

# WORKING PAPERS IN RESPONSIBLE BANKING & FINANCE

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By *Donal McKillop, Anna Sobiech, John Wilson, Dimitris Chronopoulos*

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## Abstract

This paper examines the drivers and consequences of merger activity among Irish credit unions during 2012–2023, a period marked by significant restructuring following the global financial crisis and a regulatory overhaul. Understanding these dynamics is critical as mergers have become a central strategy for ensuring sector viability amid technological, regulatory, and competitive pressures. Using semi-annual data and panel regression analysis, we assess how merger intensity and merger type influence three core performance metrics: Return on Assets (ROA), Capital Ratio, and Z-Score (a proxy for insolvency risk). Our findings reveal a nuanced picture. Credit unions that engaged in multiple mergers (four or more) exhibit consistently higher viability (Z-Score) compared to those with fewer or no mergers, suggesting that consolidation can reduce insolvency risk. However, these same credit unions display weaker Capital Ratios and lower ROA, indicating short- to medium-term trade-offs between stability and profitability. Regression results confirm that merger intensity positively affects ROA but erodes capital strength, while having no significant impact on viability. Additional determinants of viability include asset size, income diversification, cost efficiency, and common bond type, with larger and more diversified credit unions proving most resilient. These insights underscore the complexity of merger outcomes: while consolidation enhances systemic stability, it may compromise financial performance in the near term. The paper contributes to policy and practice by clarifying the conditions under which mergers support long-term sustainability and by identifying factors that amplify or mitigate merger-related risks.

**Key words:** credit unions, mergers, risk, performance.

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## 1. Introduction

Credit unions are member-owned, not-for-profit financial intermediaries wherein members simultaneously occupy the dual roles of owners and consumers of financial services. Although this cooperative identity is universal, substantial heterogeneity exists in institutional architecture, regulatory frameworks, product portfolios, and operational models across jurisdictions (Cuevas & Buchenau, 2018). In the Irish context, the genesis of the credit union movement occurred in Dublin in 1958 as a community-driven response to financial exclusion. By 1959, three credit unions collectively served 200 members and managed assets amounting to €530 (McKillop, Goth & Hyndman, 2006). Over subsequent decades, the sector experienced pronounced expansion, embedding itself within both community and workplace settings. This trajectory culminated in 2006, with 420 credit unions, over three million members, and aggregate assets of €14,355.7bn (Credit Union Commission Report, 2012).

The global financial crisis of 2008 precipitated a systemic recalibration of Ireland's financial architecture. In September 2008, the Irish Government extended a blanket guarantee encompassing €440bn of domestic banking liabilities. By November 2010, Ireland had acceded to a €67.5bn stabilization program under the auspices of the European Commission, European Central Bank, and International Monetary Fund, the so-called Troika (Honohan, 2010; Donovan & Murphy, 2013). At this juncture, credit unions exhibited structural inertia with their operational paradigms remaining largely unaltered, characterised by elevated cost bases and minimal investment in governance, human capital, risk management, and ICT infrastructure. A conditionality embedded within the Troika program mandated a comprehensive sectoral review, culminating in the establishment of the Commission on Credit Unions. The 2012 Commission report articulated an imperative for balance sheet consolidation, business model evolution, and structural reconfiguration via consolidation to safeguard financial resilience and member service continuity (Commission on Credit Unions, 2012). Among its salient recommendations was the creation of a statutory restructuring entity to facilitate mergers, operationalized through the Credit Union and Co-operation with Overseas Regulators Act (CUCORA) 2012. The Credit Union Restructuring Board (ReBo) subsequently oversaw 82 mergers involving 156 credit unions prior to its dissolution in March 2017 (ReBo Final Report, 2017). Post-ReBo, consolidation continued persisted, albeit at a moderated cadence. By September 2023, the sector comprised 186 credit unions. This represented a contraction in the number of credit unions of 56% relative to 2006. This rationalisation has led to a pronounced concentration of assets. 62 credit unions now command asset bases exceeding €100 million, collectively accounting for 69% of sectoral assets.

The present study interrogates merger dynamics within Irish credit unions utilising semi-annual data spanning 2012h1 to 2023h2. A descriptive analysis uncovers temporal patterns and behavioural inflections across Return on Assets (ROA), Capital Ratios, and Z-Scores. Particular attention is accorded to the influence of merger intensity (frequency of mergers) and merger typology (asymmetric versus symmetric asset configurations) on these indicators. A multivariate panel regression model is estimated that controls for asset scale, product diversification, operational efficiency, liquidity, and common bond typology (community versus occupational/associational), thereby isolating the marginal effect of merger activity on performance outcomes.

The results provide several insights. Scale emerges as a critical determinant of viability. Credit unions with asset portfolios exceeding €100million exhibit superior performance relative to sub-€20 million counterparts. Occupational or associational common bond institutions demonstrate enhanced resilience relative to community-based entities. Diversification also exerts a material influence. Credit unions deriving a greater proportion of revenues from interest income exhibit heightened viability, underscoring the strategic salience of product diversification into domains such as mortgage lending and SME finance. Finally, while the descriptive evidence suggests that frequent acquirers ( $\geq$  four mergers) have elevated Z-Scores, the regression based analysis reveals that merger intensity per se lacks statistical significance as a predictor of viability.

The remainder of this paper is organised as follows. Section 2 synthesises extant literature on mergers, elucidating theoretical foundations, motivations, and empirical outcomes within cooperative financial institutions. Section 3 delineates the structural profile of Irish credit unions by asset stratification and common bond typology. Section 4 undertakes a comparative performance analysis across acquiring, acquired, and non-merging entities. Section 5 presents the econometric specification and regression results, evaluating the relative salience of merger activity via performance determinants. Section 6 concludes with policy implications and avenues for future research.

