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INDUSTRY CONSOLIDATION AND THE PERFORMANCE AND STABILITY OF IRISH CREDIT UNIONS

ABSTRACT

We investigate 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 in a small, open EU economy operating within an evolving European supervisory and prudential framework. Understanding these dynamics is critical, given that mergers have become a central strategy for ensuring sector stability amid technological, regulatory, and competitive pressures. Using panel regression analysis, we assess how merger intensity and merger type relate to three core performance metrics. Our findings reveal a nuanced picture and highlight the complexity of merger outcomes. Credit unions that engaged in multiple mergers exhibit consistently higher viability (Z-Score) compared to those with fewer or no mergers, suggesting that consolidation can reduce insolvency risk. Yet they display weaker Capital Ratios and lower ROA, indicating short- to medium-term trade-offs between stability and profitability. Regression results confirm that merger intensity is positively associated with ROA but negatively with capital strength, while having no significant impact on viability. 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.

Keywords: Credit Unions; Consolidation; Mergers; Risk; Performance
JEL classification: G21; G28; G34; P13

RIASSUNTO

Consolidamento industriale e performance di stabilità delle cooperative di credito irlandesi

Questo articolo esamina i fattori determinanti e le conseguenze dell'attività di fusione tra le cooperative di credito irlandesi avvenuta tra il 2012 e il 2023, cioè durante un periodo caratterizzato da una significativa ristrutturazione successiva alla crisi finanziaria globale e da una revisione normativa in una piccola economia aperta facente parte dell'Unione Europea e quindi sottoposta all'evoluzione della sua vigilanza e regolamentazione prudenziale. La comprensione di queste dinamiche è complessa, considerato che le fusioni sono diventate una strategia centrale al fine di assicurare stabilità ad un settore sottoposto a pressioni tecnologiche, normative e concorrenziali. Attraverso un'analisi econometrica su panel data, valutiamo come l'intensità e il tipo di fusione si relazionano a tre aspetti fondamentali della performance delle banche in considerazione. I risultati mostrano un quadro sfaccettato e mettono in risalto la complessità degli esiti delle fusioni. Le cooperative di credito che sono coinvolte in fusioni multiple mostrano un'affidabilità considerevolmente maggiore (Z Score) di quelle con meno o nessuna fusione, suggerendo che il consolidamento può ridurre il rischio di insolvenza. Tuttavia, queste banche mostrano coefficienti patrimoniali più deboli e un ROA inferiore, indicando un trade off nel breve e medio periodo tra stabilità e redditività.

I risultati delle regressioni confermano che l'intensità delle fusioni è positivamente associata ai ROA ma negativamente associata all'entità del capitale, mentre non ha alcun impatto significativo sull'affidabilità. Il contributo dell'articolo ai fini di policy e di scelte operative consiste nel chiarire le condizioni in cui le fusioni accrescono la sostenibilità a lungo termine delle credit unions e nell'individuare i fattori che amplificano o mitigano i rischi legati alle fusioni di queste istituzioni.

1. INTRODUCTION

Credit unions are member-owned, not-for-profit financial intermediaries where 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 and 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

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and 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 and Murphy, 2013). At this point, 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 information and communication technologies infrastructure. A conditionality embedded within the Troika programme mandated a comprehensive sector review. This prompted the Irish Government to establish the Commission on Credit Unions. The final report produced by the Commission 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 consolidation via merger, operationalized through the Credit Union and Co-operation with Overseas Regulators Act (CUCORA) 2012. The restructuring entity known as 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, albeit at a slower pace. By September 2023, the sector comprised 186 credit unions. Relative to 2006, this represented a contraction in the number of credit unions of 56%. This rationalisation has led to a pronounced concentration of assets. 62 credit unions have asset bases exceeding €100 million and account collectively for 69% of sector assets.

The present study investigates merger dynamics within Irish credit unions. Utilising semi-annual data spanning the period 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 devoted to the influence of merger intensity (frequency of mergers) and merger

typology (asymmetric versus symmetric asset configurations) on these aforementioned indicators. We also estimate a multivariate panel regression model that controls for asset scale, product diversification, operational efficiency, liquidity, and common bond typology (community versus occupational/associational). This allows us to isolate the marginal effect of merger activity on performance outcomes.

