MANAGEMENT ENTRENCHMENT, CORPORATE GOVERNANCE and ACCOUNTING ARBITRAGE

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ABSTRACT

This paper examines the short term reaction of entrenched management to external regulation that jointly threatens managerial job security and firm survival. We utilise the 1992 imposition of the Australian Financial Institutions Code (AFIC) and a case study of New South Wales (NSW) credit unions to test "co-operative stakeholder", "regulatory-capital arbitrage", and "job-security" hypotheses. Credit unions have a governance system, operating policies, and an entrenched management structure significantly different from other banking institutions. We predict that these institutional and governance constraints limit the ability of managers to undertake substantial operating efficiencies required to meet target capital ratios, and managers will react by undertaking aggressive accounting manipulations. Consistent with predictions we find limited evidence of increased operating 'efficiency' and find that at-risk credit unions aggressively managed their capital adequacy ratios via a portfolio of accounting techniques and by taking 'asset baths'. Results raise questions about regulatory authorities imposing (possibly) inappropriate template regulation, the ethical reaction of managers and the corporate governance structures of co-operative institutions.

Classification Codes: G21, M40

Key Words: stakeholder corporate governance, credit unions, regulatory-capital arbitrage, accounting manipulations

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This paper examines the short term reaction of entrenched management to external regulation that jointly threatens managerial job security and firm survival. We utilise the 1992 imposition of the Australian Financial Institutions Code (AFIC) and a case study of New South Wales (NSW) credit unions to test "co-operative stakeholder", "regulatory-capital arbitrage", and "job-security" hypotheses. Credit unions have a governance system, operating policies, and an entrenched management structure significantly different from other banking institutions. We predict that these institutional and governance constraints limit the ability of managers to undertake substantial operating efficiencies required to meet target capital ratios, and managers will react by undertaking aggressive accounting manipulations. Consistent with predictions we find limited evidence of increased operating 'efficiency' and find that at-risk credit unions aggressively managed their capital adequacy ratios via a portfolio of accounting techniques and by taking 'asset baths'. Results raise questions about regulatory authorities imposing (possibly) inappropriate template regulation, the ethical reaction of managers and the corporate governance structures of co-operative institutions.

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Introduction

In this paper we examine a corporate governance setting that is jointly determined by an endogenous co-operative philosophy and externally by regulation that gave rise to a strong motive to undertake aggressive accounting manipulations. The external regulation is the Australian Financial Institutions Code (AFIC) that required co-operative societies to meet pre-assigned capital adequacy ratios borrowed from Basle I. We test a number of hypotheses by utilising a sub-sample of NSW credit unions that have governance structures and operating systems significantly different from the intended environment of the initial template regulation. We contribute to the literature by examining the specific motives, as determined by the corporate governance structure, that drives accounting manipulations and the techniques used, magnitude of effect, and consequences.

The corporate governance of co-operative societies, such as credit unions, provides a unique research environment because they do not strictly conform to traditional corporate governance models such as the principal-agent, myopic market, stakeholder or executive abuse of power models (Keasey, Thompson and Wright 2004). Instead, they have more of a dual governance system that reflects a weak principal-agent relationship between members, the board of directors and the general manager,[1] and an extended stakeholder view that questions value maximisation as a prime objective and stresses the importance of co-operative philosophies. The relationship between governance structures and financial performance is particularly interesting given that these co-operative societies must often compete with firms whose governance is more closely aligned to the Jensen

and Meckling (1976) principal-agent or finance perspective, and are required to meet the same prudential regulations. One further aspect is the entrenchment of credit union managers and proprietorial power they encapsulate.

At least as early as Berle and Means (1932) there is a recognition that, in the face of diffused member and board power, managers have considerable discretion to further their own interests by hiding poor performance, diverting cashflow to preferred investments, in giving themselves overly generous salary and perquisites, and in capitalising these benefits by job entrenchment. More recently, Davis (1994) confirmed this is the case for Australian credit unions. Whilst the possible inefficient use of individual credit union resources is a micro failing for those members, the perpetuation of failings across an industry that has a possible contagion impact, presents a macro problem for regulators.

In July 1992, AFIC was introduced to provide template prudential regulation for all Australian financial co-operative societies.[2] The code aims to increase integrity, efficiency and protect depositors and is couched in terms of accounting ratios that require minimum levels of capital and liquidity. These prudential accounting requirements emulated the minimum capital ratios of the Basle Accord 1988 (Basle I), designed to regulate large banks in developed countries, and those imposed on US banks by the Federal Deposit Insurance Corporation Improvement Act of 1991. Moreover, AFIC has the force of law with sanctions for failing to meet minimum

[1] Dechow, Sloan and Sweeney (1996) describe the corporate governance structure of firms whose CEO's are more likely to engage in earnings manipulation as having a dominant CEO, a board dominated by insiders and weaker external controls.

[2] The term co-operative societies encompassed both permanent building societies and credit unions. The stated purpose of AFIC was to provide template prudential regulation for co-operative financial societies in Australia based on the Basle Accord which was instituted in 1988 under the auspices of the Bank for International

capital requirements, possibly resulting in the loss of board control and dismissal of the manager. However, whilst it is patently undesirable and punitively costly for credit union managers to violate and remain below minimum capital requirements, they had few tools with which to quickly increase risk-weighted capital. We examine three hypotheses that predict the reaction of at-risk credit unions that were significantly below the required risk-weighted capital ratios around the introduction of AFIC.

As detailed in Smith, Cargill and Meyer (1981) the governance nature of credit unions demands that an economic prudential model take into account conflict resolution between member borrowers and savers, as well as the value of the institution to its members. This makes it difficult to increase profitability through increased margins without discriminating against certain member and stakeholder classes. We refer to this as the "co-operative stakeholder" hypothesis and predict that credit unions will not significantly increase profitability via increased operating margins. Second, credit unions do not have access to outside equity capital and face a mature and competitive market in the banking sector. Previous research documents that banks have found ways to manipulate the reported Basle capital figure through loan loss provisions and other accounting methods that impact the earnings figure (Beatty, Chamberlain and Maglioli 1995, Collins, Shackelford and Whalen 1995). This behaviour is consistent with Kane's (1988) description of 'regulatory dialectic' in which regulation is followed by avoidance behaviour on the part of regulated firms. Consistent with the bank literature we refer to this as

Settlements (BIS). Basle established contract equivalent standards that are explicit, stated in accounting terms, highly visible and intended to harmonize the international regulation of capital for large banks.

the “regulatory-capital arbitrage” hypothesis (Shrieves and Dahl 2003) and predict that credit union managers will replicate this behaviour.

The question then is to what extent are credit union managers willing to undertake further (and more aggressive) accounting manipulations to arbitrage risk-weighted capital requirements. Whilst, the violation of minimum capital requirements can trigger costly regulatory intervention there are also reputation costs associated with censure for accounting manipulations. In the banking literature there are conflicting views on these costs and incentives. Bishop and Lys (2001) argue the expected costs of regulatory violation are larger than the reputation costs of censure for capital management. On the other hand, Choi, Gramlich and Thomas (2001) maintain that the incentives to avoid regulatory censure are overstated.

We argue that credit union managers have significantly greater incentives to avoid regulatory censure and this is a direct result of their corporate governance structure. In credit unions, there is weak principal-agent governance between members, boards and shareholders, and no block of independent outside directors. Further, staff form a significant block of voting power. Hence, general managers have secured entrenched positions with supernormal salaries and perquisites that are not related to performance (Davis 1994). Given the theoretical predictions of Fudenberg and Tirole (1995) and the empirical research by Kanagaretnam, Lobo and Mathieu (2003) we predict that credit union managers with higher comparative levels of salary and perquisites (and limited outside opportunities) will aggressively engage in accounting manipulations when job security is threatened. We refer to this as the “job-security” hypothesis.