## 2. Literature Review

### 2.1 Why Merge?

Neoclassical Economics seeks rational explanations for mergers in terms of value creation. A key assumption is the separation of ownership (shareholders) and control (management) and that managers act to maximise shareholder value. Within this framework, a variety of motives for mergers are considered. Increased market power is one such value creating motive, a merger results in reduced competition due to the decline in firm numbers and thus offers the merged firm increased pricing power in its industry. A second value creating motive is the

potential of efficiency gains - the merger, increases asset size and thus may lead to scale economies or if the merger results in a more diversified product mix, scope economies. A third value creating motive is market discipline - mergers may discipline ineffective managers, either by a reduction in compensation or dismal after the merger (DeYoung, Evanoff and Molyneux, 2009).

A significant body of work, based on the separation of ownership and control (agency theory), assumes that mergers may destroy value because managers are motivated by their own self-interests. In this instance, managers maximise their own utility function rather than their firm's utility. Under such a scenario, decisions made even by perfectly rational utility-maximising managers may differ from those made by a firm's owners. Such utility maximising decisions by management could include mergers to increase firm size which in turn increases managerial status, power and / or wealth (Grinsten and Hribar, 2004). Managerial over confidence may also result in non-value maximizing behaviour as it may for example lead to mistakes in evaluating merger targets (Roll, 1986; Doukas and Petmezas, 2007; Billet and Qian, 2008).

Mergers facilitate restructuring, enhance scale and scope economies, enable the diversification of risk and enhance the value proposition for customers. Mergers often occur as an industry matures or because of economic and financial shocks. A wave of mergers occurred in the aftermath of the global financial crisis and to a lesser extent the COVID-19 pandemic. In many instances these were driven by legislative and regulatory intervention aimed at strengthening the economic and financial stability of the institutions concerned (Cumming et al., 2023, Cucinelli et al., 2023).

A variety of environmental and economic factors are also important in the decision to merge. Technological change has transformed back-office processing and front office delivery mechanisms. As technological change is costly and beyond the scope of many small financial institutions the alternative for many is to merge (Amel et al., 2004; Jones and Critchfield, 2005). Deregulation has enabled financial firms to offer broader product mixes and to expand geographically. Many financial firms have undertaken mergers to avail of the opportunities offered by deregulation rather than through internal growth (Estrella, 2001; Wheelock and Wilson, 2004).

Several authors have placed importance on integration of organisational culture and human resources in ensuring that mergers realise their expected value-added (Stanwick and Stanwick, 2001; Marks and Mirvis, 2011). Previous merger experience is identified as being important in integrating firms in the post-acquisition phase (Nadolska and Barkema, 2007; King and Schriber, 2016). Differential experience between the acquired and the acquirer is

also identified as a key determinant as to which party obtains most value from a merger (Cuypers, Cuypers and Martin, 2017).

## **2.2 *Mergers in Financial Cooperatives***

Analysis of credit union mergers have concentrated on the US (Fried et al., 1999; Goddard et al., 2009, 2014; Bauer et al., 2009; Bauer 2010; Wilcox and Dopico, 2011; Jackson 2017; Peng 2022); Australia (Garden and Ralston, 1999; Ralston et al., 2001; Worthington, 2001, 2004); New Zealand (McAlevy et al., 2010); UK (Goth et al. 2006); Ireland, (Central Bank, 2019; Johnson and McKillop, 2021) .

A number of these studies conclude that members of an acquired credit union experience an immediate improvement in product cost, service provision and financial stability after the merger. In part this may be because in a majority of cases the acquired credit union tends to be much smaller than the acquiring credit union and has faced difficulties prior to the merger. Jackson (2017) notes that in the US while a merger can drive measurable benefits for credit unions and their members (loan benefits, and deposit benefits) the benefits are greatest for small and medium-sized credit unions when they merge with a large credit union. Small credit unions create over three times the financial benefits for their members when they merge with a large credit union rather than another small credit union, and twice the financial benefits over merging with a medium-sized credit union. However, Jackson (2017) also cautions that size alone is not enough to overcome a merger that is a bad fit in other critical ways.

Peng (2022) detail the reasons given by acquired credit unions in the US for entering a merger. Over the period 1994 to 2017 they found that in the US there were 6,515 mergers. In 20.2% (1,319) of cases the reasons given for the merger by the acquired credit union was 'financial or managerial difficulties'. In 30.4% (1,981) of cases the reason given was 'to enable expansion of services'. In the remainder 49.4% (3,215) of cases the reason given was 'restructuring or reorganisation' and involved a change in status for the acquired credit union from federally chartered to state chartered or vice versa. More generally, it is observed that a well-constructed merger can help credit unions tackle not one issue but a range of issues, including succession planning, increasing competition, the inability to afford critical technology, and unforeseen marketplace changes.

Less evidence, however, is found of enhanced benefits accruing to members of the acquiring credit union at least when the acquired credit union is small. Indeed, Ralston et al. (2001) suggest that mergers do not generate efficiency gains greater than those that non-merging credit unions are able to achieve through internal growth. While benefits to the

members of the acquiring credit union are not immediately apparent, Jackson (2017) contends that large credit unions can still see benefits. These include membership and asset growth, access to established branch offices, and the opportunity to tap into a different group of members. Central Bank (2019) in its review of the restructuring of Irish credit unions found that mergers as well as giving acquiring credit unions a larger base of income generating assets, in the form of transferred loans and investments, such inorganic growth also led to faster organic growth in investments and loans. Additionally, the restructuring review found acquiring credit unions appeared to outperform the rest of the sector. Johnson and McKillop (2021) build on elements of the experiential learning model in an analysis of mergers in Irish credit unions. They consider the lessons learnt by three stakeholder groups central to the merger process (board of directors and the CEO; regulatory authorities; and credit union members) and where credit unions have engaged in multiple mergers whether the lessons learnt helped accomplish subsequent mergers more effectively. The study's key finding is that all stakeholder groups learn lessons from their experience of a merger, and these lessons, in turn, influence their decision-making in subsequent mergers. This information is obtained through structured conversations with a selection of credit union CEOs who participated in mergers between 2012 and 2020.

