*d*
a	1	.50	.50	-.50
b	.50	1	1	.50
c	.50	1	1	.50
d	-.50	.50	.50	1

Correlation Matrix: via Impact matrix (j_1) - Data *a*, *b*, *c*, *d*
(i_{15}, i_{16}, i_{17}, i_{18})

Data	Data *a*	*b*	*c*	*d*
a	1	-.20	-.20	-.40
b	-.20	1	1	.80
c	-.20	1	1	.80
d	-.40	.80	.80	1

Correlation Matrix: via Impact matrix (j_1) - Data *a*, *b*, *c*, *d*
(i_{19}, i_{20}, i_{21})

Data	Data *a*	*b*	*c*	*d*
a	1	-.50	-.50	-1
b	-.50	1	1	.50
c	-.50	1	1	.50
d	-1	.50	.50	1

Correlation Matrix: via Impact matrix (j_1) - Data *a*, *b*, *c*, *d*
(i_{22}, i_{23}, i_{24})

Data	Data *a*	*b*	*c*	*d*
a	1	-.50	-.50	-1
b	-.50	1	1	.50
c	-.50	1	1	.50
d	-1	.50	.50	1

Appendix 8.29 Correlation Matrices: via Impact Matrices, (j_2)

Correlation Matrix: via Impact matrix (j_2) - Data *a*, *b*, *c*, *d*
(i_1, i_2, i_3)

Data	Data *a*	*b*	*c*	*d*
a	1	-.50	.50	-.50
b	-.50	1	.50	-.50
c	.50	.50	1	-1
d	-.50	-.50	-1	1

Correlation Matrix: via Impact matrix (j_2) - Data *a*, *b*, *c*, *d*
(i_4, i_5, i_6, i_7)

Data	Data *a*	*b*	*c*	*d*
a	1	0	0	-.40
b	0	1	1	.80
c	0	1	1	.80
d	-.40	.80	.80	1

Correlation Matrix: via Impact matrix (j_2) - Data *a*, *b*, *c*, *d*
(i_8, i_9, i_{10}, i_{11})

Data	Data *a*	*b*	*c*	*d*
a	1	-1	-.80	-.80
b	-1	1	.80	.80
c	-.80	.80	1	.40
d	-.80	.80	.40	1

Correlation Matrix: via Impact matrix (j_2) - Data *a*, *b*, *c*, *d*
(i_{12}, i_{13}, i_{14})

Data	Data *a*	*b*	*c*	*d*
a	1	1	1	.50
b	1	1	1	.50
c	1	1	1	.50
d	.50	.50	.50	1

Correlation Matrix: via Impact matrix (j_2) - Data *a*, *b*, *c*, *d*
(i_{15}, i_{16}, i_{17}, i_{18})

Data	Data *a*	*b*	*c*	*d*
a	1	.20	.20	.40
b	.20	1	1	.80
c	.20	1	1	.80
d	.40	.80	.80	1

Correlation Matrix: via Impact matrix (j_2) - Data *a*, *b*, *c*, *d*
(i_{19}, i_{20}, i_{21})

Data	Data *a*	*b*	*c*	*d*
a	1	-.50	.50	-.50
b	-.50	1	-1	1
c	.50	-1	1	-1
d	-.50	1	-1	1

Correlation Matrix: via Impact matrix (j_2) - Data *a*, *b*, *c*, *d*
(i_{22}, i_{23}, i_{24})

Data	Data *a*	*b*	*c*	*d*
a	1	-.50	-.50	-.50
b	-.50	1	1	1
c	-.50	1	1	1
d	-.50	1	1	1

Appendix 8.30 Correlation Matrices: via Impact Matrices, (j_3)

Correlation Matrix: via Impact matrix (j_3) - Data *a*, *b*, *c*, *d*
(i_1, i_2, i_3)

Data	Data *a*	*b*	*c*	*d*
a	1	1	1	.50
b	1	1	1	.50
c	1	1	1	.50
d	.50	.50	.50	1

Correlation Matrix: via Impact matrix (j_3) - Data *a*, *b*, *c*, *d*
(i_4, i_5, i_6, i_7)

Data	Data *a*	*b*	*c*	*d*
a	1	.40	.40	.80
b	.40	1	1	.80
c	.40	1	1	.80
d	.80	.80	.80	1

Correlation Matrix: via Impact matrix (j_3) - Data *a*, *b*, *c*, *d*
(i_8, i_9, i_{10}, i_{11})

Data	Data *a*	*b*	*c*	*d*
a	1	.80	-.20	1
b	.80	1	-.40	.80
c	-.20	-.40	1	-.20
d	1	.80	-.20	1

Correlation Matrix: via Impact matrix (j_3) - Data *a*, *b*, *c*, *d*
(i_{12}, i_{13}, i_{14})

Data	Data *a*	*b*	*c*	*d*
a	1	1	1	.50
b	1	1	1	.50
c	1	1	1	.50
d	.50	.50	.50	1

Correlation Matrix: via Impact matrix (j_3) - Data *a*, *b*, *c*, *d*
(i_{15}, i_{16}, i_{17}, i_{18})

Data	Data *a*	*b*	*c*	*d*
a	1	-1	.40	-.40
b	-1	1	-.40	.40
c	.40	-.40	1	-.60
d	-.40	.40	-.60	1

Correlation Matrix: via Impact matrix (j_3) - Data *a*, *b*, *c*, *d*
(i_{19}, i_{20}, i_{21})

Data	Data *a*	*b*	*c*	*d*
a	1	1	.50	1
b	1	1	.50	1
c	.50	.50	1	.50
d	1	1	.50	1

Correlation Matrix: via impact matrix (j_3) - Data *a*, *b*, *c*, *d*
(i_{22}, i_{23}, i_{24})

Data	Data *a*	*b*	*c*	*d*
a	1	.50	.50	1
b	.50	1	1	.50
c	.50	1	1	.50
d	1	.50	.50	1

Appendix 8.31 Correlation Matrices: via Impact Matrices, (j_4)

Correlation Matrix: via Impact matrix (j_4) - Data *a*, *b*, *c*, *d*
(i_1, i_2, i_3)

Data	Data *a*	*b*	*c*	*d*
a	1	.50	-1	.50
b	.50	1	-.50	1
c	-1	-.50	1	-.50
d	.50	1	-.50	1

Correlation Matrix: via Impact matrix (j_4) - Data *a*, *b*, *c*, *d*
(i_4, i_5, i_6, i_7)

Data	Data *a*	*b*	*c*	*d*
a	1	-.40	-.20	-.80
b	-.40	1	.80	-.20
c	-.20	.80	1	-.40
d	-.80	-.20	-.40	1

Correlation Matrix: via Impact matrix (j_4) - Data *a*, *b*, *c*, *d*
(i_8, i_9, i_{10}, i_{11})

Data	Data *a*	*b*	*c*	*d*
a	1	.20	.40	.80
b	.20	1	.80	.40
c	.40	.80	1	.80
d	.80	.40	.80	1

Correlation Matrix: via Impact matrix (j_4) - Data *a*, *b*, *c*, *d*
(i_{12}, i_{13}, i_{14})

Data	Data *a*	*b*	*c*	*d*
a	1	-.50	-.50	-.50
b	-.50	1	1	-.50
c	-.50	1	1	-.50
d	-.50	-.50	-.50	1

Correlation Matrix: via Impact matrix (j_4) - Data *a*, *b*, *c*, *d*
(i_{15}, i_{16}, i_{17}, i_{18})

Data	Data *a*	*b*	*c*	*d*
a	1	.40	0	-.80
b	.40	1	.80	.20
c	0	.80	1	.40
d	-.80	.20	.40	1

Correlation Matrix: via Impact matrix (j_4) - Data *a*, *b*, *c*, *d*
(i_{19}, i_{20}, i_{21})

Data	Data *a*	*b*	*c*	*d*
a	1	.50	.50	1
b	.50	1	1	.50
c	.50	1	1	.50
d	1	.50	.50	1

(i_{22}, i_{23}, i_{24})

Data	Data *a*	*b*	*c*	*d*
a	1	-1	-1	-.50
b	-1	1	1	.50
c	-1	1	1	.50
d	-.50	.50	.50	1

Appendix 8.32 Correlation Matrices: via Impact Matrices, (j_5)

Correlation Matrix: via Impact matrix (j_5) - Data *a*, *b*, *c*, *d* (i_1, i_2, i_3)