This study extends previous research in several ways. First, we document that the corporate governance environment of credit unions is significantly different from the corporate governance of banks. Yet, after the introduction of AFIC they are subject to effectively the same regulation. This provides a direct link between corporate governance and managements' motivation to undertake aggressive accounting manipulations. This raises further questions about whether accounting ratios should be taken as definitive evidence of success and failure, especially where managers operate in a co-operative environment and in a failure avoidance mode. Prior knowledge of differential corporate governance structures would aid regulators in better managing transition periods. Second, prior research on accounting management has typically examined broad measures of earnings management, such as total or discretionary accruals. We extend this literature by examining individual components within a portfolio of techniques and consider aggressive manipulations such 'asset baths' that abruptly change risk structures. We assume, given the stated objectives of AFIC, that regulators are more concerned accounting techniques that abruptly change risk structures.

We found support for all hypotheses at and around the introduction of AFIC. There was little evidence of improvements in profitability (return on assets), which we interpret as support for the co-operative stakeholder hypothesis. However, temporary and significant positive jumps in the risk-weighted capital adequacy ratio were observed. Furthermore, these sudden and large jumps in risk-weighted capital were almost completely explained by a variety of accounting manipulations consistent with the regulatory-capital arbitrage hypothesis. Additionally, the

magnitude and aggressive nature of the accounting manipulations that included "asset baths", supported our job-security hypothesis. We also observe that these short term accounting manipulations are either not discovered by auditors and/or are not acted on by regulators. We conjecture that this may be explained by the belief that the going concern assumption is not violated or because of the wider risk of contagion.

The background and research hypotheses are developed in the next section. Section three describes the data and the statistical method, section four reports the results and the paper is concluded in section five.

Background and Hypotheses Development

Regulatory Background

In July 1992 the Australian Financial Institutions Code (AFIC) was introduced to provide template prudential regulation for all Australian financial co-operative societies.[3] The regulation is couched in terms of accounting ratios and focuses on requiring minimum levels of capital and liquidity. In essence, AFIC requires a minimum of 8% capital[4] as a ratio of risk-adjusted assets,[5] as well as the holding of 7% of assets as prime liquid assets with an additional 8% to be held as operational liquidity. The AFIC prudential requirements emulated the minimum capital ratios of Basle Accord I and those imposed on US banks by the Federal Deposit Insurance Corporation Improvement Act of 1991 (see Kim and Kross 1998, and Ahmed et al.

[3] The term co-operative societies encompass permanent building societies (PBS's) and credit unions (CUs).

[4] The 8% must comprise a minimum of 4% Tier 1 capital (equity, retained earnings, preferred capital). The remainder can be made up of Tier 2 capital (loan loss provisions (LLP), perpetual preferred stock and debt, convertible debt and other subordinated stock and debt) of which there can only be a maximum of 1.25% of LLP.

[5] Asset risk weightings are set out in Appendix 1.

1999). In addition, market, credit data[6] and operations risk are required to be managed and reported together with the provision of guarantees, management contracts, and funds under external management. The stated primary objectives of the AFIC legislation are: (i) to protect and promote financial integrity and efficiency, and (ii) to protect the interests of depositors.

Given the restriction on credit union markets implied by their common bonds, they can be subject to significant shifts in the demand for loans or supply of funds caused by income and demographic changes in membership. These factors, in conjunction with small size diseconomies, mean they have higher overall risk management problems in the form of exposed liquidity and interest rate risk (see Goldsworthy, Schulz and Shuetrim 2000). The proposals for the AFIC regulatory reform of the Australian co-operative financial sector was based on these perceptions of higher relative risk structures compared to banks, with the sanctions intended to encourage the rehabilitation of undercapitalised institutions.[7]

Hence, credit union prudential standards obtained the force of law under the AFIC Code. The penalties for falling below minimum capital requirements include sanctions on loan portfolios and investment activities, monitoring of activities,[8] increased reporting requirements, the placing of credit unions under direction (with an outside manager gaining control), or even forced merger. Any of these sanctions would result in the loss of managerial and board reputations and possible dismissal

[6] Loan exposures of greater than 5% of capital are required to be reported, exposures of greater than 10% require prior approval from State supervisory bodies and there are restrictions on commercial lending and minimum loan covenants to members.

[7] This criticism is reflected, in part, by the failures of the Pyramid Building Society in Victoria, the State Bank of South Australia, Western Australian Teachers Credit Union and the MOE Credit Union in Victoria.

[8] Credit unions below the 8% capital target and also below a 1% return on assets are placed on active watch by AFIC.

of the manager. Hence, it is costly for managers to violate and remain below minimum capital requirements set out under AFIC.

Prior to AFIC, financial co-operatives were regulated by a range of legislation that differed across Australian states, acknowledging differences between building societies and credit unions, and required significantly lower capital ratios.[9] A significant point is that AFIC strongly reflects legislation originally enacted for larger banks. Our research questions and derived hypotheses revolve around the imposition of this external regulation on a different corporate governance setting from that operating in banks.

Research Questions and Hypotheses

Increased Efficiency?

The first research question concerns the impact of AFIC on the stated objective of raising the operating efficiency of credit unions.

RESEARCH QUESTION 1 (RQ1). How did the introduction of AFIC affect the operating performance of credit unions?

Credit unions have antecedents, philosophies and operating procedures that vary significantly from other financial and banking intermediaries and this creates several unique agency relationships. Credit union philosophy is developed from mutual collaboration with the main purposes to provide services to members at cost (thus questioning profit maximisation as a prime objective), the equitable treatment

[9] As low as 3%.

of members, and a broad notion of community service to an extended stakeholder set based on co-operative principles (Smith, Cargill and Meyer 1981). This approach is reflected in their modus of operations when becoming a member. On joining, credit union members can only purchase one share which restricts members to one vote. Hence, credit unions do not have a class of 'owner-shareholders' who can build up substantial voting blocks. Further, member borrowers and savers are treated equally with the philosophy that there be no conflict between these two classes of members.[10] The extended stakeholder notion extends beyond members to include employees and, loosely, society as a whole. In corporate governance terms this approach is similar to an extended stakeholder view of the world.

From this philosophical approach there has evolved a lending mindset that has a strong impact on the structure of the loan portfolio, and the agency costs of lending and managers' perception of risk. Credit unions have traditionally drawn membership from narrow restrictive bonds usually based on geographical boundaries and common occupational employment or associations.[11] Further, credit unions have focused on providing credit in the form of personal unsecured loans, previously difficult to obtain from banks and significantly more expensive from other sources. This activity is considered to be providing a valuable source of lower cost consumer finance to the community at large. Whether their restrictive bonds lower individual agency search costs and reduces the risk of bad debt, or the lower average maturity of the loan portfolio (18 months) combined with the restricted size and limited economies of scale increases risk and costs is a point of

[10] Compare this long established philosophy of the credit union movement with AFIC which specifically has the objective of protecting depositors: "The primary role of capital in deposit taking institutions is to provide a cushion against loss and to maintain the confidence of depositors" AFIC, 1992, p16.
[11] The occupational category accounts for 82% of credit unions (Fried and Lovell 1993).

debate in the literature (Fried, Knox Lovell and Vanden Eeckaut 1993). However, Kohers and Mullis (1987) empirically show that credit unions are less burdened by bad debts suggesting an agency cost advantage over banks in consumer finance. Hence, there is a strong perception that the risk of personal loans in credit unions is lower than those in banks.

There are other unique agency problems that arise from the institutional structure of credit unions. Davies (1994) documents that credit unions have unrefined corporate governance structures with policy and board agenda dominated by managers. As a result, a number of moral hazard problems develop that results in weak bonding covenants between management, the membership and the board of directors. First, there is weak governance by members. Because of the 'one member, one vote' rule, the incentive and ability of members to generate a concentration of voting power is limited and member attendance and voting at general meetings is limited. Second there is weak board governance. Board directors are internally appointed with no outside board members, more often they are volunteers, not remunerated, frequently drawn from a narrow employment bond and, therefore, lacking in skills related to the management and monitoring of a financial institution.[12] Whilst generally lacking in financial skills board members bring to the table a strong co-operative espirit de corp. Third, by combining the extended stakeholder and not-for-profit principles there arises a strong bond between the general manager and staff. Consequently, internal management has a propensity to over-staff and to establish generous employee-manager relationships. In this way managers obtain a potentially large and influential voting block because of their direct influence with

employees and the disincentive of members to attend and vote at meetings or to lobby board directors.