Analysis of cooperative bank mergers has focused primarily on Europe. Lang and Welzel (1999) consider mergers in German (Bavarian) cooperative banks and concludes that the primary motive is not the improvement of operational efficiency but rather regulatory pressure. Koetter (2008) considers savings and cooperative bank mergers in Germany and concludes that only one in two mergers prove a success. Coccorese et al. (2020) find that mergers in Italian cooperative banks improve cost efficiency but only after the cooperative bank in question has entered at least three consecutive mergers. This finding is important as it suggests that 'learning-by-doing' spreads the overhead cost of successive mergers and minimises the loss of focus on managements' primary objective of serving members. Jones and Kalmi (2015) suggest that network arrangements confer on European cooperative banks many efficiency advantages that may be gained by way of mergers. Harada and Kitamura (2018) investigate consolidation in Japanese cooperative banks (Shinkin banks). They conclude that much of the activity is driven by the regulatory authority's desire for banking stability. They find that large, but unhealthy and inefficient banks merge with small and inefficient banks to survive and benefit from a subsidised deposit rate.

### **3. Sectoral Overview**

#### **3.1 Sectoral Composition**

Table 1 details the number of credit unions in each of four asset size categories (Greater than €100m; €60m to €100m; €20m to €60m; and Less than €20m) and the overall share of sectoral assets attributed to each size category. Several points are noteworthy. First, although credit union numbers have continually fallen over the period 2012 to 2023 (by 53%) the speed of decline was most pronounced between 2012 and 2017. This period coincided with the operation of the Credit Union Restructuring Board (ReBo) which was established in 2013 to help underpin the stability and long-term viability of the credit union sector in Ireland. When ReBo concluded its term of office, (31st March 2017), it had supported 82 mergers involving 156 credit unions (ReBo Final Report, 2017). Second, credit unions with assets Greater than €100M controlled 69% of the sectoral assets in 2023 compared to 30% in 2012. Third, there has been a marked reduction in the number of credit unions with assets of Less than €20m. In 2012 these credit unions had a 15% share of sectoral assets compared to 1% in 2023.

While the rapid decline in credit union numbers has been primarily due to mergers there has also been a small number of failures, six over the investigative period. The highest profile failure was that of Newbridge Credit Union which was formally wound-up in December 2013.<sup>1</sup> Other notable failures over the period were Berehaven Credit Union, and Howth Sutton Credit Union, both in 2014; Rush Credit Union in 2016; Charleville Credit Union in 2017 and Drumcondra and District Credit Union in 2021.

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<sup>1</sup> From 2008 the regulator had become more deeply involved in Newbridge Credit Union's affairs, raising concerns about several alleged breaches. These included holding too many loans above €1 million each, alleged under provisioning for bad debts and maintenance of inadequate reserves. Newbridge Credit Union in 2013 was one of the largest credit unions in Ireland. It had approximately 32,000 deposit accounts and 7,000 loan accounts with total loans outstanding of approximately €140 million. (Irish Times, Monday 11<sup>th</sup> November 2013).

**Table 1: Sectoral Composition by Asset Size**

Range	Number of Credit Unions	Assets € Million	Category Assets / Total Assets of the Sector (%)
<b>2023</b>			
Less than €20M	17	278	1%
€20M- €60M	64	2450	13%
€60M- €100M	43	3344	17%
Greater than €100M	62	13382	69%
<b>Total</b>	<b>186</b>	<b>19455</b>	<b>100%</b>
<b>2021</b>			
Less than €20M	29	447	3%
€20M- €60M	76	2921	17%
€60M- €100M	39	2943	17%
Greater than €100M	57	11149	64%
<b>Total</b>	<b>201</b>	<b>17459</b>	<b>100%</b>
<b>2019</b>			
Less than €20M	50	681	4%
€20M- €60M	97	3769	21%
€60M- €100M	39	3136	17%
Greater than €100M	55	10501	58%
<b>Total</b>	<b>241</b>	<b>18088</b>	<b>100%</b>
<b>2017</b>			
Less than €20M	76	920	6%
€20M- €60M	108	3981	24%
€60M- €100M	35	2707	17%
Greater than €100M	52	8768	54%
<b>Total</b>	<b>271</b>	<b>16375</b>	<b>100%</b>
<b>2015</b>			
Less than €20M	145	1575	11%
€20M- €60M	117	4173	29%
€60M- €100M	39	3038	21%
Greater than €100M	35	5799	40%
<b>Total</b>	<b>336</b>	<b>14586</b>	<b>100%</b>
<b>2012</b>			
Less than €20M	205	2047	15%
€20M- €60M	135	4900	36%
€60M- €100M	31	2420	18%
Greater than €100M	25	4063	30%
<b>Total</b>	<b>396</b>	<b>13429</b>	<b>100%</b>

### 3.2 Performance Measurement (ROA, Capital Ratio, Z-Score)

Three performance measures are considered.

1. Return on Assets (ROA) defined as Net Income (Surplus) / Assets.
2. Capital Ratio defined as Regulatory Reserves / Assets.
3. Z-Score defined as  $\frac{\text{ROA} + \text{Capital Ratio}}{\text{Variability of ROA}}$ .

The Z-Score measure highlights that the higher the Capital Ratio, the higher the ROA and the less variable the ROA the lower the probability of insolvency.<sup>2</sup> The probability of insolvency is the situation where the ROA is so negative (the credit union is running a deficit) depleting the capital of the credit union. In this situation ( $\text{ROA} + \text{Capital Ratio} \leq 0$ ). It can be shown that a measure for the probability of insolvency for the credit union is then given as

$$\text{Probability } (\text{ROA} \leq \text{Capital Ratio}) = \frac{1}{(Z\text{-Score})^2}$$

It is unlikely that the regulatory authorities (Central Bank) will permit a credit union to get into a position of becoming insolvent, before that situation occurs, the credit union concerned will be encouraged by the Central Bank to seek a merger or alternatively it will be subject to resolution. We therefore consider three scenarios in addition to that of insolvency:

- (a) where the Capital Ratio falls to the regulatory minimum.  $\text{ROA} + \text{Capital Ratio} \leq 10.0\%$ .

This represents the present capital requirements that Irish credit unions are subject.