Data	Data *a*	*b*	*c*	*d*
a	1	.50	.50	.50
b	.50	1	1	1
c	.50	1	1	1
d	.50	1	1	1

Correlation Matrix: via Impact matrix (j_5) - Data *a*, *b*, *c*, *d* (i_4, i_5, i_6, i_7)

Data	Data *a*	*b*	*c*	*d*
a	1	0	-.40	.60
b	0	1	.80	.80
c	-.40	.80	1	.40
d	.60	.80	.40	1

Correlation Matrix: via Impact matrix (j_5) - Data *a*, *b*, *c*, *d* (i_8, i_9, i_{10}, i_{11})

Data	Data *a*	*b*	*c*	*d*
a	1	.40	.40	.80
b	.40	1	.40	.80
c	.40	.40	1	.20
d	.80	.80	.20	1

Correlation Matrix: via Impact matrix (j_5) - Data *a*, *b*, *c*, *d*
(i_{12}, i_{13}, i_{14})

Data	Data *a*	*b*	*c*	*d*
a	1	.50	.50	1
b	.50	1	1	.50
c	.50	1	1	.50
d	1	.50	.50	1

Correlation Matrix: via Impact matrix (j_5) - Data *a*, *b*, *c*, *d*
(i_{15}, i_{16}, i_{17}, i_{18})

Data	Data *a*	*b*	*c*	*d*
a	1	.20	.20	.80
b	.20	1	1	.40
c	.20	1	1	.40
d	.80	.40	.40	1

Correlation Matrix: via Impact matrix (j_5) - Data *a*, *b*, *c*, *d*
(i_{19}, i_{20}, i_{21})

Data	Data *a*	*b*	*c*	*d*
a	1	1	1	1
b	1	1	1	1
c	1	1	1	1
d	1	1	1	1

Correlation Matrix: via Impact matrix (j_5) - Data *a*, *b*, *c*, *d*
(i_{22}, i_{23}, i_{24})

Data	Data *a*	*b*	*c*	*d*
a	1	-.50	-.50	-.50
b	-.50	1	1	1
c	-.50	1	1	1
d	-.50	1	1	1

Appendix 8.33 Correlation Matrices: via ADI Matrices

(i_1, i_2, i_3) Correlation Matrix: via ADI Matrix (i_1, i_2, i_3)

Data/Weights	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
aa	1	1.00	-.94	-.19	.19	.27	.33	.33
ab	1.00	1	-.96	-.24	.24	.32	.28	.28
ba	-.94	-.96	1	.50	-.50	-.57	0	0
bb	-.19	-.24	.50	1	-1	-1.00	.87	.87
ca	.19	.24	-.50	-1	1	1.00	-.87	-.87
cb	.27	.32	-.57	-1.00	1.00	1	-.82	-.82
da	.33	.28	0	.87	-.87	-.82	1	1
db	.33	.28	0	.87	-.87	-.82	1	1

(i_4, i_5, i_6, i_7) Correlation Matrix: via ADI Matrix (i_4, i_5, i_6, i_7)

Data/Weights	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
aa	1	.99	-.15	.12	.04	.44	-.72	-.71
ab	.99	1	-.10	.18	.08	.49	-.63	-.62
ba	-.15	-.10	1	.96	.97	.82	.62	.53
bb	.12	.18	.96	1	.99	.94	.44	.35
ca	.04	.08	.97	.99	1	.90	.43	.33
cb	.44	.49	.82	.94	.90	1	.18	.11
da	-.72	-.63	.62	.44	.43	.18	1	.99
db	-.71	-.62	.53	.35	.33	.11	.99	1

(i_8, i_9, i_{10}, i_{11}) Correlation Matrix: via ADI Matrix (i_8, i_9, i_{10}, i_{11})

Data/Weights	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
aa	1	.99	-.71	-.63	-.97	-.97	-.45	-.42
ab	.99	1	-.75	-.67	-.97	-.96	-.52	-.45
ba	-.71	-.75	1	.99	.86	.80	.95	.92
bb	-.63	-.67	.99	1	.81	.75	.97	.96
ca	-.97	-.97	.86	.81	1	.99	.66	.64
cb	-.97	-.96	.80	.75	.99	1	.58	.59
da	-.45	-.52	.95	.97	.66	.58	1	.96
db	-.42	-.45	.92	.96	.64	.59	.96	1

(i_{12}, i_{13}, i_{14}) Correlation Matrix: via ADI Matrix (i_{12}, i_{13}, i_{14})

Data/Weights	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
aa	1	.99	.54	.67	.90	.76	-.25	-.20
ab	.99	1	.66	.78	.82	.66	-.11	-.05
ba	.54	.66	1	.99	.11	-.13	.68	.72
bb	.67	.78	.99	1	.28	.04	.54	.59
ca	.90	.82	.11	.28	1	.97	-.65	-.61
cb	.76	.66	-.13	.04	.97	1	-.82	-.78
da	-.25	-.11	.68	.54	-.65	-.82	1	1.00
db	-.20	-.05	.72	.59	-.61	-.78	1.00	1

(i_{15}, i_{16}, i_{17}, i_{18}) Correlation Matrix: via ADI Matrix (i_{15}, i_{16}, i_{17}, i_{18})

Data/Weights	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
aa	1	.97	-.48	-.45	-.14	-.28	-.21	-.22
ab	.97	1	-.26	-.23	.09	-.06	.04	.03
ba	-.48	-.26	1	.99	.92	.94	.95	.95
bb	-.45	-.23	.99	1	.95	.98	.94	.93
ca	-.14	.09	.92	.95	1	.99	.96	.95
cb	-.28	-.06	.94	.98	.99	1	.93	.92
da	-.21	.04	.95	.94	.96	.93	1	1.00
db	-.22	.03	.95	.93	.95	.92	1.00	1

(i_{19}, i_{20}, i_{21}) Correlation Matrix: via ADI Matrix (i_{19}, i_{20}, i_{21})

Data/Weights	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
aa	1	.99	-.09	-.09	-.87	-.87	-.40	-.40
ab	.99	1	-.20	-.20	-.80	-.92	-.50	-.50
ba	-.09	-.20	1	1	-.42	.58	.95	.95
bb	-.09	-.20	1	1	-.42	.58	.95	.95
ca	-.87	-.80	-.42	-.42	1	.50	-.11	-.11
cb	-.87	-.92	.58	.58	.50	1	.80	.80
da	-.40	-.50	.95	.95	-.11	.80	1	1
db	-.40	-.50	.95	.95	-.11	.80	1	1

(i_{22}, i_{23}, i_{24}) Correlation Matrix: via ADI Matrix (i_{22}, i_{23}, i_{24})

Data/Weights	*aa*	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
aa	1	.98	-.85	-.85	-.85	-.85	-1.00	-.99
ab	.98	1	-.71	-.71	-.71	-.71	-.96	-.94
ba	-.85	-.71	1	1	1	1	.88	.91
bb	-.85	-.71	1	1	1	1	.88	.91
ca	-.85	-.71	1	1	1	1	.88	.91
cb	-.85	-.71	1	1	1	1	.88	.91
da	-1.00	-.96	.88	.88	.88	.88	1	1.00
db	-.99	-.94	.91	.91	.91	.91	1.00	1

Appendix 8.34 Regime Method Rankings

i	Data/Weights							
	aa	*ab*	*ba*	*bb*	*ca*	*cb*	*da*	*db*
i_1	1	1	3	3	1	1	2	2
i_2	3	3	1	2	2	2	3	3
i_3	2	2	2	1	3	3	1	1
i_4	2	1	2	1	1	1	2	2
i_5	4	4	1	2	2	3	1	1
i_6	3	3	4	4	4	4	3	3
i_7	1	2	3	3	3	2	4	4
i_8	4	4	1	1	1	1	2	1
i_9	2	2	4	4	3	3	4	4
i_{10}	3	3	2	2	2	2	1	2
i_{11}	1	1	3	3	4	4	3	3
i_{12}	1	1	1	1	1	1	2	2
i_{13}	2	3	3	3	2	2	3	3
i_{14}	3	2	2	2	3	3	1	1
i_{15}	4	3	1	1	1	1	1	1
i_{16}	2	2	2	3	3	3	2	2
i_{17}	1	1	3	2	2	2	3	3
i_{18}	3	4	4	4	4	4	4	4
i_{19}	2	2	1	1	3	2	1	1
i_{20}	1	1	3	3	2	3	3	3
i_{21}	3	3	2	2	1	1	2	2
i_{22}	2	2	1	1	1	1	2	2
i_{23}	3	3	2	2	2	2	1	1
i_{24}	1	1	3	3	3	3	3	3