Thus under AFIC, credit unions were faced with increased regulatory sanctions determined by the level of their risk-weighted capital. They are predicated on the normative belief that efficient behavioural changes can be imposed on undercapitalised co-operatives in such a way so as to reduce inherent risk factors with a simultaneous reduction in losses to depositors. The AFIC prudential reforms thus emphasise the pre-eminent role for capital in the regulatory process. Activities deemed to be higher risk require larger funds to back them.[13] In turn, this implies that the risk of those activities is borne by equity-holders rather than depositors[14] and reflects the philosophy generated by the Basle Accord. However, credit unions do not have an effective class of shareholders and a co-operative philosophy determines that risk and profits should be evenly shared. Hence, in addressing the first research question on how introduction of AFIC affected the operating performance of credit unions, we take account of the incentives imposed by the underlying philosophies and governance structures of credit unions. We argue that credit union managers have strong incentives and constraints not to dramatically change operations in the short term.

[12] These governance variables are similar to those reported by Dechow, Sloan and Sweeney (1996) who describe the corporate governance structure of firms whose CEO's are more likely to engage in earnings manipulation as having a dominant CEO, a board dominated by insiders and weaker external controls.

[13] For example, a credit union which had assets of A$1.0 million, comprised of only business and personal loans (with a risk weighting of 1.0) would be required to have A$80,000 in capital in order to meet the 8% requirement. On the other hand, if the same credit union had assets comprised of residential mortgage loans (with a risk weighting of 0.5), then only A$40,000 of equity capital would be required.

[14] AFIC, 1992, p16. states: "The primary role of capital in deposit taking institutions is to provide a cushion against loss and to maintain the confidence of depositors".

First, credit unions cannot raise external equity to satisfy any sudden changes in regulatory capital requirements such as banks can – capital is restricted to one share per member issued at a nominal amount and these cannot be exchanged or traded. Thus, raw capital can only be accumulated through retained surpluses from operating activities. This can only be achieved through increased profitability by increasing revenue or reducing costs.

However, profit-maximising behaviour is incompatible with a co-operative philosophy. Smith, Cargill and Meyer (1981) highlight two major factors affecting the objectives of a credit union: (i) the value of a credit union should be maximised with respect to both borrower and depositor, and (ii) any probability of conflict arising between borrowers and depositors should be minimised. Thus, the accrual of raw capital from members through operating activities poses a serious philosophic problem for management. Increasing profits impose direct costs on members (by increasing the operating margin) and decisions have to be made as to whether the costs are borne by member depositors, member borrowers, or shared in some manner. Further, there are implicit cross-subsidies in such capital creation. Whilst current members receive the benefits provided by capital reserves that accrued at the expense of past members, they in turn bear the costs of current surpluses which are then retained for the benefit of future members. If capital accrues at a constant rate then the inter-temporal burden on members is shared evenly. However, current members who are forced to bear sudden and large jumps in capital creation will 'over-subsidise' future members without any return for these costs. Besides these philosophical considerations there are pragmatic reasons for not altering current deposit and loan rates. Credit unions must compete in the

mature banking industry and any change in rates risk a flight of current members not willing to subsidise future members, to other financial service providers. We predict that managers will react by not discriminating against any class of members thus maintaining the co-operative philosophy and minimising the risk of member flight.

The other way to increase profitability is to dramatically cut costs. The major costs faced by financial service providers, other than interest expense, is salaries. In credit unions, during the period of this study, the average cost of salary as a proportion of total expenses was 16% compared to 58% for interest expense. Whilst this is larger than banks[15] this group represents significant political leverage for credit union managers and the extended stakeholder philosophy of credit unions. Managers could turn to other expenses but the empirical evidence for bank institutions suggests efficiency through these expense classes is not an easy short-term recovery path (Dahl and Spivey 1995). Hence, we predict that profitability is unlikely to be increased by the endorsement in a reduction of these costs by managers or boards.

There are other issues that support a null hypothesis that risk weighted capital will not be increased by increasing raw profitability. Whilst the role of capital adequacy requirements in constraining the portfolio risk of profit maximising institutions, such as banks, is perceived to be beneficial it is not clear whether the same argument can be applied to co-operative institutions. For example, concern has been raised with respect to the effectiveness of various regulations and their impact

[15] The comparable cost in the four largest banks was 10%.

on the competitiveness of financial co-operatives. Wolken and Navratil (1981) examined the impact of the federal credit union usury ceiling on consumer credit availability and loan rates and reported that credit unions lost business in the market for deposits as a result of changes in operations. In addition, Brewer Jackson and Mondschean (1996) showed that in the face of regulation affecting portfolio risk levels, savings and loan institutions diversified into non-traditional assets thus increasing rather than reducing their risk exposure. Thus, it is not inherently obvious that credit unions should change their modus of operations. Bundt and Keating (1988) determined that previous deregulation in the 1980's failed to alter operating margins and if the close bonds of credit unions provide a comparative advantage in credit risk management then AFIC risk weightings may not pragmatically reflect real risk levels.

To summarise the above. Given credit unions inability to raise outside equity, an obvious approach is to immediately increase raw profitability by increasing the operating margin. We argue this is unlikely for several reasons: (i) it goes directly against the philosophy of a co-operative organisation and requires unpalatable decisions about cross-subsidisation that is unlikely to be endorsed by the board; (ii) the empirical evidence for bank institutions suggests efficiency is not an easy short-term recovery path; (iii) the internal organisational culture is geared to (over)providing services to members through higher staffing levels and this provides significant political capital to managers; and (iv) credit union managers have an optimistic faith in the going concern viability of their credit union supported by a comparative advantage in bad debt management of personal loans and no significant empirical research suggesting that operating changes are

necessarily effective. Instead they will seek to maintain the status quo, only instituting any profitability changes over a longer time horizon. We define raw profitability as the simple accounting income divided by net assets and propose the following null hypothesis:

HYPOTHESIS 1a. The return of assets (ROA) as a raw measure of profitability will not increase in the short term for credit unions regardless of size.

HYPOTHESIS 1b. The return of assets (ROA) as a raw measure of profitability will not increase in the short term for credit unions regardless of censure risk faced.

Hypothesis 1a controls for risk factors associated with size and tests for the impact over all credit unions. Hypothesis 1b is a stronger form of hypothesis 1a, in that it condenses the sample into credit unions that are below the AFIC risk weighted capital requirements and thus facing censure risk.

Accounting Manipulations and Job Security Concerns

Confronted by expected sanctions or transactions costs and the inability or unwillingness to increase capital by increasing raw profitability at the expense of targeted sectors of the membership, managers of at-risk credit unions facing censure risk may seek other avenues to meet regulatory requirements. We therefore propose two further research questions.

RESEARCH QUESTION 2 (RQ2). Are at-risk credit unions motivated to engage in material income increasing manipulations to increase capital?

RESEARCH QUESTION 3 (RQ3). Combined with entrenched management who have high concerns about job security will at-risk credit unions undertake aggressive accounting manipulations?

These questions directly address the research that examines the incentives for managers to manage or manipulate accounting numbers, specifically regulatory-capital arbitrage where managers attempt to stave-off or mitigate the impact of regulation.[16] This category includes price control regulation where financial statement management can increase the likelihood of price increase approval (Navissi 1999), the influencing of contractual outcomes (Healy and Wahlen 1999), and the circumvention of the impact of banking regulations.

Many of the studies that examine earnings manipulations use macro proxies such as unexpected accruals. However, the research that concentrates on banks looks at specific accruals or accounting methods used to manage earnings. For example, accrual management of the loan loss provision (LLP) to bolster the numerator of the capital ratio has been a primary technique employed (see Ahmed et al. 1999, Beatty, Chamberlain and Magliolo 1995, Collins et al. 1995, Moyer 1990, Greenawalt and Sinkey 1988). Further, Kim and Kross (1998) argue that LLP management is more likely to be detected after regulatory shocks and when capital ratios are relatively low.