The probability of the credit union becoming unviable in this instance is  $\text{Pr}(\text{ROA} \leq 10.0\%) = \frac{1}{(Z\text{-Score})^2}$

- (b) where the Capital Ratio falls to 7.5%.  $\text{ROA} + \text{Capital Ratio} \leq 7.5\%$ .

Sectoral practitioners have argued that the 10% Capital Ratio is not calibrated to balance sheet risk profiles, nor is it in line with regulatory requirements elsewhere. Industry practitioners argue for a reduced and more balanced capital requirement. The probability of the credit union becoming unviable in this instance is  $\text{Pr}(\text{ROA} \leq 7.5\%) = \frac{1}{(Z\text{-Score})^2}$ .

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<sup>2</sup> Lepetit and Strobel (2013; 2015) detail five different approaches to construct time varying Z-Score measures. They conclude that the most appropriate measure in each context is an inherently empirical question and depends on the data under consideration. In an empirical assessment, based on commercial, co-operative and savings banks data, they concluded that the measure used in this study is best. In this paper the Z-Score employed utilises the mean and the standard deviation of a credit union's ROA calculated over the full sample [1 .....T]. These are combined with current period t values of the Capital Ratio.

(c) where the Capital Ratio falls to 12.5%.  $ROA + Capital\ Ratio \leq 12.5\%$ . This represents aspects of the current supervisory situation faced by larger asset size credit unions. If a credit union's capital base falls to approximately 12.5% those with supervisory responsibility within the Central Bank for the credit union concerned 'encourage' the credit union to bolster capital levels. The scenario can also be thought to mimic the additional operational risk requirement that several larger credit unions are subject to. The probability of the credit union becoming unviable in this instance is  $Pr(ROA \leq 12.5\%) = \frac{1}{(Z-Score)^2}$ .

### 3.3 Performance Measures by Asset Size

In Table 2, an overview of the ROA and Capital Ratio is presented for credit unions by asset size bands for the period 2012 to 2023. Credit unions with asset exceeding €100 million have a lower but much less variable ROA than credit unions in smaller asset categories. The smallest credit unions (asset size <€20M) having the highest ROA but the greatest variability. There is little difference in the average Capital Ratio across the size bands, although credit unions with assets of €60M to €100M are best capitalised, on average. The smallest credit unions (assets <€20M) are subject to the greatest variability in Capital Ratio. In Table 3, Z-Scores by asset size categories are presented for each of the solvency/viability benchmarks. The picture that emerges across the four scenarios is that for the most part the Z-Score value tends to increase as the size band rises. This suggests that viability, for the most part, is in general better for larger credit unions.

**Table 2: Return on Assets and Capital Ratio (by Asset Category)**

Asset Size Category	Number of CUs (average over time)	Return on Asset (ROA)		Capital Ratio	
		Mean (%)	Standard deviation (%)	Mean (%)	Standard deviation (%)
<€20M	292	1.39	1.75	15.76	5.72
€20M-€60M	224	1.21	1.56	15.72	3.72
€60M-€100M	71	1.16	1.02	16.24	2.58
>€100M	92	1.02	0.95	15.73	2.85
All	309	1.24	1.50	15.80	4.33

**Table 3: Z-Score (by Asset Category)**

Asset Size Category	Z-Score (Solvency)		Z-Score (Capital = 7.5%)		Z-Score (Capital = 10.0%)		Z-Score (Capital = 12.5%)	
	Mean	SD (%)	Mean	SD (%)	Mean	SD (%)	Mean	SD (%)
<€20M	21.61	17.88	12.11	10.65	8.87	8.30	5.71	6.61
€20M-€60M	23.84	15.79	13.49	9.73	10.02	7.82	6.59	6.33
€60M-€100M	25.22	13.97	14.32	8.26	10.68	6.46	7.02	4.92
>€100M	26.83	20.29	14.52	11.32	10.37	8.42	6.32	6.34
All	23.32	17.72	12.93	10.34	9.41	7.95	5.97	6.20

### 3.4 Performance Measures by Common Bond Type

In Table 4 an overview of the ROA and Capital Ratio is presented by common bond type for the period 2016-2023.<sup>3</sup> Credit unions which have an occupational /associational common bond have on average a higher ROA but a marginally lower Capital Ratio than credit unions with a community based common bond. Occupational /associational credit unions are also found to have a lower variability in ROA but much higher variability in Capital Ratio when compared with community-based credit unions.

In Table 5, *Z*-Scores by common bond type are presented for each of the solvency/viability benchmarks. A consistent picture does not emerge across the four capital benchmark scenarios. The *Z*-Score value is higher for credit unions with an occupational / associational common bond compared to those with a community common bond at the solvency and 7.5% benchmarks, but this is then reversed for the traditional and main benchmarks of 10.0% and 12.5%. Additionally, a consistent picture does not emerge across the capital scenarios for the variability (standard deviation) in the *Z*-Score metrics.

**Table 4: Return on Assets and Capital Ratio (by Common Bond Type)**

	Return on Asset (ROA)	Capital Ratio

<sup>3</sup> We analyse the period 2016 to 2023 for disaggregation by common bond (rather than 2012h1 – 2023h2) as we have only been able to access the common bond designation of credit unions for this shortened period.

Common Bond Category	Number of CUs (average over time)	Mean (%)	Standard deviation (%)	Mean (%)	Standard deviation (%)
Community	322	0.73	1.09	16.37	3.58
Occupational / Associational	15	0.86	0.84	16.05	7.19

**Table 5: Z-Score (by Common Bond Type)**

Common Bond Category	Z-Score (Solvency)		Z-Score (Capital = 7.5%)		Z-Score (Capital = 10.0%)		Z-Score (Capital = 12.5%)	
	Mean	SD (%)	Mean	SD (%)	Mean	SD (%)	Mean	SD (%)
Community	22.33	12.73	12.42	9.10	5.79	7.75	6.25	5.10
Occupational / Assoc.	25.48	14.09	13.48	9.48	5.49	6.73	4.86	4.09

#### 4. Merger Analysis

##### 4.1 Mergers and Performance

In Table 6, an overview of the Capital Ratio, ROA and Z-Score is presented for credit unions based upon merger activity. Information is presented for acquired credit unions, credit unions that opted not to enter mergers, and for acquiring credit unions with, in this instance, the analysis disaggregated in terms of the number of mergers undertaken over the period. There is little evidence of distinct trends in Table 6. However, acquired credit unions do on average have a weaker Capital Ratio and a poorer average Z-Score than credit unions not entering mergers although the average ROA is the same for both categories. Table 6 also highlights that the probability of complete capital depletion appeared least likely for credit unions that had acquired twice (Z-Score = 31.35) and most likely for those that had acquired only once (Z-Score = 21.51).