Appendix 8.35 Question 2 and Regime Method Rankings

i	Data/Weights *a*	*aa*	*b*	*bb*	*c*	*cb*	*d*	*db*
i_1	2	1	1	3	2	1	1	2
i_2	3	3	2	2	1	2	3	3
i_3	1	2	3	1	3	3	2	1
i_4	2	2	1	1	1	1	2	2
i_5	4	4	2	2	3	3	1	1
i_6	3	3	4	4	4	4	3	3
i_7	1	1	3	3	2	2	4	4
i_8	4	4	1	1	1	1	1	1
i_9	1	2	3	4	3	3	3	4
i_{10}	2	3	2	2	2	2	2	2
i_{11}	3	1	4	3	4	4	4	3
i_{12}	1	1	1	1	1	1	2	2
i_{13}	3	2	3	3	3	2	3	3
i_{14}	2	3	2	2	2	3	1	1
i_{15}	4	4	1	1	1	1	1	1
i_{16}	3	2	3	3	3	3	4	2
i_{17}	1	1	2	2	2	2	2	3
i_{18}	2	3	4	4	4	4	3	4
i_{19}	1	2	1	1	1	2	2	1
i_{20}	3	1	3	3	3	3	3	3
i_{21}	2	3	2	2	2	1	1	2
i_{22}	2	2	1	1	1	1	2	2
i_{23}	3	3	2	2	2	2	1	1
i_{24}	1	1	3	3	3	3	3	3

Question 2: *a*, *b*, *c*, *d*. Regime Method: *aa*, *bb*, *cb*, *db*.

Appendix 8.36 Correlation Matrices: Question 2 and Regime Method Rankings

Correlation Matrix of Q2 and Regime Method Rankings (i_1, i_2, i_3)

Data	Data/Weights *aa*	*bb*	*cb*	*db*
a	.50			
b		-1		
c			.50	
d				.50

Correlation Matrix of Q2 and Regime Method Rankings (i_4, i_5, i_6, i_7)

Data	Data/Weights *aa*	*bb*	*cb*	*db*
a	1			
b		1		
c			1	
d				1

Correlation Matrix of Q2 and Regime Method Rankings (i_8, i_9, i_{10}, i_{11})

Data	Data/Weights *aa*	*bb*	*cb*	*db*
a	.40			
b		.80		
c			1	
d				.80

Correlation Matrix of Q2 and Regime Method Rankings (i_{12}, i_{13}, i_{14})

Data	Data/Weights *aa*	*bb*	*cb*	*db*
a	.50			
b		1		
c			.50	
d				1

Correlation Matrix of Q2 and Regime Method Rankings (i_{15}, i_{16}, i_{17}, i_{18})

Data	Data/Weights *aa*	*bb*	*cb*	*db*
a	.80			
b		1		
c			1	
d				.40

Correlation Matrix of Q2 and Regime Method Rankings (i_{19}, i_{20}, i_{21})

Data	Data/Weights *aa*	*bb*	*cb*	*db*
a	-.50			
b		1		
c			.50	
d				.50

Correlation Matrix of Q2 and Regime Method Rankings (i_{22}, i_{23}, i_{24})

Data	Data/Weights *aa*	*bb*	*cb*	*db*
a	1			
b		1		
c			1	
d				1

Appendix 9.1 Questions 1 to 6: Correlation Matrices

Correlation Matrix by Age: Q1 - Q6 (h_1, h_2, h_3, h_4)

	Q1	Q2	Q3	Q4	Q5	Q6
Q1	1	.99	1.00	.94	.99	1.00
Q2	.99	1	.98	.89	.97	.99
Q3	1.00	.98	1	.94	1.00	1.00
Q4	.94	.89	.94	1	.97	.92
Q5	.99	.97	1.00	.97	1	.99
Q6	1.00	.99	1.00	.92	.99	1

Correlation Matrix by Age: Q1 - Q6 ($h_1 + h_2$), ($h_3 + h_4$), h_1, ($h_h + h_3 + h_4$), ($h_1 + h_3 + h_4$), h_4

	Q1	Q2	Q3	Q4	Q5	Q6
Q1	1	1.00	1.00	.98	1.00	1.00
Q2	1.00	1	1.00	.97	1.00	1.00
Q3	1.00	1.00	1	.98	1.00	1.00
Q4	.98	.97	.98	1	.98	.97
Q5	1.00	1.00	1.00	.98	1	1.00
Q6	1.00	1.00	1.00	.97	1.00	1

h = age group

h_1 = under 20 years of age

h_2 = 20-39

h_3 = 40-59

h_4 = 60+

Correlation Matrix by Sex and Age: Q1 - Q6 (h_1, h_2, h_3, h_4)

	Q1	Q2	Q3	Q4	Q5	Q6
Q1	1	.94	.99	.89	.95	.97
Q2	.94	1	.97	.88	.96	.86
Q3	.99	.97	1	.91	.97	.94
Q4	.89	.88	.91	1	.97	.77
Q5	.95	.96	.97	.97	1	.86
Q6	.97	.86	.94	.77	.86	1

Correlation Matrix by Sex and Age: Q1 - Q6 ($h_1 + h_2$), ($h_3 + h_4$), h_1, ($h_1 + h_3 + h_4$), ($h_1 + h_3 + h_4$), h_4

	Q1	Q2	Q3	Q4	Q5	Q6
Q1	1	.96	1.00	.90	.95	.97
Q2	.96	1	.98	.96	.99	.87
Q3	1.00	.98	1	.92	.96	.95
Q4	.90	.96	.92	1	.98	.78
Q5	.95	.99	.96	.98	1	.85
Q6	.97	.87	.95	.78	.85	1

Appendix 9.2 Questions 9 to 17: Correlation Matrices (Q1 'yes')

Q1 'yes' Correlation Matrix by Age: Q9 - 17 (h_1, h_2, h_3, h_4)

	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q9	1	.61	-.92	.68	-.84	.86	.98	-.16	-.22
Q10	.61	1	-.44	.91	-.07	.43	.43	.65	.49
Q11	-.92	-.44	1	-.66	.86	-.63	-.95	.19	.11
Q12	.68	.91	-.66	1	-.23	.32	.55	.60	.57
Q13	-.84	-.07	.86	-.23	1	-.78	-.93	.64	.59
Q14	.86	.43	-.63	.32	-.78	1	.84	-.40	-.57
Q15	.98	.43	-.95	.55	-.93	.84	1	-.34	-.35
Q16	-.16	.65	.19	.60	.64	-.40	-.34	1	.94
Q17	-.22	.49	.11	.57	.59	-.57	-.35	.94	1

Q1 'yes' Correlation Matrix by Age: Q9 - Q17 ($h_1 + h_2$), ($h_3 + h_4$), h_1, ($h_1 + h_3 + h_4$), ($h_1 + h_3 + h_4$), h_4

	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q9	1	.58	-.94	.72	-.80	.82	.96	-.10	-.11
Q10	.58	1	-.36	.92	.02	.39	.35	.71	.58
Q11	-.94	-.36	1	-.62	.87	-.65	-.96	.23	.13
Q12	.72	.92	-.62	1	-.19	.34	.53	.61	.60
Q13	-.80	.02	.87	-.19	1	-.75	-.93	.67	.60
Q14	.82	.39	-.65	.34	-.75	1	.84	-.36	-.51
Q15	.96	.35	-.96	.53	-.93	.84	1	-.35	-.33
Q16	-.10	.71	.23	.61	.67	-.36	-.35	1	.95
Q17	-.11	.58	.13	.60	.60	-.51	-.33	.95	1

Q1 'yes' Correlation Matrix by Sex and Age: Q9 - Q17 (h_1, h_2, h_3, h_4)