By way of preview, our results suggest the following. Scale is a critical determinant of viability. Credit unions with asset portfolios exceeding €100 million exhibit superior performance relative to sub-€20 million counterparts. Occupational/associational common bond institutions demonstrate enhanced resilience relative to community-based common bond counterparts. Credit unions deriving a greater proportion of revenues from interest income are more viable. This highlights 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.

Despite the scale of consolidation underway, a substantive gap remains in understanding how merger activity translates into performance outcomes within cooperative financial institutions (credit unions). Prior studies typically examine mergers in aggregate. Thus offering limited insights into how merger intensity interacts with key dimensions of institutional health, or how different aspects of financial performance respond asymmetrically to consolidation. Our study augments prior literature by disaggregating merger effects across profitability, capital adequacy, and viability. Thus enabling a clearer identification of the channels through which consolidation shapes financial resilience. This multidimensional approach provides a more granular assessment of whether repeated mergers strengthen or strain cooperative business models. The findings hold important implications for policymakers and regulators tasked with navigating the tension between promoting stability through consolidation and preserving the distinctive embedded characteristics of the cooperative model.

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

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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?

Standard economics posits 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 via merger: increases in asset size 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, where mergers (or the threat of mergers) disciplines ineffective managers, either by a reduction in compensation or dismissal 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-interest. 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; Cuccinelli, Ielasi and Zambelli, 2025).

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, Knox Lovell and Yaisawarng, 1999; Goddard, McKillop and Wilson, 2009, 2014; Bauer, Miles and Nishikawa, 2009; Bauer 2010; Wilcox and Dopico, 2011; Jackson, 2017; Peng, 2022); Australia (Garden and Ralston, 1999; Ralston, Wright and Garden, 2001; Worthington, 2001, 2004); New Zealand (McAlevey, Sibbald and Tripe, 2010); UK (Goth, McKillop and Wilson, 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 most cases the acquired credit union tends to be much

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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 cautions that size alone is not enough to overcome a merger that is a bad fit in other critical ways.

Peng (2022) details the reasons given by acquired credit unions in the US for entering a merger. Over the period 1994 to 2017 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.

There is limited evidence of enhanced benefits accruing to members of the acquiring credit union, especially when the acquired credit union is small. Ralston, Wright and Garden (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. Moreover, acquiring credit unions appeared to outperform the rest of the sector.

Analysis of cooperative bank mergers has focused primarily on Europe. Lang and Welzel (1999) consider mergers in German (Bavarian) cooperative banks and conclude 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 and Ferri (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 suggests that 'learning-by-doing' spreads the overhead cost of successive mergers and minimises the loss of focus on management's primary objective of serving members. For European cooperative banks, Jones and Kalmi (2015) suggest that network arrangements confer efficiency advantages that may be gained by way of mergers. Harada (2018) investigate consolidation in Japanese cooperative (Shinkin) banks. They conclude that much of the activity is driven by the regulatory authority's desire for financial stability.

3. Sectoral Overview

3.1. Sectoral Composition

Table 1 shows the number of Irish 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 for the years 2012, 2017, and 2023. Several points are noteworthy. First, credit union numbers have declined over the period 2012 to 2023; the speed of decline is most pronounced between 2012 and 2016 (Figure 1). 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. 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 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 sector 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[1].

[1] The highest profile failure was that of Newbridge Credit Union which was formally wound-up in December 2013. 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 11th November 2013). Other notable failures were Berehaven Credit