[16] There are other incentives that induce managers to manipulate or adjust financial statements. In general they can be categorised as: (1) *Signalling*: to signal or report inside knowledge about the internal operations of the firm to the capital markets and to increase potential usefulness for current pricing or predictive ability (Ahmed, Takeda and Thomas 1999, DeFond and Park 1997), (2) *Deception*: to deceive external constituents in order to manipulate stock prices (Barth, Elliot and

An important restriction imposed by the AFIC legislation was the limitation on the use of the LLP in meeting capital requirements. The LLP counts as Tier 2 capital, but is restricted to 1.25% of the total capital to risk-weighted assets ratio. Thus, at-risk credit union managers who have reached the 1.25% level have an incentive to reduce the loan loss expense and increase earnings. In keeping with the bank regulatory-arbitrage we hypothesise that at-risk credit union managers will attempt to manage risk-weighted capital by using techniques that either increase Tier 2 capital directly or indirectly through reduced expenses and higher income. We analyse the LLP and add to the specific accrual research by also examining movements in the long service and holiday provisions.

Research question three poses a stronger question in asking to what extent are managers willing to undertake further accounting manipulations to arbitrage the risk-weighted capital requirements. Whilst, the violation of minimum capital requirements can trigger costly regulatory intervention there are also reputation costs associated with censure from accounting manipulations. In the banking literature there are conflicting views on these costs and incentives. Bishop and Lys (2001) argue the expected costs of regulatory violation are larger than the reputation costs of censure from capital management. On the other hand, Choi, Gramlich and Thomas (2001) maintain the incentives to avoid regulatory censure are overstated. We argue in at-risk credit unions there are three strong reasons and incentives to undertake risky accounting manipulations to arbitrage the capital to risk-weighted assets ratio. The first two reasons have been addressed. First, there are simply limited opportunities to increase raw capital because managers are

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Finn 1999), to cover up an inefficient management cultures or the enactment of bad business deals (Rosen 2003), or to meet analyst forecasts (DeGeorge et al. 1999), and (3) *Regulatory Arbitrage.*

constrained or unwilling to increase earnings by targeting sectors of the membership because of strong philosophical antecedents. Second, credit unions do not have recourse to equity capital.

The third arises from an incentive caused by the weak agency relationship between members, boards and shareholders and the potentially strong voting block delivered to managers by staff under the extended stakeholder concept. As a result, credit union general managers tend to dominate agenda setting and, as a group, they have captured supernormal salaries and perquisites based on size unrelated to performance and entrenched positions (Davis 1994). Thus, there is a strong incentive to minimise the risk of institutional failure and to satisfy any minimum prudential standards in order to maintain the future stream of supernormal salary and perquisites.

Hence, we hypothesise that managers with greater job security concerns and higher levels of comparative salary and perquisites will more aggressively engage in accounting manipulations to meet regulated targets. In undertaking our research we apply the three key theoretical postulates of Fudenberg and Tirole (1995) and the empirical research by Kanagaretnam, Lobo and Mathieu (2003) with regard to job security concerns and adopt them to credit unions.

Further, given the restrictions imposed by AFIC on LLP's we hypothesise that management will resort to a wide portfolio of accounting techniques (Beatty et al. 1995). These techniques will be opportunistic and aggressive (Bowman and Navissi 2003, Rosnet 2003) and, in conformity with Beasley et al. (1999), we

expect both the numerator (capital) and denominator (risk-weighted assets) of the ratio will be manipulated. We predict that the techniques will include the lowering of discretionary accrual expenses, 'dirty surplus' accounting techniques which bypass the income statement and directly increase the equity accounts, and the reclassification of assets into lower risk classes (asset baths). Similar to Kim and Kross (1998), we do not expect all credit union managers to resort to such techniques. Rather, we expect only those credit unions, whose capital ratio is at-risk will significantly undertake aggressive and potentially reputation damaging accounting techniques. For these firms the expected costs of regulatory violation are larger than the costs of censure from undertaking accounting manipulations. Further, we also propose that because general managers of large credit unions have a higher salary and perquisite base this will translate into relatively higher job loss concerns. Our prediction is that the aggressive degree of accounting techniques utilised will be associated with the size of the credit union. Formally, three further hypotheses are as follows:

HYPOTHESIS 2. The capital adequacy ratio (CAR) for at-risk credit unions will significantly increase around the introduction of AFIC.

HYPOTHESIS 3. The use of accounting techniques will explain the majority of these increases.

HYPOTHESIS 4. Large credit unions will utilise relatively more aggressive accounting manipulations.

Data and Statistical Method

Data

The data used in this study was sourced from the Registrar of New South Wales (NSW) co-operative societies and consists of summary accounting data required to be lodged with the Registrar each quarter-year. This data consists of a sample of one hundred and thirty-seven credit unions out of the full sample of one hundred and forty-four NSW credit unions.[17] In turn, this represents almost half of the two hundred and eighty-eight credit unions in operation in Australia in early 1995. The sample period covers thirty-one quarterly reporting periods from June 1987 through to December 1994. From this data we construct a quarterly return on assets ratio by dividing operating earnings before tax by total assets (QROA). This ratio was then used to evaluate the impact of increased capital adequacy regulations on operating efficiency and/or the willingness of managers to increase operating margins.

In order to calculate the risk weighted capital adequacy ratio the breakdown of total assets into the designated AFIC risk classes was obtained from the quarterly financial reports of all credit unions. These assets were then weighted by the ratios listed in Table 1 in order to estimate the total risk weighted assets (RWA). The quarterly risk adjusted capital adequacy ratio (CAR) was then calculated according to the principles outlined in section two as follows:

$$CAR = \frac{T_1K + T_2K}{RWA} \qquad (1)$$

[17] Seven credit unions were omitted because of incomplete financial data sets.

where T_1K is tier one capital, T_2K is tier two capital and RWA is risk weighted assets. Change in quarterly return on risk weighted assets (ΔCAR_t) was then calculated by subtracting the current ratio from the previous ratio.

Similar to Kim and Kross (1998), we determine those credit unions that were deemed to be at-risk and more likely to engage in earnings and risk capital accounting management techniques. AFIC required a minimum of 8% risk adjusted capital and this legislation was operative from the September 1992 reporting quarter. Hence, at-risk credit unions were defined to be those whose risk-adjusted capital was lower than the required 8% threshold one year before the enactment date – that is 30 June 1991. The derived sample consisted of 16 small and 16 large credit unions. For these 32 at-risk credit unions we obtained all 31 quarterly financial reports over the research period and proceeded to decompose total assets into the various risk classes in order to calculate the CAR per equation (1) for each quarter. Credit unions were stratified according to size. Small (large) credit unions were defined as having total assets less than (greater than) A$20 million as at 30 June 1992 (per Fried et al. 1993). Small credit unions accounted for 95 or 69% and large credit unions represent 42 or 31% of the sample.

Decomposition was undertaken for two major reasons. First, the research of Fried et al. (1993) suggests financial performance of credit unions is related to size, since size influences asset structure (especially the extent of diversification of the loan portfolio), and the ability to quickly generate profits. In our sample, average assets were $68m. for large and $6.4m. for small, with small credit unions having a higher quarterly return on assets than large credit unions (37.58% v 35.51%) and a higher

percentage of risky assets (personal loans compared to total loans 93% v 85%). A second reason is the view that size possibly acts as a proxy for the strength of the financial agency relationship between directors and managers. Along with the gains from economies of scale from size, it is possible that management of large credit unions have a more developed governance structure and generally increased financial accountability.[18] Given that large credit union managers have higher salaries and perquisites and, hence, face a larger loss function from being placed under direction, it is interesting to examine whether possibly stronger governance structures inhibit the proclivity to engage in aggressive accounting manipulations. The statistical methods applied to the two data sets are outlined in the next section.