	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q9	1	-.18	-.03	-.15	-.27	.36	.20	-.28	-.09
Q10	-.18	1	-.79	.72	-.02	-.20	.37	.67	.32
Q11	-.03	-.79	1	-.81	.56	-.12	-.73	-.27	-.01
Q12	-.15	.72	-.81	1	-.34	.11	.58	.51	.18
Q13	-.27	-.02	.56	-.34	1	-.69	-.83	.61	.71
Q14	.36	-.20	-.12	.11	-.69	1	.39	-.62	-.82
Q15	.20	.37	-.73	.58	-.83	.39	1	-.21	-.37
Q16	-.28	.67	-.27	.51	.61	-.62	-.21	1	.86
Q17	-.09	.32	-.01	.18	.71	-.82	-.37	.86	1

Q1 'yes' Correlation Matrix by Sex and Age: Q9 - Q17 (h_1 + h_2), etc

	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q9	1	-.13	-.00	-.25	-.19	.31	.24	-.26	-.05
Q10	-.13	1	-.75	.66	.03	-.22	.36	.68	.36
Q11	-.00	-.75	1	-.78	.58	-.12	-.76	-.22	.01
Q12	-.25	.66	-.78	1	-.33	.09	.54	.50	.18
Q13	-.19	.03	.58	-.33	1	-.68	-.81	.62	.71
Q14	.31	-.22	-.12	.09	-.68	1	.40	-.62	-.83
Q15	.24	.36	-.76	.54	-.81	.40	1	-.21	-.34
Q16	-.26	.68	-.22	.50	.62	-.62	-.21	1	.86
Q17	-.05	.36	.01	.18	.71	-.83	-.34	.86	1

Appendix 9.3 Questions 9 to 17: Correlation Matrices (Q1 'no')

Q1 'no' Correlation Matrix by Age: Q9 - 17 (h_1, h_2, h_3, h_4)

	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q9	1	.81	-.83	.13	.08	-.78	-.29	.88	.52
Q10	.81	1	-.99	.68	-.52	-.52	.32	.93	.18
Q11	-.83	-.99	1	-.66	.48	.50	-.29	-.91	-.14
Q12	.13	.68	-.66	1	-.98	.19	.91	.42	-.48
Q13	.08	-.52	.48	-.98	1	-.34	-.98	-.25	.57
Q14	-.78	-.52	.50	.19	-.34	1	.51	-.80	-.93
Q15	-.29	.32	-.29	.91	-.98	.51	1	.04	-.69
Q16	.88	.93	-.91	.42	-.25	-.80	.04	1	.53
Q17	.52	.18	-.14	-.48	.57	-.93	-.69	.53	1

Q1 'no' Correlation Matrix by Age: Q9 - Q17 ($h_1 + h_2$), ($h_3 + h_4$), h_1, ($h_1 + h_3 + h_4$), ($h_1 + h_3 + h_4$), h_4

	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q9	1	.81	-.83	.11	.12	-.83	-.33	.88	.59
Q10	.81	1	-1.00	.67	-.48	-.58	.29	.95	.24
Q11	-.83	-1.00	1	-.64	.45	.58	-.25	-.94	-.23
Q12	.11	.67	-.64	1	-.97	.14	.90	.44	-.43
Q13	.12	-.48	.45	-.97	1	-.33	-.98	-.24	.56
Q14	-.83	-.58	.58	.14	-.33	1	.50	-.81	-.92
Q15	-.33	.29	-.25	.90	-.98	.50	1	.03	-.68
Q16	.88	.95	-.94	.44	-.24	-.81	.03	1	.54
Q17	.59	.24	-.23	-.43	.56	-.92	-.68	.54	1

Q1 'no' Correlation Matrix by Sex and Age: Q9 - Q17 (h_1, h_2, h_3, h_4)

	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q9	1	-.09	-.32	-.14	.39	.27	.13	-.12	-.54
Q10	-.09	1	.30	.72	-.39	-.32	.24	.87	.38
Q11	-.32	.30	1	.33	.34	.22	-.08	.43	.20
Q12	-.14	.72	.33	1	-.49	-.29	.60	.41	-.02
Q13	.39	-.39	.34	-.49	1	.20	-.61	-.13	.02
Q14	.27	-.32	.22	-.29	.20	1	.37	-.09	-.62
Q15	.13	.24	-.08	.60	-.61	.37	1	.05	-.59
Q16	-.12	.87	.43	.41	-.13	-.09	.05	1	.55
Q17	-.54	.38	.20	-.02	.02	-.62	-.59	.55	1

Q1 'no' Correlation Matrix by Sex and Age: Q9 - Q17 ($h_1 + h_2$), etc

	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q9	1	-.14	-.24	-.15	.50	.36	.08	-.23	-.67
Q10	-.14	1	.27	.69	-.41	-.33	.21	.88	.40
Q11	-.24	.27	1	.37	.34	.25	-.04	.35	.10
Q12	-.15	.69	.37	1	-.47	-.18	.63	.40	-.05
Q13	.50	-.41	.34	-.47	1	.28	-.57	-.23	-.20
Q14	.36	-.33	.25	-.18	.28	1	.40	-.17	-.63
Q15	.08	.21	-.04	.63	-.57	.40	1	.04	-.49
Q16	-.23	.88	.35	.40	-.23	-.17	.04	1	.61
Q17	-.67	.40	.10	-.05	-.20	-.63	-.49	.61	1

Appendix 9.4 Questions 9 to 17: *u* (Q1 'yes')

Q1 'yes' Q9 - Q17 — $\Sigma(a + f)$: h_1, h_2, h_3, h_4 — Values for *u*

$\Sigma(a + f)$	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
h_1	4.51	2.79	4.74	3.59	2.61	4	3.89	3.18	3.28
h_2	4.64	2.79	4.51	3.58	1.89	4.23	4.20	2.65	2.99
h_3	4.61	2.77	4.42	3.64	1.92	4.08	4.17	2.81	3.17
h_4	4.68	2.91	4.38	3.82	2.05	4.18	4.24	3.25	3.30

Q1 'yes' Q9 - Q17 — $\Sigma(a + f)$: $(h_1 + h_2)$, etc — Values for *u*

$\Sigma(a + f)$	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
$h_1 + h_2$	4.62	2.79	4.53	3.58	1.95	4.21	4.17	2.69	3.01
$h_3 + h_4$	4.62	2.78	4.42	3.65	1.93	4.09	4.17	2.83	3.18
h_1	4.51	2.79	4.74	3.59	2.61	4	3.89	3.18	3.28
h_2, h_3, h_4	4.63	2.78	4.45	3.63	1.92	4.14	4.18	2.77	3.11
h_1, h_2, h_3	4.61	2.78	4.46	3.62	1.93	4.13	4.17	2.76	3.11
h_4	4.68	2.91	4.38	3.82	2.05	4.18	4.24	3.25	3.30

Q1 'yes' Q9 - Q17 *m*: h_1, h_2, h_3, h_4 *f*: h_1, h_2, h_3, h_4 Values for *u*

sex/age	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
m h_1	4.51	2.73	4.80	3.57	2.57	4.21	3.86	3.07	3.15
h_2	4.53	2.73	4.55	3.65	1.74	4.24	4.30	2.57	2.91
h_3	4.58	2.74	4.37	3.69	1.84	4.07	4.11	2.81	3.17
h_4	4.60	3.20	4	4	1.80	4.30	4.36	3.44	3.22
f h_1	4.50	3	4.50	3.67	2.75	3.25	4	3.67	3.60
h_2	4.74	2.86	4.48	3.53	2.01	4.22	4.11	2.72	3.05
h_3	4.65	2.79	4.47	3.59	2.01	4.09	4.23	2.81	3.18
h_4	4.75	2.67	4.67	3.67	2.25	4.08	4.10	3.09	3.36

Q1 'yes' Q9 - Q17 *m*, then *f*: (h_1 + h_2), etc Values for *u*

sex/age	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
m									
h_1 + h_2	4.52	2.73	4.58	3.64	1.86	4.24	4.24	2.64	2.95
h_3 + h_4	4.58	2.77	4.35	3.71	1.84	4.08	4.12	2.84	3.17
h_1	4.51	2.73	4.80	3.57	2.57	4.21	3.86	3.07	3.15
h_2, h_3, h_4	4.56	2.75	4.42	3.69	1.80	4.13	4.18	2.75	3.09
h_1, h_2, h_3	4.55	2.73	4.45	3.67	1.85	4.13	4.16	2.75	3.09
h_4	4.60	3.20	4	4	1.80	4.30	4.36	3.44	3.22
f									
h_1 + h_2	4.73	2.87	4.48	3.53	2.04	4.19	4.11	2.74	3.07
h_3 + h_4	4.65	2.78	4.48	3.59	2.02	4.09	4.22	2.83	3.19
h_1	4.50	3	4.50	3.67	2.75	3.25	4	3.67	3.60
h_2, h_3, h_4	4.68	2.81	4.48	3.57	2.02	4.14	4.18	2.78	3.14
h_1, h_2, h_3	4.68	2.82	4.47	3.57	2.02	4.13	4.18	2.78	3.14
h_4	4.75	2.67	4.67	3.67	2.25	4.08	4.10	3.09	3.36