**Table 6: Capital Ratio, ROA, and Z-Score (by Merger Activity)**

##### Merger Activity (2012h1-2023h2)

Mergers	Capital Ratio (Mean)	Return on Assets (ROA) (Mean)	Z-Score (Mean)	Number of Observations	Number of CUs
Acquired	15.37	1.25	22.25	2266	195
No Transfers	16.20	1.25	24.21	3490	148
<b>Acquiring Credit Unions</b>					
1 Merger	15.09	1.09	21.51	594	24
2 Mergers	15.71	1.23	31.35	373	15
3 Mergers	16.60	1.31	23.84	200	8
4 Mergers	15.53	1.14	23.35	168	7
5 or more Mergers	14.28	1.26	22.65	175	6

Figure 1 profiles the Capital Ratio benchmarked at 2012h1 (that is 2012h1 = 0) for the period 2012h1 to 2023h2. Three scenarios are considered, credit unions that have not acquired other credit unions, credit unions that have acquired a relatively low number of times (one to three times), and credit unions that have acquired a relatively high number of times (four and more times). Figure 1 highlights that over the period those credit unions that have chosen not to acquire have a superior Capital Ratio than the other two categories. Those that have acquired a relatively low number of times (one to three times) have a stronger capital performance than those that acquired a high number of times (four and more times). All categories faced capital depletion from 2017 through to 2021 although capital levels did improve in 2022 and 2023. Overall, this analysis suggests that merger activity, at least in the short to medium term, is least beneficial to those involved in a greater number (four and more times) of mergers.

**Figure 1: Capital Ratio and Merger Activity**

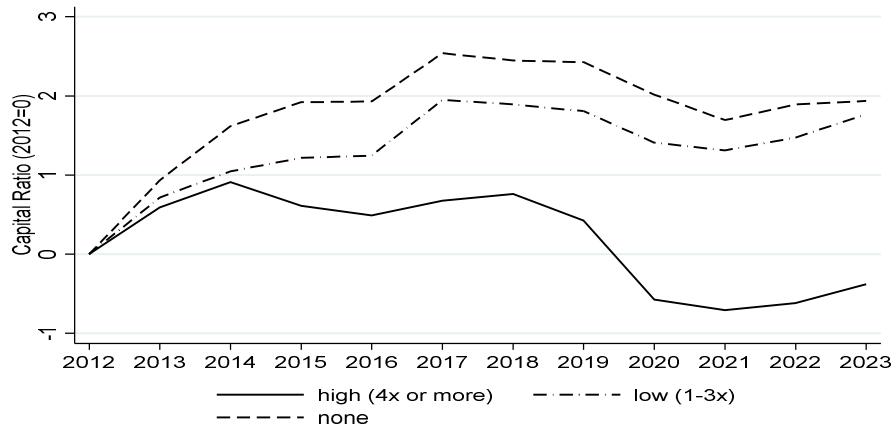


Figure 2 profiles the ROA benchmarked at 2012h1 (2012h1 = 0) for 2012h1 to 2023h2. Figure 2 highlights that credit unions that have acquired a relatively high number of times (four and more times) have for most of the period (2014h2 to 2022h2) the lowest level of ROA and while the trend breaks at points it appears that credit unions that have acquired a relatively low number of times (one to three times) have a somewhat higher ROA than those that have not acquired. It is also noticeable that for all categorisations the ROA has trended downwards over most of the period (at least until 2022) with the most pronounced decline being for those that have acquired the most. Overall, this analysis suggests that merger activity, at least in the short to medium term, is detrimental to the ROA position of acquiring credit unions.

**Figure 2: Return on Assets (ROA) and Merger Activity**

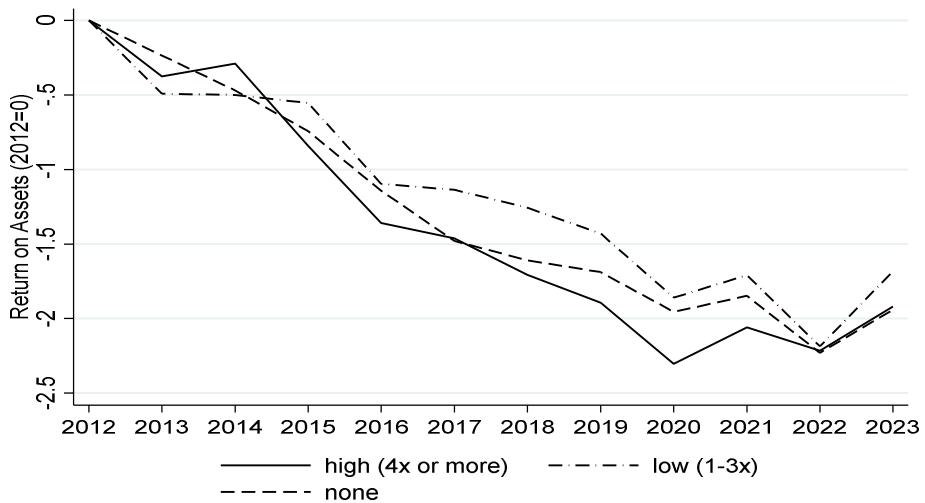
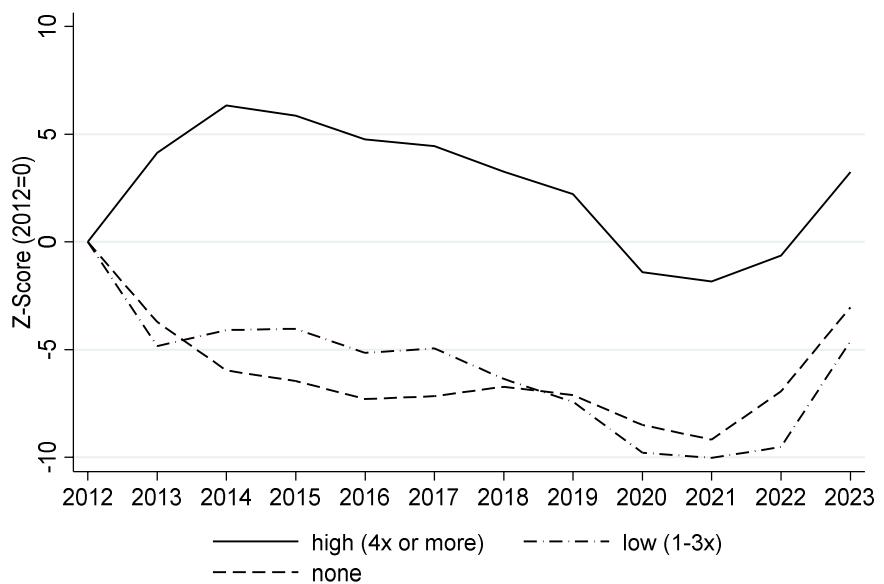