The Statistical Model

It is well known that shocks or interventions that can manifest themselves in several forms frequently affect the time series of financial data. Shocks can change the level (either anticipatory or after some delay), change the trend, and have either a permanent or transient impact on the level of a financial series. In the case where exogenous interventions on the data series is known, then a statistical model can be specified as a rational (ratio) polynomial distributed lag and described as an impulse response function as follows:

$$Y_t = \mu + \sum_{i=1}^{M} \frac{\varpi_i(B)B^{bi}}{\delta_i(B)} X_{i,t} + \frac{\theta(B)}{\phi(B)} Y_t + \varepsilon_t \qquad (2)$$

where μ is a constant, ϖ_i is an impulse function, B is the backward operator and i is the power function between a change in X and its effect upon Y at time t, M is the number of independent variables and ε the uncorrelated noise term zero with mean

[18] Hautalvoma et al. (1993) report the degree of financial governance of chief executive officers (CEO) was

zero and a normal distribution (Box and Jenkins 1976, Ch.11). The final term is an ARIMA mechanism that models the lag structure of dependent variable.

Equation (3) simply expresses equation (2) to allow for the one impulse from AFIC (ϖ_i), with *r* the order of the response function, and *p* the order of the autoregressive process on Y_t.

$$Y_t = \mu_t + \frac{\varpi_i}{1-\delta_{i,1}B-\cdots-\delta_{i,r}B^r} AFIC + (\phi_1 +\cdots+ \phi_p B^p)Y_{t-p} + \sum_{j=1}^{n} \lambda_j + \varepsilon_t$$

(3)

Y_t is defined as either the QROA $_t$ or the ΔCAR_t, ϖ_i tests for any spike in the data series at the introduction of AFIC in the September 1992 quarter, and δ_i tests for any reversion effects from ϖ_i. If δ_i lies in the range ($0 < \delta_i < 1$) then the regulatory impact initially results in a spiked jump and has a reversion effect in the following form:

$$[\,1 + \delta B^1 + \delta^2 B^2 +\ldots+ \delta^k B^k]\,\varpi$$

(4)

This functional form is consistent with the hypothesis that the residual effects from the AFIC legislation impact more slowly across subsequent periods. Finally, λ_j tests for any other significant quarterly spikes in the two series outside the impact of AFIC.

positively related to size.

Results

Testing for Increases in Profitability

Since one reaction to AFIC is the promotion of efficiency and an increase in raw profitability, we first investigate whether AFIC induced any increases in ROA and whether they were temporary or permanent. Applying model (3), we analysed quarterly return on assets (QROA) for both large and small credit unions and report the estimated coefficients in Table 1.

INSERT TABLE 1 ABOUT HERE

Results indicate no consistent increases in profitability around the time of AFIC enactment. Large credit unions exhibited two significant increases in ROA (λ_1 in September 1993) and another almost two years after AFIC (λ_2 in June 1994). Two points can be made from these results, they lag AFIC by at least a year and they are not sustained. On the other hand, small credit unions experienced significantly lower ROA within a 2-year window after the increase in capital adequacy requirements (λ_1 , λ_2, λ_3). It may be possible that the AFIC legislation imposed substantial costs and the subsequent force majeure lead to the diversification of small credit unions into inefficient operating areas away from the personal loan area (consistent with Brewer, Jackson and Mondschean 1996, and Wolken and Navratil 1981).

The more likely scenario was credit unions at-risk under the 8% required benchmark would undertake some operating efficiencies or increase the operating margin. H1(b) predicts that these actions would be constrained and would not be

substantial. Table 2 presents the results of the ROA analysis for both large and small 'at-risk' credit unions. For large at-risk credit unions there is weak evidence of an increase in efficiency in the June 1992 quarter (w_1) and stronger evidence two years later (λ_2). But again the results are not consistent or sustained. This is not the case for small at-risk credit unions. In contrast to the overall analysis, there appears to be profitability gains around AFIC (w_1, λ_1) in the three following quarters.

INSERT TABLE 2 ABOUT HERE

Whether this result is related to efficiency gains or managerial reallocation of the internal gains and losses between members is problematic. However, we point to the fact that the ROA intercepts for large and small at-risk credit unions are both lower than the overall sample (0.34 *cf.* 0.36, and 0.29 *cf.* 0.39). This suggests that average returns for, at least, small at-risk credit unions were at a level where operating efficiencies could be reasonably be enacted. The case for large at-risk credit unions is not as compelling and we will return to this point in the next section. Thus, the AFIC requirements may have induced some efficiency effects around introduction for *small at-risk credit unions*, which did not translated into the overall credit union sector. These results, in turn, suggest that if regulation is deemed necessary to avert financial market failure then they are more likely to be successful if they are specific and target those firms deemed to be at-risk. In terms of H1(b) our predictions have constrained supported.

Overall, we conclude that the AFIC enactment is not associated with any sustained changes in raw profitability in credit unions with the exception for at-risk credit

unions. These results are consistent with the unique co-operative philosophy of credit unions and an extended stakeholder concept that prohibits reallocating costs and returns between members in order to increase the operating margin and profitability. Our results thus support H1(a).

The above analysis shows only limited increases in raw profitability and thus points to a limitation in increasing risk-weighted capital. We now turn to the hypotheses that manipulative accounting techniques would be employed by those credit union managers deemed to have the greatest incentive in order to quickly improve their capital adequacy ratios. These are identified as the at-risk group with capital ratios less than 8% in the preceding 6-months. We test the manipulative accounting hypotheses (H2, H3 and H4) in the next section.

Testing for Increases in Risk-Weighted Capital

Analysis of the quarterly change in the capital adequacy ratio *(ΔCAR)* using equation (3) was next performed for both large and small 'at-risk' credit unions. Table 3 reveals significant and positive spikes (ϖ_1) in the change in the capital adequacy ratios during the September 1992 quarters for both large and small at-risk credit unions. Large credit unions had a significantly higher jump in the September quarter CAR (2.81%) compared to a smaller spike for small credit unions (1.23%). But small credit unions had a comparatively more continuous evolution of their risk-weighted capital with it increasing by 1.61% above the expected time-series for the three quarters from September 1992 to March 1993.[19] These characteristics are clearly shown by observing the unadjusted time-series plots in Figures 1 and 2.

Figures 1 and 2 also reveal the unusual nature of the *ΔQCAR* around the introduction of increased capital adequacy requirements compared to the *QROA* ratio. For both small and large credit unions, the *ΔQCAR* plots below *QROA*, except around the imposition of increased AFIC capital adequacy requirements during the September quarter 1992. Hence, based upon our statistical and visual analysis, we conclude there were significant and unusual increases in the capital adequacy ratio of at-risk credit unions around the enactment of AFIC, which confirms the prediction of H2.

INSERT TABLE 3 AND FIGURES 1 & 2 ABOUT HERE

Capital Arbitrage Using Accounting Manipulations

We have now established that statistically significant and large positive increases in the capital adequacy ratio of at-risk credit unions (irrespective of size) occurred during the September 1992 quarter and this was accompanied by only minor increases in profitability. The hypotheses we now test are whether the increase in risk-weighted capital was caused by accounting manipulations by managers.

There are two potential strategies that remain with management to employ to increase the capital adequacy ratio of credit unions: (i) increase the value of capital reserves, or (ii) decrease the risk-weighting of assets. Strategy one may be implemented through a variety of methods, including improved raw profitability, manipulation of discretionary accounting items to increase reported profits, and the use of dirty surplus accounting techniques that bypass the income statement and

[19] The functional form of the AFIC intervention was $(1 + 0.2492 + 0.2492^2)\ 1.2259 \Rightarrow 1.61$ (as per equation

directly increase capital. Examples of dirty surplus accounting include asset revaluations taken to a revaluation reserve, extraordinary items booked 'below the line', and LLP reversed directly to capital reserves. Accounting techniques commonly employed to increase reported income include the reduction of discretionary expenses such as bad debt expense and provisions for long service and holiday leave.