Q1 'yes' Q9 - Q17 $\Sigma(m + f)$: m/f Values for u

m/f	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
m	4.56	2.75	4.44	3.69	1.84	4.14	4.16	2.77	3.09
f	4.68	2.81	4.48	3.57	2.03	4.13	4.18	2.79	3.14
$\Sigma(m + f)$	4.62	2.78	4.46	3.63	1.94	4.13	4.17	2.78	3.12

Appendix 9.5 Questions 9 to 17: *n*, %, *u* (Q1 'yes')

Q1 'yes' Q9 - Q17 Data

sex	age		Q9 v_1	v_2	v_3	v_4	v_5
m	h_1	(*n*)	26	6	3	2	0
		($n_h w_h$)	130	24	9	4	0
		(%)	70.27	16.22	8.11	5.41	0
		(*u*)	4.51				
	h_2	(*n*)	56	22	8	1	0
		($n_h w_h$)	280	88	24	2	0
		(%)	64.37	25.29	9.20	1.15	0
		(*u*)	4.53				
	h_3	(*n*)	102	43	7	0	2
		($n_h w_h$)	510	172	21	0	2
		(%)	66.23	27.92	4.55	0	1.30
		(*u*)	4.58				
	h_4	(*n*)	6	4	0	0	0
		($n_h w_h$)	30	16	0	0	0
		(%)	60	40	0	0	0
		(*u*)	4.60				
f	h_1	(*n*)	2	2	0	0	0
		($n_h w_h$)	10	8	0	0	0
		(%)	50	50	0	0	0
		(*u*)	4.50				
	h_2	(*n*)	77	20	1	0	1
		($n_h w_h$)	385	80	3	0	1
		(%)	77.78	20.20	1.01	0	1.01
		(*u*)	4.74				
	h_3	(*n*)	123	29	4	0	5
		($n_h w_h$)	615	116	12	0	5
		(%)	76.40	18.01	2.48	0	3.11
		(*u*)	4.65				
	h_4	(*n*)	9	3	0	0	0
		($n_h w_h$)	45	12	0	0	0
		(%)	75	25	0	0	0
		(*u*)	4.75				
Σ*m*		(*n*)	190	75	18	3	2
		($n_h w_h$)	950	300	54	6	2
		(%)	65.97	26.04	6.25	1.04	.69
		(*u*)	4.56				
Σ*f*		(*n*)	211	54	5	0	6
		($n_h w_h$)	1055	216	15	0	6
		(%)	76.45	19.57	1.81	0	2.17
		(*u*)	4.68				
Σ(*m* + *f*)		(*n*)	401	129	23	3	8
		($n_h w_h$)	2005	516	69	6	8
		(%)	71.10	22.87	4.08	.53	1.42
		(*u*)	4.62				

Q1 'yes'

		Q10		
v_1	v_2	v_3	v_4	v_5
2	1	6	3	3
10	4	18	6	3
13.33	6.67	40	20	20
2.73				
2	7	62	25	7
10	28	186	50	7
1.94	6.80	60.19	24.27	6.80
2.73				
3	11	82	38	8
15	44	246	76	8
2.11	7.75	57.75	26.76	5.63
2.74				
0	2	8	0	0
0	8	24	0	0
0	20	80	0	0
3.20				
0	0	4	0	0
0	0	12	0	0
0	0	100	0	0
3				
6	4	69	12	9
30	16	207	24	9
6	4	69	12	9
2.86				
2	9	100	39	3
10	36	300	78	3
1.31	5.88	65.36	25.49	1.96
2.79				
0	0	8	4	0
0	0	24	8	0
0	0	66.67	33.33	0
2.67				
7	21	158	66	18
35	84	474	132	18
2.59	7.78	58.52	24.44	6.67
2.75				
8	13	181	55	12
40	52	543	110	12
2.97	4.83	67.29	20.45	4.46
2.81				
15	34	339	121	30
75	136	1017	242	30
2.78	6.31	62.89	22.45	5.57
2.78				

Q1 'yes'					Q1 'yes'				
		Q11					Q12		
v_1	v_2	v_3	v_4	v_5	v_1	v_2	v_3	v_4	v_5
12	3	0	0	0	3	4	6	0	1
60	12	0	0	0	15	16	18	0	1
80	20	0	0	0	21.43	28.57	42.86	0	7.14
4.80					3.57				
54	28	2	1	1	16	30	32	5	1
270	112	6	2	1	80	120	96	10	1
62.79	32.56	2.33	1.16	1.16	19.05	35.71	38.10	5.95	1.19
4.55					3.65				
80	66	10	1	3	32	65	52	12	2
400	264	30	2	3	160	260	156	24	2
50	41.25	6.25	.63	1.88	19.63	39.88	31.90	7.36	1.23
4.37					3.69				
4	3	1	0	1	2	6	2	0	0
20	12	3	0	1	10	24	6	0	0
44.44	33.33	11.11	0	11.11	20	60	20	0	0
4					4				
2	2	0	0	0	1	0	2	0	0
10	8	0	0	0	5	0	6	0	0
50	50	0	0	0	33.33	0	66.67	0	0
4.50					3.67				
65	33	8	1	1	20	29	47	7	3
325	132	24	2	1	100	116	141	14	3
60.19	30.56	7.41	.93	.93	18.87	27.36	44.34	6.60	2.83
4.48					3.53				
95	54	7	2	3	26	69	50	16	4
475	216	21	4	3	130	276	150	32	4
59.01	33.54	4.35	1.24	1.86	15.76	41.82	30.30	9.70	2.42
4.47					3.59				
9	2	1	0	0	3	3	5	1	0
45	8	3	0	0	15	12	15	2	0
75	16.67	8.33	0	0	25	25	41.67	8.33	0
4.67					3.67				
150	100	13	2	5	53	105	92	17	4
750	400	39	4	5	265	420	276	34	4
55.56	37.04	4.81	.74	1.85	19.56	38.75	33.95	6.27	1.48
4.44					3.69				
171	91	16	3	4	50	101	104	24	7
855	364	48	6	4	250	404	312	48	7
60	31.93	5.61	1.05	1.40	17.48	35.31	36.36	8.39	2.45
4.48					3.57				
321	191	29	5	9	103	206	196	41	11
1605	764	87	10	9	515	824	588	82	11
57.84	34.41	5.23	.90	1.62	18.49	36.98	35.19	7.36	1.97
4.46					3.63				

Q1 'yes'					Q1 'yes'				
		Q13					Q14		
v_1	v_2	v_3	v_4	v_5	v_1	v_2	v_3	v_4	v_5
2	0	5	4	3	7	4	2	1	0
10	0	15	8	3	35	16	6	2	0
14.29	0	35.71	28.57	21.43	50	28.57	14.29	7.14	0
2.57					4.21				
2	3	12	21	46	42	30	10	4	1
10	12	36	42	46	210	120	30	8	1
2.38	3.57	14.29	25	54.76	48.28	34.48	11.49	4.60	1.15
1.74					4.24				
4	4	31	45	77	75	45	29	7	7
20	16	93	90	77	375	180	87	14	7
2.48	2.48	19.25	27.95	47.83	46.01	27.61	17.79	4.29	4.29
1.84					4.07				
0	0	2	4	4	5	3	2	0	0
0	0	6	8	4	25	12	6	0	0
0	0	20	40	40	50	30	20	0	0
1.80					4.30				
0	1	2	0	1	1	0	2	1	0
0	4	6	0	1	5	0	6	2	0
0	25	50	0	25	25	0	50	25	0
2.75					3.25				
5	7	20	25	48	50	32	19	1	2
25	28	60	50	48	250	128	57	2	2
4.76	6.67	19.05	23.81	45.71	48.08	30.77	18.27	.96	1.92
2.01					4.22				
5	10	33	46	67	69	57	29	5	5
25	40	99	92	67	345	228	87	10	5
3.11	6.21	20.50	28.57	41.61	41.82	34.55	17.58	3.03	3.03
2.01					4.09				
0	2	4	1	5	4	5	3	0	0
0	8	12	2	5	20	20	9	0	0
0	16.67	33.33	8.33	41.67	33.33	41.67	25	0	0
2.25					4.08				
8	7	50	74	130	129	82	43	12	8
40	28	150	148	130	645	328	129	24	8
2.97	2.60	18.59	27.51	48.33	47.08	29.93	15.69	4.38	2.92
1.84					4.14				
10	20	59	72	121	124	94	53	7	7
50	80	177	144	121	620	376	159	14	7
3.55	7.09	20.92	25.53	42.91	43.51	32.98	18.60	2.46	2.46
2.03					4.13				
18	27	109	146	251	253	176	96	19	15
90	108	327	292	251	1265	704	288	38	15
3.27	4.90	19.78	26.50	45.55	45.26	31.48	17.17	3.40	2.68
1.94					4.13				