Figure 3 profiles Z-Score benchmarked at 2012h1 (2012h1 = 0) for 2012h1 to 2023h2. Figure 3 highlights that credit unions that have acquired four times or more have a consistently

higher Z-Score than the other two categories. This implies that credit unions that have acquired most have a lower probability of default relative to the other two categorizations. It is also the case that the Z-Score trended upwards from 2012h1 for those credit unions that have acquired four times or more (until 2014) before falling to 2020 and then rising until 2023h2 in comparison to the gradual decline faced by the other two categories (until 2021). Figure 3 also highlights that credit unions merging one to three times have a lower default probability, for a majority of the period, compared to those choosing not to acquire. In that credit unions merging four times and more have on average lower ROA and lower Capital Ratio levels than those not merging or merging one to three times this suggests that credit unions that acquire most have least variability in ROA. This may relate to multiple merging credit unions having to more actively manage earnings due to expenditures incurred in merger transactions.

**Figure 3: Z-Score and Merger Activity**



In Table 7 an overview of the Capital Ratio, ROA and Z-Score is presented for credit unions based upon the relative asset size of the credit unions involved in the merger. The analysis is conducted for the period 2012h1 to 2023h2. Information is presented for credit unions that opted not to enter a merger, where a merger occurred between similarly sized credit unions (similar size brackets  $<2$ ) and where a merger was between a large credit union and one much smaller (size bracket diff  $\geq 2$ ). It is noticeable that only marginal differences emerge between the three credit union categories. This is somewhat of a surprise as credit unions merging of similar size (similar size brackets  $<2$ ) could be viewed as strategic mergers and thus necessitate the involvement of better functioning (high performing) credit unions. While in contrast, the mergers between large and small credit unions (size bracket diff  $\geq 2$ )

could be viewed as less strategic in nature enabling the involvement of less well performing acquiring credit unions. The analysis, however, does not find such a pattern.

**Table 7: Capital Ratio, ROA, Z-Score by Relative Size of Acquired Credit Unions (2012-2023)**

Average merger size	Capital Ratio (Mean)	Return on Assets (ROA) (Mean)	Z-Score (Mean)	Number of observations
No mergers	16.49	1.41	24.14	1409
Similar size brackets <2	15.98	1.42	22.04	180
Size bracket diff >=2	15.66	1.22	26.19	428

Figure 4 profiles the Capital Ratio benchmarked at 2012 (2012h1 = 0) for the period 2012h1 to 2023h2. Three scenarios are considered, credit unions that opted not to enter a merger, where a merger occurred between similarly sized credit unions (size brackets <2) and where a merger was between a large credit union and one much smaller (size bracket diff >=2). Relative to the benchmark date of 2012h1, the capital position of credit unions choosing not to acquire steadily improved up to 2017 before falling back until 2020 and then improving until 2023. The capital position of acquiring credit unions that acquired similar sized credit unions followed a broadly similar pattern although the pattern was not as pronounced. Mergers between large and small credit unions again followed the same pattern although not as pronounced as that for similarly sized credit unions.

**Figure 4: Capital Ratio and Merger Activity by Relative Size of Merging Credit Unions**

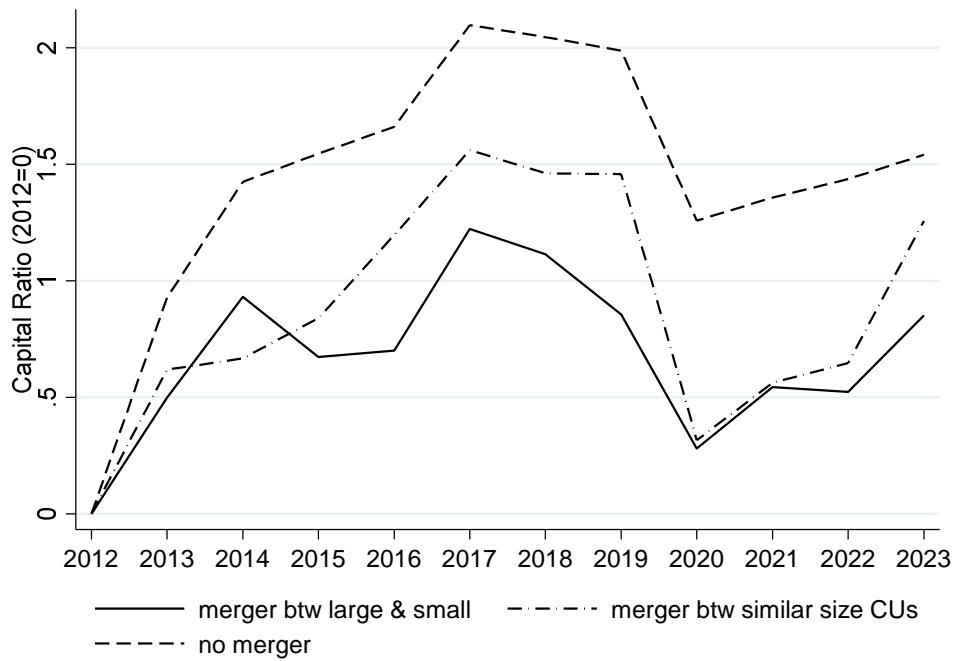


Figure 5 profiles the ROA benchmarked at 2012 (2012h1 = 0) for 2012h1 to 2023h2. The ROA trended steadily downwards for all categories until 2020 before rising in 2021, falling in 2022 and then rising again in 2023. Little if any differences emerge across the three merger categorisations.