The second strategy requires that credit union managers change the asset composition of their portfolio. This could be achieved by switching business lines from high risk personal or business loans into lower risk mortgage loans or by holding higher levels of cash deposits. Such a strategy is difficult and costly. First, it takes considerable time and resources to refocus the balance sheet (Dahl and Spivey 1995), and re-alignment too quickly into non-traditional areas can be inefficient (Brewer et al. 1996). This is especially so given that the mortgage loan sector in Australia requires credit unions to compete directly with the large banks. Moreover, to progressively turn aside from the high return/personal loan areas where credit unions have a comparative advantage in agency monitoring compounds this inefficiency. Alternatively, credit unions might reclassify their existing loans into lower risk classes by taking an asset bath such that the composition of their loan portfolio *appears* to have changed. However, these window dressing reclassifications are risky and would only be attempted if managers were highly motivated.

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6).

In order to assess whether any abnormal accounting management occurred, we first require an expectations model that measures the expected ΔCAR for individual at-risk credit unions during the six months before and after the imposition of increased capital adequacy requirements. We do this by running equation (3) for each individual credit union and using the intercept term μ_t and the autoregressive terms on Y_t to estimate an expectations model and then subtract actual from expected. The next step was to estimate the proportion of unexpected ΔCAR that was attributable to accounting manipulations. Expected changes in loan loss, long service leave and holiday provisions were estimated from a cross-sectional panel data model with a common intercept and different time-series for each credit union.

The results are reported in Table 4. We note that the reclassification of loans to reduce the risk weighting of assets was the most utilised manipulative accounting technique, being used by all 16 of the large credit unions and by 9 of the small credit unions. Large credit unions had a 26% higher net effect from accounting manipulations when compared to small credit unions and all asset risk re-classifiers had risk-adjusted capital above 8% by the end of December 1992. In addition to loan asset reclassifications, 7 of the 16 large credit unions used 'dirty surplus' and/or discretionary income manipulative accounting methods to increase equity and further boost their risk-adjusted capital. A higher proportion of small credit unions (15 of 16) applied such techniques.

From Table 4, it can be seen that reclassifications, on average, contributed 97% of the unexpected changes in the risk weighted capital adequacy ratio for large credit

unions compared to 39.8% for small credit unions. Small credit unions relied to a greater extent on dirty surplus and discretionary accounting (30.3% compared to 8.1%). Overall, the use of accounting management techniques more than explained the unexpected increase in risk weighted capital for large credit unions (105.1%), whilst explaining 70.1% of the unexpected increase in risk weighted capital for small credit unions.

Overall, our analysis indicates that during the 12-month window period immediately surrounding the introduction of the AFIC legislation, at-risk credit unions employed accounting strategies to reduce the threat of being placed under 'direction'. The most frequently applied strategy was the reclassification of loans from high-risk personal/business loans to lower-risk housing loans. Small credit unions did not utilise this strategy as widely instead employing dirty surplus and income manipulative accounting methods to boost their risk-adjusted capital. These methods were also used, albeit to a lesser extent, by large credit unions to further enhance their position.

Both hypotheses 3 and 4 are confirmed by the results. Manipulative accounting techniques do explain the majority of the QCAR increases and large credit unions are more aggressive in the manipulation of their accounts on two accounts. First, they relied heavily on accounting reclassification techniques to move personal loans into a lower risk class. Other techniques such as accrual manipulation and dirty surplus accounting are more widely utilised in the banking sector but this study is one of the few to document the widespread use of asset reclassifications (see also Jones and John 1998). Second, large credit unions raised QCAR within one period

(September 1992) which exactly coincided with the introduction of the AFIC requirements. Further, the fact that credit union managers had obtained supernormal personal rents, undertaken large and aggressive accounting manipulations within credit unions at-risk over a short period of time, lends further support to the proposition that the incentive to reduce the threat of dismissal is influential (Kanagaretnam, Lobo and Mathieu 2003).

Summary and Discussion

This study analysed the impact of increased capital adequacy requirements imposed by the Australian Financial Institutions Code (AFIC) in July 1992 on credit unions in Australia. The stated purpose of AFIC was to promote financial efficiency and to protect the interests of depositors. In essence, the prime accounting ratio directive of AFIC required a minimum of 8% capital as a ratio of risk adjusted assets. We examined the reaction of credit union managers to the new regulation and found that capital adequacy levels moved quickly to satisfy the risk-weighted capital requirements as laid down by AFIC. However, the process by which capital adequacy levels changed was not via efficiency gains or increased operating profitability; but through accounting manipulations in the form of asset reclassifications, followed by discretionary accounting methods and dirty surplus techniques.

This research is unique in the regulatory capital arbitrage banking literature because it isolates a situation whereby managers have very limited ability to meet capital standards and to reduce potential transaction, monitoring and personal costs. We document that profitability in credit unions is a function of re-allocating costs and

benefits between member depositors and member borrowers. In a co-operative society, there is an operating culture that depositors should not be subsidised at the expense of borrowers or vice versa. Further, if the costs of profits were to be shared equally then the credit union industry would be at a competitive disadvantage compared to banks. Deposit rates would decrease and loan rates increase. This would further accentuate the overt monopoly subsidy provided to banks in Australia and the branding provided by the free provision of prudential monitoring. Thus, managers who undertook to meet prudential requirements by increasing operating margins or by trying to quickly reduce costs and the service provided to members would challenge a sacrosanct principle of co-operatives. Nor do credit union managers have recourse to issued capital.

There is a complicating factor in that credit union managers by virtue of weak corporate governance have accumulated supernormal rents in the form of above normal salaries and perquisites. Hence, at-risk credit union managers have very strong incentives, but limited ability, to quickly mitigate minimum capital imposed by AFIC. As we document this was achieved by the use of manipulative and aggressive accounting manipulations. By doing so this paper establishes a link between aggressive accounting manipulations, changes in asset risk metrics, job security returns and regulatory capital arbitrage.

From these results we may reasonably question why auditors and regulators did not discover, or if they did so, why they sanctioned these manipulations. Auditors are concerned with violations of the going concern principle. Examination of the intercept in Tables 1 and 2, show that QROA is well above the benchmark figure

used in the banking industry of 0.25% per quarter. The possible exception is small at-risk credit unions, but they showed improvement in profitability after AFIC. Further, a comparative advantage that credit unions enjoy is a strong core customer asset. Credit unions dominate banks in terms of customer relationship marketing and service delivery;[20] stimulated by a culture that emphasises the importance of consistent excellence in service to customers.

> "The fact that such small, ostensibly cooperative organisations, can manage to survive (even thrive) is a reflection of their distinctive organisational cultures which appear to produce satisfied and loyal customers who are prepared to pay a premium price for loans and yet who are staunch and loyal advocates (Duncan and Elliot 2002, p.23).

Thus, the long term profitability of credit unions (and the going concern assumption) is relatively safe as long as the credit union maintains a loyal customer core. By not changing operating margins managers may have enabled the customer asset base; indeed by immediately increasing profitability and acting like a 'bank' the going concern viability of some credit unions may have been challenged.

What about the role of regulators? There is ample evidence that regulators and experts are fooled by accounting manipulations. For example, earnings management to gain price approvals in regulated industries (Navissi 1999), accounting manipulations in failing firms (Rosnet 2003), to cover up fraud (Beasley

[20] Effective customer relationship marketing and service quality delivery in the credit union sector encompasses the provision of customer service as promised, establishing interactive relationships with individuals and emphasising personalised information. This includes the provision of prompt service, having convenient hours, providing customers with a feeling of safety in their transactions and investments, making customers feel valued, and generally having a caring, understanding and helpful customer focus (Duncan and Elliot 2002).

et al 1999), and McKeown, Mutchler and Hopwood (1991) report auditors often fail to issue going concern opinions for companies that ultimately go bankrupt. Moreover, the voluminous research on bank regulatory-capital arbitrage, which was not sanctioned, provides evidence that regulators were either fooled or turned a 'blind eye'. Finally, Shrieves and Dahl (2003) document substantial and sustained earnings management by Japanese banks during the 1990's that was inexplicitly ignored by regulators. They conclude earnings management was instrumental in enabling Japanese banks to comply with international capital regulations imposed by the Basle Accord. Quite simply the cost to society of upholding idealistic banking legislation is much greater than the benefits.