Q1 'yes'					Q1 'yes'				
		Q15					Q16		
v_1	v_2	v_3	v_4	v_5	v_1	v_2	v_3	v_4	v_5
3	6	5	0	0	1	6	1	5	1
15	24	15	0	0	5	24	3	10	1
21.43	42.86	35.71	0	0	7.14	42.86	7.14	35.71	7.14
3.86					3.07				
42	27	12	1	1	2	14	28	24	15
210	108	36	2	1	10	56	84	48	15
50.60	32.53	14.46	1.20	1.20	2.41	16.87	33.73	28.92	18.07
4.30					2.57				
72	55	29	5	5	7	47	48	37	28
360	220	87	10	5	35	188	144	74	28
43.37	33.13	17.47	3.01	3.01	4.19	28.14	28.74	22.16	16.77
4.11					2.81				
7	1	3	0	0	1	3	4	1	0
35	4	9	0	0	5	12	12	2	0
63.64	9.09	27.27	0	0	11.11	33.33	44.44	11.11	0
4.36					3.44				
2	0	2	0	0	0	2	1	0	0
10	0	6	0	0	0	8	3	0	0
50	0	50	0	0	0	66.67	33.33	0	0
4					3.67				
39	43	22	1	1	4	16	43	32	11
195	172	66	2	1	20	64	129	64	11
36.79	40.57	20.75	.94	.94	3.77	15.09	40.57	30.19	10.38
4.11					2.72				
70	65	23	2	2	4	39	57	44	17
350	260	69	4	2	20	156	171	88	17
43.21	40.12	14.20	1.23	1.23	2.48	24.22	35.40	27.33	10.56
4.23					2.81				
4	4	1	1	0	2	2	4	1	2
20	16	3	2	0	10	8	12	2	2
40	40	10	10	0	18.18	18.18	36.36	9.09	18.18
4.10					3.09				
124	89	49	6	6	11	70	81	67	44
620	356	147	12	6	55	280	243	134	44
45.26	32.48	17.88	2.19	2.19	4.03	25.64	29.67	24.54	16.12
4.16					2.77				
115	112	48	4	3	10	59	105	77	30
575	448	144	8	3	50	236	315	154	30
40.78	39.72	17.02	1.42	1.06	3.56	21.00	37.37	27.40	10.68
4.18					2.79				
239	201	97	10	9	21	129	186	144	74
1195	804	291	20	9	105	516	558	288	74
42.99	36.15	17.45	1.80	1.62	3.79	23.29	33.57	25.99	13.36
4.17					2.78				

Q1 'yes'

	Q17			
v_1	v_2	v_3	v_4	v_5
0	6	4	2	1
0	24	12	4	1
0	46.15	30.77	15.38	7.69
3.15				
0	25	28	22	5
0	100	84	44	5
0	31.25	35	27.50	6.25
2.91				
5	73	54	28	13
25	292	162	56	13
2.89	42.20	31.21	16.18	7.51
3.17				
1	1	6	1	0
5	4	18	2	0
11.11	11.11	66.67	11.11	0
3.22				
0	3	2	0	0
0	12	6	0	0
0	60	40	0	0
3.60				
5	29	42	24	5
25	116	126	48	5
4.76	27.62	40	22.86	4.76
3.05				
5	55	75	18	9
25	220	225	36	9
3.09	33.95	46.30	11.11	5.56
3.18				
2	3	4	1	1
10	12	12	2	1
18.18	27.27	36.36	9.09	9.09
3.36				
6	105	92	53	19
30	420	276	106	19
2.18	38.18	33.45	19.27	6.91
3.09				
12	90	123	43	15
60	360	369	86	15
4.24	31.80	43.46	15.19	5.30
3.14				
18	195	215	96	34
90	780	645	192	34
3.23	34.95	38.53	17.20	6.09
3.12				

Appendix 9.6 Questions 9 to 17: *u* (Q1 'no')

Q1 'no' Q9 - Q17 $\Sigma(a + f)$: h_1, h_2, h_3, h_4 Values for *u*

$\Sigma(a + f)$	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
h_1	4.56	2.88	4.44	2.89	2.88	4	3.44	3.22	3.57
h_2	4.42	2.85	4.45	3.18	2.17	4.15	4.02	2.72	2.88
h_3	4.41	2.96	4.43	3.20	2.10	4.06	4.04	3.18	3.31
h_4	4.67	3.67	3.75	3.33	2	4	4	4	3.33

Q1 'no' Q9 - Q17 $\Sigma(a + f)$: $(h_1 + h_2)$, etc Values for *u*

$\Sigma(a + f)$	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
$h_1 + h_2$	4.44	2.85	4.45	3.13	2.27	4.13	3.93	2.80	2.96
$h_3 + h_4$	4.42	3	4.39	3.20	2.09	4.06	4.04	3.23	3.31
h_1	4.56	2.88	4.44	2.89	2.88	4	3.44	3.22	3.57
h_2, h_3, h_4	4.42	2.93	4.41	3.19	2.13	4.10	4.03	2.99	3.11
h_1, h_2, h_3	4.42	2.91	4.44	3.16	2.19	4.10	3.98	2.98	3.13
h_4	4.67	3.67	3.75	3.33	2	4	4	4	3.33

Q1 'no' Q9 - Q17	*m*: h_1, h_2, h_3, h_4				*f*: h_1, h_2, h_3, h_4				Values for *u*
sex/age	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
m h_1	4.25	3	4.20	3	2.33	3.67	3.33	3	3.75
h_2	4.16	2.78	4.28	2.89	1.94	4.28	3.89	3.06	3.16
h_3	4.25	3.03	4.37	3.29	1.97	3.97	4.09	3.30	3.47
h_4	4.50	4	5	3.50	2	4	4	4.50	3.50
f h_1	4.80	2.75	4.75	2.80	3.20	4.20	3.50	3.33	3.33
h_2	4.64	2.90	4.55	3.38	2.30	4.07	4.10	2.55	2.71
h_3	4.75	2.82	4.56	3	2.40	4.27	3.94	2.94	2.93
h_4	5	3	3	3	2	4	4	3	3

Q1 'no' Q9 - Q17	*m*, then *f*: (h_1 + h_2), etc								Values for *u*
sex/age	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
m									
h_1 + h_2	4.17	2.82	4.26	2.91	2	4.19	3.82	3.05	3.26
h_3 + h_4	4.26	3.08	4.41	3.30	1.97	3.97	4.08	3.37	3.47
h_1	4.25	3	4.20	3	2.33	3.67	3.33	3	3.75
h_2, h_3, h_4	4.23	2.98	4.36	3.16	1.96	4.07	4.02	3.27	3.37
h_1, h_2, h_3	4.22	2.95	4.33	3.14	1.98	4.05	3.98	3.21	3.39
h_4	4.50	4	5	3.50	2	4	4	4.50	3.50
f									
h_1 + h_2	4.67	2.88	4.58	3.29	2.43	4.09	4	2.68	2.76
h_3 + h_4	4.76	2.83	4.47	3	2.38	4.25	3.94	2.94	2.94
h_1	4.80	2.75	4.75	2.80	3.20	4.20	3.50	3.33	3.33
h_2, h_3, h_4	4.69	2.87	4.52	3.23	2.33	4.14	4.04	2.69	2.79
h_1, h_2, h_3	4.70	2.86	4.57	3.19	2.42	4.15	3.98	2.75	2.82
h_4	5	3	3	3	2	4	4	3	3