**Figure 5: Return on Assets (ROA) & Mergers by Relative Size of Merging Credit Unions**

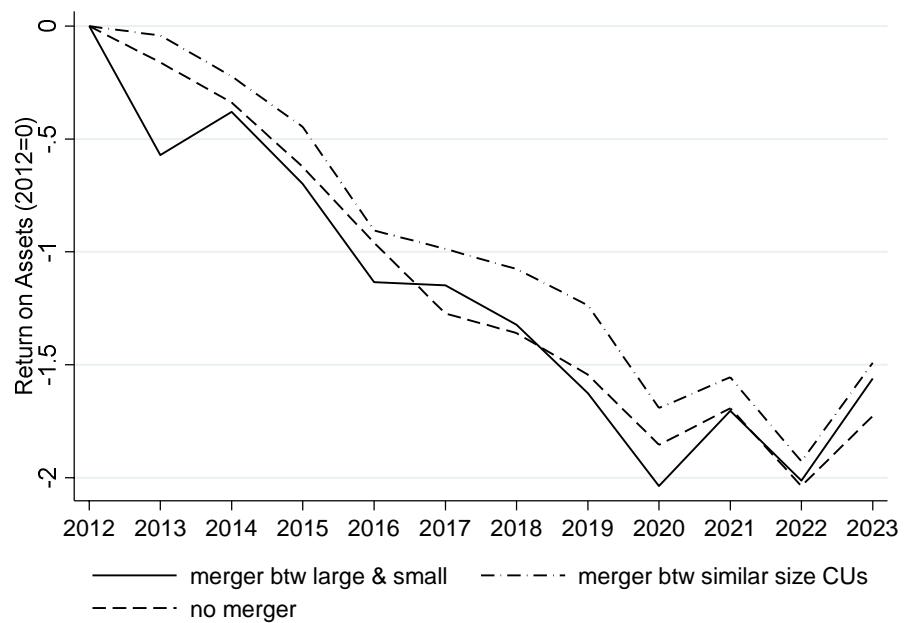
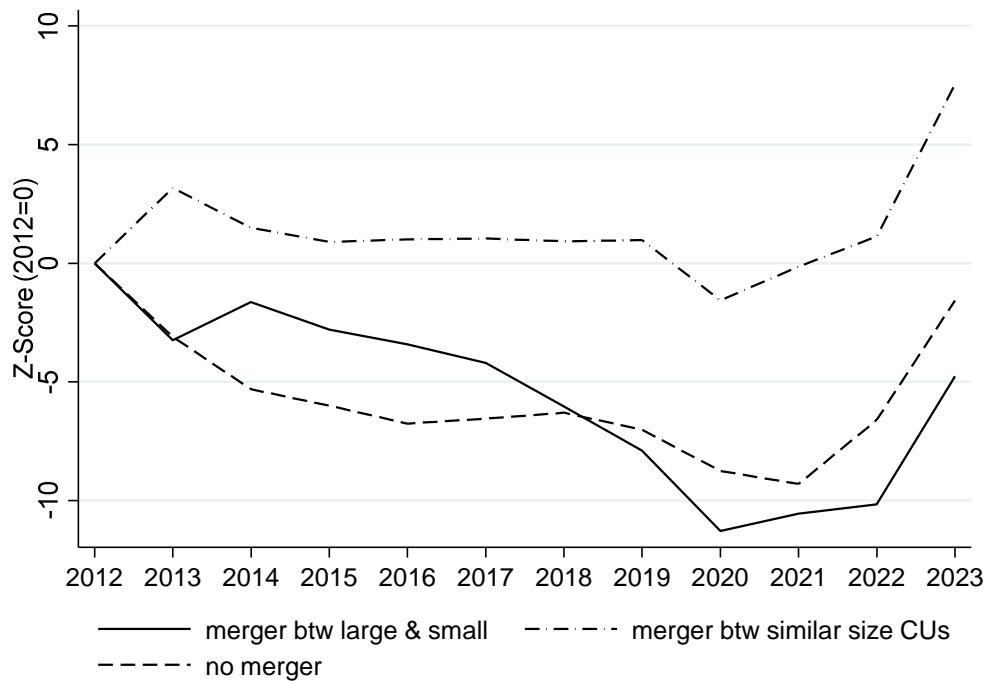


Figure 6 profiles  $Z$ -Score (2012h1 = 0) for the period 2012h1 to 2023h2. The  $Z$ -Score for mergers between similarly sized credit unions remains relatively stable over the period whereas the  $Z$ -Score for the other two categories declined until 2020/2021 indicating that for these two categories the probability of default at that point was greater than in 2012. That said, for all categories  $Z$ -Scores improved in 2022 and 2023 indicating a reduction in the probability of default. Default probability at the end of the period was lowest where mergers occurred between large and small credit unions.

**Figure 6: Z-Score and Merger Activity by Relative Size of Merging Credit Unions**



## 5. Statistical Analysis

This section investigates the importance of mergers as an influence on credit union performance (ROA, Capital Ratio and  $Z$ -Score). The analysis takes the form of a panel regression covering the period 2011 to 2023. Explanatory variables are Merger Intensity (the number of mergers a credit union entered into during the investigative period), Common Bond type (Dummy, community common bond=0, non-community common bond=1), Income Diversification ((1-interest income as a proportion of total income (where total income is defined as interest income + investment income + other income)), Asset Size (log of total assets), a narrow definition of Liquidity (cash & current account assets/total assets) and Cost/Income (cost to income ratio). We considered the impact of the aforementioned variables for each of the four viability scenarios - (i)  $Z$ -Score (Solvency); (ii)  $Z$ -Score (Viability at 7.5%);

(iii) Z-Score (Viability at 10.0%), (iv) Z-Score (Viability at 12.5%) with coefficient estimates and significance levels detailed in Table 8 and for ROA and the Capital Ratio in Table 9.