As discussed in Scholes, Wilson and Wolfson (1992) and mentioned by Kim and Kross (1998), regulatory bodies can make more efficient policies if they consider the impact of regulations on managerial incentives and behaviour. An understanding of the different philosophy and culture of organisations can also guard against the issuance of template regulations that may be inequitable in their impact; and hence require accounting manipulators to save the day for the firm and themselves.

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Appendix 1: Asset Risk Weightings and Capital Adequacy Requirements Imposed by the 1992 AFIC Regulations on Credit Unions

AFIC regulations require institutions to hold a minimum of 8% capital as a ratio of risk-adjusted assets, 7% of assets as prime liquid assets and 8% of assets to be held as operational liquidity. The 8% risk-adjusted capital must comprise a minimum of 4% Tier 1 capital (equity, retained earnings, preferred capital). The remainder can be made up of Tier 2 capital (loan loss provisions (LLP), perpetual preferred stock and debt, convertible debt and other subordinated stock and debt) of which there can only be a maximum of 1.25% of LLP. In addition, market, credit, data and operations risk are required to be managed and reported together with the provision of guarantees and management contracts in managed funds. AFIC requires that credit union assets be divided into five categories, each of which is assigned a specific risk weighting given below. Total risk-weighted assets are then derived by multiplying the dollar value of all assets by their risk weight and then summing.

Risk Weight %	Type of Asset
0	Notes, coin and short-term federal government debt
10	Long-term federal government debt, state government debt
20	Bank liabilities, local government debt
50	Residential mortgage loans
100	Unsecured business loans, personal loans, lines of credit

Appendix 2: Example of the Calculation of the Proportion of Unexpected Change in Capital Adequacy Ratio (CAR) Attributable to Accounting Manipulation Techniques

1. We begin by using equation (A2.1) to estimate the time series expectation of *ΔCAR* for each at-risk credit union and using the intercept and time series coefficients to calculate expectations. Each expected change is then estimated over the period March 1992 to December 1992.

$$E\Delta CAR_t = \mu_t + \frac{\varpi_i}{1-\delta_{i,1}B-\cdots-\delta_{i,r}B^r} AFIC + (\phi_1 +\cdots+ \phi_p B^p)\Delta CAR_{t-p} + \sum_{j=1}^{n}\lambda_j + \varepsilon_t \quad \text{(A2.1)}$$

2. The CAR is then reconstructed by directly calculating the expected ratio for December 1991 from the accounts. A check is carried out to determine if there were any dirty surplus flows or if the *ΔCAR* was significant. If either was detected, we go back until these conditions are satisfied.

3. The next step involves fitting an autoregressive time series model to estimate the expected dollar operating earnings (clean surplus) for each Credit Union. Operating earnings are used as the anchor point because our previous analysis indicated that operating earnings was relatively stable and, hence, more robust to prediction.

4. The expected risk weighted assets was then derived from the above information.

5. An example of these calculations are set out below:

Expected Variables	Dec 91	Mar 92	Jun 92	Sep 92	Dec 92
+E[ΔCAR]	0.25%	0.25%	0.25%	0.25%	0.25%
***E[Operating earnings]*		$1000	$1000	$1000	$1000
#E[Capital]	$40,000	$41,000	$42,000	$43,000	$44,000
^E[CAR]	8%	8.25%	8.5%	8.75%	9.0%
^^E[Risk weighted assets]	$500,000	$496,970	$494,117	$491,429	$488,890

+ Expected ΔQCAR estimated from intercept and autoregressive coefficients derived from equation (A2.1). * Expected operating earnings estimated from an autoregressive model. # Expected capital derived from observed capital in Dec 91 plus expected clean surplus operating earnings in subsequent years. ^ Expected capital adequacy ratio derived from observed CAR in Dec 91 plus expected changes. ^^ Expected risk weighted assets estimated after deriving expected capital and expected capital adequacy ratio.

The above example shows stable but slightly increasing expected earnings and falling expected risk weighted assets. This will change from firm to firm but is consistent with credit unions having *long term policies* to increase earnings and lower risk profiles.

6. Subtracting actual ΔCAR from expected ΔCAR an unexpected spike of 1.25% in ΔCAR was observed in the September 92 quarter.

7. The actual change in capital is then observed for that quarter. In this example the capital increased to $46,000.

8. The expected accrual expense is estimated from a cross-sectional autoregressive time-series model based on past changes in provisions. To derive the unexpected change we subtract expected accruals from actual accruals. We assume this to be $500.

9. We directly observe from the accounts any dirty surplus flows. In the example it is $1800.

10. The unexpected decrease in risk-weighted assets is then calculated by subtracting observed ($460,000) from expected ($491,429).

11. The percentage contributions for each factor are then calculated.

i. Discretionary	$500/491,429	=	0.1017/1.25	=	8.14%
ii. Dirty surplus	$1800/491,429	=	0.3052/1.25	=	36.63%
iii.Reclassifications	$31,429/491,429	=	0.6395/1.25	=	51.16%
			Total		95.93%

12. Finally, we repeat this procedure for all firms in the 1992 quarters and then sum and average the proportions from small and large at-risk credit unions.

Table 1: The Impact of AFIC on the Quarterly Return on Assets (QROA) on All Credit Unions

Panel A: Large Credit Unions (Total Assets greater than A$20 million)

	Coefficient	Estimate	T Ratio	Variable
1	μ	0.3562	25.63*	Intercept
2	ϕ_1	0.3595	13.37*	*QROA* lag 1 period
3	ϕ_2	0.2496	9.25*	*QROA* lag 4 periods
4	λ_1	0.0488	1.92**	*QROA* Sep Qtr 93
5	λ_2	0.1319	5.18*	*QROA* June Qtr 94
		AIC -628.13		SBC -602.92

Panel B: Small Credit Unions (Total Assets less than A$20 million)

	Coefficient	Estimate	T Ratio	Variable
1	μ	0.3867	23.27*	Intercept
2	ϕ_1	0.0875	4.82*	*QROA* lag 1 period
3	ϕ_2	0.3864	21.27*	*QROA* lag 4 periods
4	λ_1	-0.0695	-1.69**	*QROA* June Qtr 93
5	λ_2	-0.1177	-2.86*	*QROA* Dec Qtr 93
6	λ_3	-0.0832	-2.02*	*QROA* Mar Qtr 94
		AIC 3025.49		SBC 3060.57

*Denotes statistical significance at the 5% level, and **denotes statistical significance at the 10% level. Sample consists of 95 small credit unions and 42 large credit unions.

Model is : $$QROA_t = \mu + \Sigma \frac{w_i}{1 - \delta_{i,1}B - \cdots - \delta_{i,r}B^r} AFIC + (\phi_1 + \cdots + \phi_p B^p) QROA_{t-p} + \sum_{j=1}^{n} \lambda_j$$

The model was estimated simultaneously by maximum likelihood via nonlinear least squares. The adequacy of the fitted model was determined by checking the statistical significance of the coefficients and performing diagnostic checks on the residuals. Competing models were compared and chosen by minimising the Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC).

Table 2: The Impact of AFIC on the Quarterly Return on Assets of 'At-Risk' Credit Unions

Panel A: Large 'At-Risk' Credit Unions

	Coefficient	Estimate	T Ratio	Variable
1	μ	0.3415	10.86*	Mean *QROA*
2	ϕ_1	0.5239	12.52*	*QROA* lag 1 period
3	ϕ_2	0.2000	4.77*	*QROA* lag 4 periods
4	ω_1	0.0684	1.75**	*QROA* June Qtr 92
5	λ_1	0.1731	4.43*	*QROA* June Qtr 94
		AIC -246.37		SBC -226.21

Panel B: Small 'At-Risk' Credit Unions

	Coefficient	Estimate	T Ratio	Variable
1	μ	0.2941	10.07*	Mean *QROA*
2	ϕ_1	0.1883	3.87*	*QROA* lag 1 period
3	ϕ_2	0.1068	2.19*	*QROA* lag 3 periods
4	ω_1	0.2112	2.07*	Impact of AFIC Sep Qtr 92
5	ω_2	0.1868	1.80**	*QROA* Dec Qtr 92
6	λ_1	0.1921	1.88**	*QROA* Mar Qtr 93
		AIC 426.35		SBC 450.47

*Denotes statistical significance at the 5% level; and ** denotes statistical significance at the 10% level. Sample consists of 16 large and 16 small credit unions whose capital adequacy ratio was below 8% one year before AFIC (ie. 31 June 1991).