Q1 'no' Q9 - Q17 $\Sigma(m + f)$: m/f Values for u

m/f	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
m	4.23	2.98	4.35	3.15	1.98	4.05	3.98	3.26	3.39
f	4.70	2.86	4.54	3.19	2.41	4.14	3.98	2.76	2.82
$\Sigma(m + f)$	4.43	2.93	4.44	3.17	2.19	4.09	3.98	3.01	3.14

Appendix 9.7 Questions 9 to 17: *n*, %, *u* (Q1 'no')

Q1 'no' Q9 - Q17 Data

sex	age		v_1	v_2	Q9 v_3	v_4	v_5
m	h_1	(*n*)	1	3	0	0	0
		($n_h w_h$)	5	12	0	0	0
		(%)	25	75	0	0	0
		(*u*)	4.25				
	h_2	(*n*)	10	9	6	0	0
		($n_h w_h$)	50	36	18	0	0
		(%)	40	36	24	0	0
		(*u*)	4.16				
	h_3	(*n*)	27	8	4	3	2
		($n_h w_h$)	135	32	12	6	2
		(%)	61.36	18.18	9.09	6.82	4.55
		(*u*)	4.25				
	h_4	(*n*)	1	1	0	0	0
		($n_h w_h$)	5	4	0	0	0
		(%)	50	50	0	0	0
		(*u*)	4.50				
f	h_1	(*n*)	4	1	0	0	0
		($n_h w_h$)	20	4	0	0	0
		(%)	80	20	0	0	0
		(*u*)	4.80				
	h_2	(*n*)	20	6	2	0	0
		($n_h w_h$)	100	24	6	0	0
		(%)	71.43	21.43	7.14	0	0
		(*u*)	4.64				
	h_3	(*n*)	15	5	0	0	0
		($n_h w_h$)	75	20	0	0	0
		(%)	75	25	0	0	0
		(*u*)	4.75				
	h_4	(*n*)	1	0	0	0	0
		($n_h w_h$)	5	0	0	0	0
		(%)	100	0	0	0	0
		(*u*)	5				
Σ*m*		(*n*)	39	21	10	3	2
		($n_h w_h$)	195	84	30	6	2
		(%)	52	28	13.33	4	2.67
		(*u*)	4.23				
Σ*f*		(*n*)	40	12	2	0	0
		($n_h w_h$)	200	48	6	0	0
		(%)	74.07	22.22	3.70	0	0
		(*u*)	4.70				
Σ(*m* + *f*)		(*n*)	79	33	12	3	2
		($n_h w_h$)	395	132	36	6	2
		(%)	61.24	25.58	9.30	2.33	1.55
		(*u*)	4.43				

Q1 'no'

		Q10		
v_1	v_2	v_3	v_4	v_5
0	0	4	0	0
0	0	12	0	0
0	0	100	0	0
3				
2	1	9	3	3
10	4	27	6	3
11.11	5.56	50	16.67	16.67
2.78				
2	5	19	8	0
10	20	57	16	0
5.88	14.71	55.88	23.53	0
3.03				
1	0	1	0	0
5	0	3	0	0
50	0	50	0	0
4				
0	1	1	2	0
0	4	3	4	0
0	25	25	50	0
2.75				
0	3	20	6	0
0	12	60	12	0
0	10.34	68.97	20.69	0
2.90				
1	1	11	2	2
5	4	33	4	2
5.88	5.88	64.71	11.76	11.76
2.82				
0	0	1	0	0
0	0	3	0	0
0	0	100	0	0
3				
5	6	33	11	3
25	24	99	22	3
8.62	10.34	56.90	18.97	5.17
2.98				
1	5	33	10	2
5	20	99	20	2
1.96	9.80	64.71	19.61	3.92
2.86				
6	11	66	21	5
30	44	198	42	5
5.50	10.09	60.55	19.27	4.59
2.93				

Q1 'no'					Q1 'no'				
		Q11					Q12		
V1	V2	V3	V4	V5	V1	V2	V3	V4	V5
1	4	0	0	0	0	1	2	1	0
5	16	0	0	0	0	4	6	2	0
20	80	0	0	0	0	25	50	25	0
4.20					3				
9	6	2	1	0	1	2	10	4	1
45	24	6	2	0	5	8	30	8	1
50	33.33	11.11	5.56	0	5.56	11.11	55.56	22.22	5.56
4.28					2.89				
16	17	1	1	0	3	7	22	3	0
80	68	3	2	0	15	28	66	6	0
45.71	48.57	2.86	2.86	0	8.57	20	62.86	8.57	0
4.37					3.29				
2	0	0	0	0	0	1	1	0	0
10	0	0	0	0	0	4	3	0	0
100	0	0	0	0	0	50	50	0	0
5					3.50				
3	1	0	0	0	0	1	2	2	0
15	4	0	0	0	0	4	6	4	0
75	25	0	0	0	0	20	40	40	0
4.75					2.80				
19	9	0	0	1	3	7	13	3	0
95	36	0	0	1	15	28	39	6	0
65.52	31.03	0	0	3.45	11.54	26.92	50	11.54	0
4.55					3.38				
10	8	0	0	0	0	3	10	3	0
50	32	0	0	0	0	12	30	6	0
55.56	44.44	0	0	0	0	18.75	62.50	18.75	0
4.56					3				
0	0	1	0	0	0	0	1	0	0
0	0	3	0	0	0	0	3	0	0
0	0	100	0	0	0	0	100	0	0
3					3				
28	27	3	2	0	4	11	35	8	1
140	108	9	4	0	20	44	105	16	1
46.67	45	5	3.33	0	6.78	18.64	59.32	13.56	1.69
4.35					3.15				
32	18	1	0	1	3	11	26	8	0
160	72	3	0	1	15	44	78	16	0
61.54	34.62	1.92	0	1.92	6.25	22.92	54.17	16.67	0
4.54					3.19				
60	45	4	2	1	7	22	61	16	1
300	180	12	4	1	35	88	183	32	1
53.57	40.18	3.57	1.79	.89	6.54	20.56	57.01	14.95	.93
4.44					3.17				

Q1 'no'					Q1 'no'				
		Q13					Q14		
v_1	v_2	v_3	v_4	v_5	v_1	v_2	v_3	v_4	v_5
0	0	2	0	1	1	0	2	0	0
0	0	6	0	1	5	0	6	0	0
0	0	66.67	0	33.33	33.33	0	66.67	0	0
2.33					3.67				
0	1	6	1	9	10	4	3	1	0
0	4	18	2	9	50	16	9	2	0
0	5.88	35.29	5.88	52.94	55.56	22.22	16.67	5.56	0
1.94					4.28				
1	0	11	8	15	14	8	9	3	0
5	0	33	16	15	70	32	27	6	0
2.86	0	31.43	22.86	42.86	41.18	23.53	26.47	8.82	0
1.97					3.97				
0	0	1	0	1	0	2	0	0	0
0	0	3	0	1	0	8	0	0	0
0	0	50	0	50	0	100	0	0	0
2					4				
1	1	1	2	0	1	4	0	0	0
5	4	3	4	0	5	16	0	0	0
20	20	20	40	0	20	80	0	0	0
3.20					4.20				
2	3	7	8	10	12	9	5	1	1
10	12	21	16	10	60	36	15	2	1
6.67	10	23.33	26.67	33.33	42.86	32.14	17.86	3.57	3.57
2.30					4.07				
2	1	4	2	6	9	2	3	1	0
10	4	12	4	6	45	8	9	2	0
13.33	6.67	26.67	13.33	40	60	13.33	20	6.67	0
2.40					4.27				
0	0	0	1	0	0	1	0	0	0
0	0	0	2	0	0	4	0	0	0
0	0	0	100	0	0	100	0	0	0
2					4				
1	1	20	9	26	25	14	14	4	0
5	4	60	18	26	125	56	42	8	0
1.75	1.75	35.09	15.79	45.61	43.86	24.56	24.56	7.02	0
1.98					4.05				
5	5	12	13	16	22	16	8	2	1
25	20	36	26	16	110	64	24	4	1
9.80	9.80	23.53	25.49	31.37	44.90	32.65	16.33	4.08	2.04
2.41					4.14				
6	6	32	22	42	47	30	22	6	1
30	24	96	44	42	235	120	66	12	1
5.56	5.56	29.63	20.37	38.89	44.34	28.30	20.75	5.66	.94
2.19					4.09				