**Table 8: Factors Influencing Z-Score (Viability) (2012-2023)**

Dependent Variables	Z-Score (Solvency)	Z-Score (Capital=7.5%)	Z-Score (Capital=10%)	Z-Score (Capital=12.5%)
	Regression 1	Regression 2	Regression 3	Regression 4
Diversification	0.096 (0.015)***	0.056 (0.009)***	0.042 (0.008)***	0.028 (0.006)***
Size	0.015 (0.002)***	0.007 (0.001)***	0.005 (0.001)***	0.002 (0.001)***
Cost/Income	-0.164 (0.010)***	-0.135 (0.006)***	-0.126 (0.005)***	-0.118 (0.004)***
Liquidity	-0.235 (0.053)***	-0.111 (0.033)***	-0.066 (0.026)**	-0.026 (0.022)
Common Bond	6.001 (1.403)***	3.484 (0.824)***	2.611 (0.635)***	1.895 (0.512)***
Merger Intensity	0.436 (0.689)	0.108 (0.385)	0.014 (0.290)	-0.112 (0.208)
Number of Observations	6,847	6,847	6,847	6,847

From Table 8 it is evident that there is much uniformity across the four estimated equations. Almost all coefficient estimates are significant at the 1% level, the key exception, however, is that of merger intensity for all four regressions. Viability (measured by greater values of Z-Score), however, is found to be neither positively nor negatively related to merger intensity thus implying that merger intensity has no impact on credit union viability, as measured by Z-Score.

In contrast, Z-Scores have a positive relationship with income diversification, that is credit unions that have a greater share of interest income as a proportion of total income are more viable. Z-Scores have a negative and statistically significant relationship with the cost to income ratio, that is, the lower the cost to income ratio the more viable is a credit union. Z-Scores have a positive relationship with asset size, that is larger credit unions are more viable across all capital benchmarks in comparison to their smaller counterparts. Z-Scores are negatively related to the liquidity ratio which suggests that credit unions with lower liquidity levels are more viable. Z-Scores are positively related to the common bond dummy implying that occupational and associational credit unions are more viable than community-based credit unions.

**Table 9: Factors Influencing ROA and Capital Adequacy (2012-2023)**

Dependent Variables	ROA	Capital Ratio
	Regression 5	Regression 6
Diversification	0.001 (0.001)	0.006 (0.009)
Size	-0.001 (0.000)***	0.000 (0.001)
Cost/Income	-0.055 (0.002)***	-0.047 (0.006)***
Liquidity	-0.005 (0.004)	0.112 (0.033)***
Common Bond type	-0.099 (0.040)**	0.196 (0.526)
Merger Intensity	0.014 (0.003)***	-0.039 (0.014)***
Number of Observations	6,854	6,853

In Table 9 we consider the component parts of Z-Score (ROA and the Capital Ratio) as separate dependent variables. The analysis again takes the form of a panel regression for 2011 to 2023 with potential explanatory variables as detailed in Table 8. Table 9 (Regression 5) reveals that ROA is positively related to merger intensity, indicating that those credit unions engaged in greater numbers of mergers have higher ROAs. Table 9 (Regression 6) highlights that the Capital Ratio is negatively related to merger intensity, which suggests that credit unions involved in greater numbers of mergers have weaker capital positions.

The regression results in Table 9 also suggest that diversification does not impact on either ROA or the Capital Ratio, that asset size negatively impacts on ROA but not the Capital Ratio, that credit unions with lower cost to income ratios have stronger ROAs and Capital Ratios, that credit unions with higher liquidity levels have higher Capital Ratios but that liquidity levels do not affect the ROA, that common bond type does not impact upon the Capital Ratio but that community credit unions have significantly higher ROAs than occupational/associational credit unions.

## 6. Conclusion

This study explored merger behaviors in Irish credit unions over the period 2012–2023, a decade characterised by profound restructuring following the global financial crisis and the intervention of the Credit Union Restructuring Board (ReBo). Against a backdrop of regulatory pressure, technological disruption, and evolving member expectations, mergers emerged as a mechanism for safeguarding sector viability. Understanding their impact is critical for policymakers, regulators, and practitioners seeking to balance stability with member value.

Our analysis provides several important insights. Consolidation has been extensive. Credit union numbers fell by 56% from their 2006 peak, creating a sector dominated by larger institutions. Merger intensity matters, albeit in complex ways. Credit unions that merged most frequently (four or more times) achieved higher viability (Z-Score), signalling reduced insolvency risk. Yet these same credit unions exhibited weaker capital positions and lower profitability, suggesting that aggressive merger strategies impose short- to medium-term costs on profitability and capital adequacy. Regression results confirm this trade-off. Merger intensity is positively associated with ROA, but negatively with capital strength. Beyond mergers, size, diversification, efficiency and common bond are key determinants of viability. Specifically larger, more diversified credit unions are most viable,

Our findings have policy relevance. Mergers can enhance systemic stability, but are not a panacea. Regulatory frameworks should recognise consolidation risks in relation to capital erosion and operational strain. Support mechanisms such as targeted governance guidance, and technology-sharing initiatives could mitigate these risks. Policies that encourage diversification and efficiency may complement merger strategies, and strengthen long-term sustainability without sacrificing member value. A nuanced approach balancing benefits of scale with the ethos of credit unions is merited.

Further research should examine external constraints such as legislative rigidity, common bond restrictions, and competitive pressures from FinTech that may amplify merger-related challenges. Understanding these dynamics is vital for designing interventions that preserve the distinctive role of credit unions in promoting financial inclusion, while ensuring their viability in an increasingly complex and competitive financial landscape.

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