Model is : $$QROA_t = \mu + \Sigma \frac{w_i}{1 - \delta_{i,1}B - \cdots - \delta_{i,r}B^r} AFIC + (\phi_1 B + \cdots + \phi_p B^p) QROA_{t-p} + \sum_{j=1}^{n} \lambda_j$$

The model was estimated simultaneously by maximum likelihood via nonlinear least squares. The adequacy of the fitted model was determined by checking the statistical significance of the coefficients and performing diagnostic checks on the residuals. Competing models were compared and chosen using the Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC). The MA term was not significant.

Table 3: The Impact of AFIC on the Change in Quarterly Capital Adequacy Ratio of 'At-Risk' Credit Unions

Panel A: Large 'At-Risk' Credit Unions

	Coefficient	Estimate	T Ratio	Variable
1	μ	0.1295	4.22*	Intercept
2	ϕ_1	0.1775	3.65*	$\Delta QCAR_t$ lag 1 period
3	ϖ_1	2.8099	22.71*	Impact of AFIC Sep Qtr 92
4	λ_1	0.2096	1.70**	$\Delta QCAR_t$ Dec Qtr 93
5	λ_2	0.4288	3.47*	$\Delta QCAR_t$ June Qtr 94
Akaike IC		600.95	Schwartz BC	621.11

Panel B: Small 'At-Risk' Credit Unions

	Coefficient	Estimate	T Ratio	Variable
1	μ	0.1712	3.81*	Intercept
2	ϕ_1	0.1005	2.00*	$\Delta QCAR_t$ lag 1 period
3	ϖ_1	1.2259	6.29*	Impact of AFIC Sep Qtr 92
4	δ_2	0.2492	1.69#	Reversion Coefficient
	AIC 956.73			SBC 972.80

Denotes statistical significance at the 5% level; ** denotes statistical significance at the 10% level; and # denotes significance of the mean reversion coefficient to two lags at the 10% level. Sample consists of 16 large and 16 small credit unions whose capital adequacy ratio was below 8% one year before AFIC (ie. 31 June 1991).

Model is : $$\Delta QCAR_t = \mu + \sum \frac{w_i}{1 - \delta_{i,1}B - \cdots - \delta_{i,r}B^r} AFIC + (\phi_1 + \cdots + \phi_p B^p)\Delta QCAR_{t-p} + \sum_{j=1}^{n} \lambda_j$$

The model was estimated simultaneously by maximum likelihood via nonlinear least squares. The adequacy of the fitted model was determined by checking the statistical significance of the coefficients and performing diagnostic checks on the residuals. Competing models were compared and chosen using the Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC).

Table 4: The Impact of Accounting Manipulations on Risk-Weighted Capital Adequacy – Two Quarters Before and After AFIC

Large Credit Unions		**Small Credit Unions**
Average Impact	Type	Average Impact
97.0%	Reclassification of assets (RA)	39.8%
3.1%	Dirty surplus accounting (DS)	9.0%
5.0%	Discretionary accounting (DA)	21.3%
105.1%		70.1%

The window period includes the quarters ended March, June, September and December 1992. Total is the attributed percentage that accounting manipulations explain of the deviation from the time-series expectations of ΔQCAR.

Figure 1 - Quarterly Return on Assets and Change in Capital Adequacy Ratio
Large 'at-risk' Credit Unions

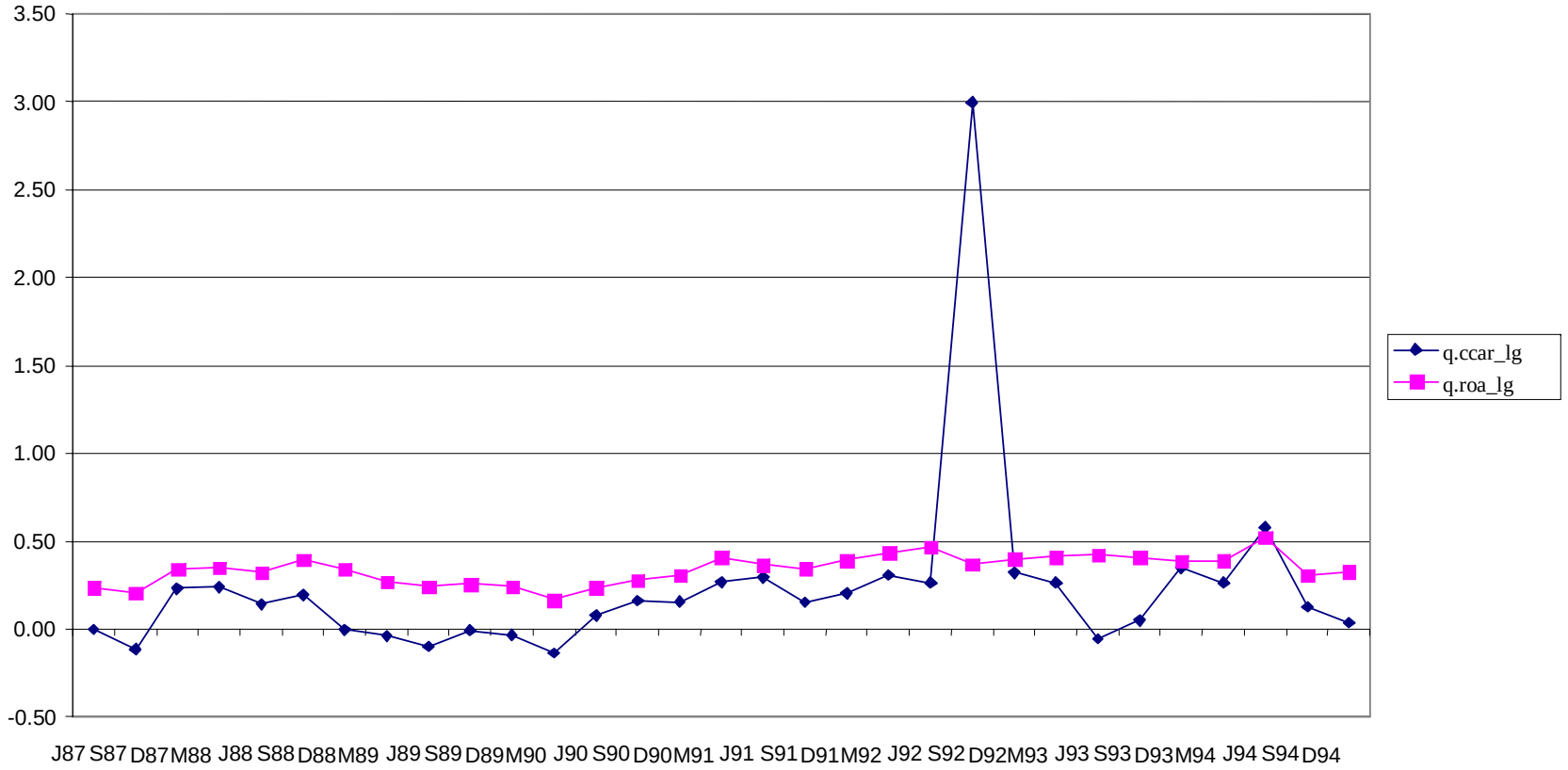

Figure 2 - Quarterly Return on Assets and Change in Capital Adequacy Ratio
Small 'at-risk' Credit Unions