Q1 'no'					Q1 'no'				
		Q15					Q16		
v_1	v_2	v_3	v_4	v_5	v_1	v_2	v_3	v_4	v_5
0	1	2	0	0	0	1	1	1	0
0	4	6	0	0	0	4	3	2	0
0	33.33	66.67	0	0	0	33.33	33.33	33.33	0
3.33					3				
5	8	5	1	0	0	8	4	1	3
25	32	15	2	0	0	32	12	2	3
26.32	42.11	26.32	5.26	0	0	50	25	6.25	18.75
3.89					3.06				
15	11	6	3	0	4	12	10	4	3
75	44	18	6	0	20	48	30	8	3
42.86	31.43	17.14	8.57	0	12.12	36.36	30.30	12.12	9.09
4.09					3.30				
0	2	0	0	0	1	1	0	0	0
0	8	0	0	0	5	4	0	0	0
0	100	0	0	0	50	50	0	0	0
4					4.50				
0	4	1	1	0	0	4	1	0	1
0	16	3	2	0	0	16	3	0	1
0	66.67	16.67	16.67	0	0	66.67	16.67	0	16.67
3.50					3.33				
9	16	4	1	0	1	6	10	6	8
45	64	12	2	0	5	24	30	12	8
30	53.33	13.33	3.33	0	3.23	19.35	32.26	19.35	25.81
4.10					2.55				
7	3	4	2	0	1	3	6	6	0
35	12	12	4	0	5	12	18	12	0
43.75	18.75	25	12.50	0	6.25	18.75	37.50	37.50	0
3.94					2.94				
0	1	0	0	0	0	0	1	0	0
0	4	0	0	0	0	0	3	0	0
0	100	0	0	0	0	0	100	0	0
4					3				
20	22	13	4	0	5	22	15	6	6
100	88	39	8	0	25	88	45	12	6
33.90	37.29	22.03	6.78	0	9.26	40.74	27.78	11.11	11.11
3.98					3.26				
16	24	9	4	0	2	13	18	12	9
80	96	27	8	0	10	52	54	24	9
30.19	45.28	16.98	7.55	0	3.70	24.07	33.33	22.22	16.67
3.98					2.76				
36	46	22	8	0	7	35	33	18	15
180	184	66	16	0	35	140	99	36	15
32.14	41.07	19.64	7.14	0	6.48	32.41	30.56	16.67	13.89
3.98					3.01				

Q1 'no'

	Q17			
v_1	v_2	v_3	v_4	v_5
2	0	1	1	0
10	0	3	2	0
50	0	25	25	0
3.75				
1	8	6	1	3
5	32	18	2	3
5.26	42.11	31.58	5.26	15.79
3.16				
4	16	10	5	1
20	64	30	10	1
11.11	44.44	27.78	13.89	2.78
3.47				
0	1	1	0	0
0	4	3	0	0
0	50	50	0	0
3.50				
0	1	2	0	0
0	4	6	0	0
0	33.33	66.67	0	0
3.33				
0	8	12	5	6
0	32	36	10	6
0	25.81	38.71	16.13	19.35
2.71				
1	2	7	5	0
5	8	21	10	0
6.67	13.33	46.67	33.33	0
2.93				
0	0	1	0	0
0	0	3	0	0
0	0	100	0	0
3				
7	25	18	7	4
35	100	54	14	4
11.48	40.98	29.51	11.48	6.56
3.39				
1	11	22	10	6
5	44	66	20	6
2	22	44	20	12
2.82				
8	36	40	17	10
40	144	120	34	10
7.21	32.43	36.04	15.32	9.01
3.14				

Appendix 9.8 Questions 9 to 17: *u* (Q1 'yes' + Q1 'no')

Q1 y + n Q9 - Q17 Σ(*m* + *f*): *m*/*f* Values for *u*

m/*f*	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
m	4.49	2.79	4.42	3.59	1.87	4.12	4.13	2.85	3.15
f	4.68	2.82	4.49	3.51	2.09	4.13	4.15	2.79	3.10
Σ(*m* + *f*)	4.58	2.81	4.46	3.55	1.98	4.13	4.14	2.82	3.12

Appendix 9.9 Questions 9 to 17: *n*, %, *u* (Q1 'yes' + Q1 'no')

Q1 y + n Q9 - Q17 Data

sex	age		Q9 v_1	v_2	v_3	v_4	v_5
Σm		(n)	229	96	28	6	4
		$(n_h w_h)$	1145	384	84	12	4
		(%)	63.09	26.45	7.71	1.65	1.10
		(u)	4.49				
Σf		(n)	251	66	7	0	6
		$(n_h w_h)$	1255	264	21	0	6
		(%)	76.06	20	2.12	0	1.82
		(u)	4.68				
$\Sigma(m + f)$		(n)	480	162	35	6	10
		$(n_h w_h)$	2400	648	105	12	10
		(%)	69.26	23.38	5.05	.87	1.44
		(u)	4.58				

Q1 y + n

		Q10		
v_1	v_2	v_3	v_4	v_5
12	27	191	77	21
60	108	573	154	21
3.66	8.23	58.23	23.48	6.40
2.79				
9	18	214	65	14
45	72	642	130	14
2.81	5.63	66.88	20.31	4.38
2.82				
21	45	405	142	35
105	180	1215	284	35
3.24	6.94	62.50	21.91	5.40
2.81				

Q1 y + n					Q1 y + n				
		Q11					Q12		
v_1	v_2	v_3	v_4	v_5	v_1	v_2	v_3	v_4	v_5
178	127	16	4	5	57	116	127	25	5
890	508	48	8	5	285	464	381	50	5
53.94	38.48	4.85	1.21	1.52	17.27	35.15	38.48	7.58	1.52
4.42					3.59				
203	109	17	3	5	53	112	130	32	7
1015	436	51	6	5	265	448	390	64	7
60.24	32.34	5.04	.89	1.48	15.87	33.53	38.92	9.58	2.10
4.49					3.51				
381	236	33	7	10	110	228	257	57	12
1905	944	99	14	10	550	912	771	114	12
57.12	35.38	4.95	1.05	1.50	16.57	34.34	38.70	8.58	1.81
4.46					3.55				

Q1 y + n					Q1 y + n				
		Q13					Q14		
v_1	v_2	v_3	v_4	v_5	v_1	v_2	v_3	v_4	v_5
9	8	70	83	156	154	96	57	16	8
45	32	210	166	156	770	384	171	32	8
2.76	2.45	21.47	25.46	47.85	46.53	29.00	17.22	4.83	2.42
1.87					4.12				
15	25	71	85	137	146	110	61	9	8
75	100	213	170	137	730	440	183	18	8
4.50	7.51	21.32	25.53	41.14	43.71	32.93	18.26	2.69	2.40
2.09					4.13				
24	33	141	168	293	300	206	118	25	16
120	132	423	336	293	1500	824	354	50	16
3.64	5.01	21.40	25.49	44.46	45.11	30.98	17.74	3.76	2.41
1.98					4.13				

Q1 y + n					Q1 y + n				
		Q15					Q16		
v_1	v_2	v_3	v_4	v_5	v_1	v_2	v_3	v_4	v_5
144	111	62	10	6	16	92	96	73	50
720	444	186	20	6	80	368	288	146	50
43.24	33.33	18.62	3.00	1.80	4.89	28.13	29.36	22.32	15.29
4.13					2.85				
131	136	57	8	3	12	72	123	89	39
655	544	171	16	3	60	288	369	178	39
39.10	40.60	17.01	2.39	.90	3.58	21.49	36.72	26.57	11.64
4.15					2.79				
275	247	119	18	9	28	164	219	162	89
1375	988	357	36	9	140	656	657	324	89
41.17	36.98	17.81	2.69	1.35	4.23	24.77	33.08	24.47	13.44
4.14					2.82				

Q1 y + n

		Q17		
v_1	v_2	v_3	v_4	v_5
13	130	110	60	23
65	520	330	120	23
3.87	38.69	32.74	17.86	6.85
3.15				
13	101	145	53	21
65	404	435	106	21
3.90	30.33	43.54	15.92	6.31
3.10				
26	231	255	113	44
130	924	765	226	44
3.89	34.53	38.12	16.89	6.58
3.12				