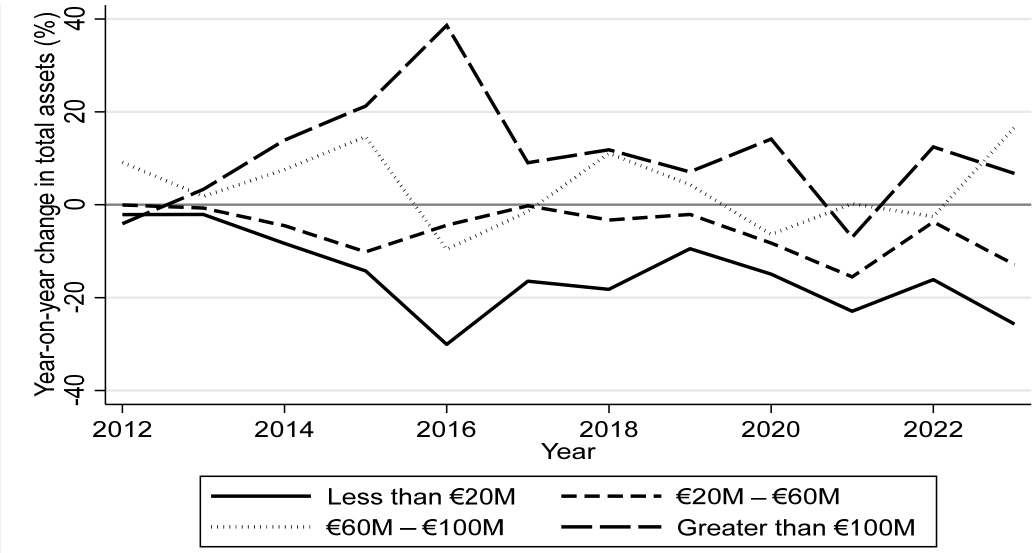
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TABLE 1 – *Sectoral Composition by Asset Size*

Asset Range	No. CUs 2012	No. CUs 2017	No. CUs 2023	Asset Share 2012	Asset Share 2017	Asset Share 2023
Less than €20M	205	76	17	15%	6%	1%
€20M – €60M	135	108	64	36%	24%	13%
€60M – €100M	31	35	43	18%	17%	17%
Greater than €100M	25	52	62	31%	53%	69%
Total	**396**	**271**	**186**	**100%**	**100%**	**100%**

Notes: This table shows the sectoral composition of Irish credit unions by asset size for the years 2012, 2017, and 2023.

FIGURE 1 – *Year-on-year Change in Total Assets by Asset Size 2012–2023*



Notes: This figure shows the year-on-year change in total assets by asset size category for the period 2012 to 2023.

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.

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 $\frac{\text{ROA+Capital Ratio}}{\text{Variability of ROA}}$.

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[2]. 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 (ROA+Capital Ratio≤0). It can be shown that a measure for the probability of insolvency for the credit union is then given as

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

Three scenarios are considered in addition to that of insolvency:

(a) where the Capital Ratio falls to the current regulatory minimum of 10.0%. The probability of the credit union becoming unviable in this instance is $\Pr(\text{ROA} \leq 10.0\%) = \frac{1}{(Z-Score)^2}$

(b) where the Capital Ratio falls to 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. The probability of the credit union becoming unviable in this instance is $\Pr(\text{ROA} \leq 7.5\%\%) = \frac{1}{(Z-Score)^2}$

(c) where the Capital Ratio falls to 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. This scenario mimics the additional operational risk requirement that several larger credit

[2] 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.

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unions are subject to. The probability of the credit union becoming unviable in this instance is $\Pr(\text{ROA} \leq 12.5\%) = \frac{1}{(Z-Score)^2}$.

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 assets 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) have the highest ROA but the greatest variability. There is trivial difference in the average Capital Ratio across the size bands, although credit unions with assets of €60M to €100M are best capitalised, on average. 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 the Z-Score value tends to increase as the size band rises, suggesting that viability is in general better for larger credit unions.

TABLE 2 – *Return on Assets and Capital Ratio (by Asset Category)*

Asset Size Category	No. CUs (avg.)	ROA Mean (%)	ROA SD (%)	Capital Ratio Mean (%)	Capital Ratio SD (%)
<€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**

Notes: The table reports the mean and standard deviation of return on assets (ROA) and capital ratios across credit unions, grouped by asset size. The number of credit unions corresponds to the average over the sample period.

TABLE 3 – *Z-Score (by Asset Category)*

Asset Size Category	Z-Score (Solvency) Mean	SD (%)	Z-Score (Cap=7.5%) Mean	SD (%)	Z-Score (Cap=10.0%) Mean	SD (%)	Z-Score (Cap=12.5%) 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**

Notes: The table reports mean values and standard deviations of the Z-score across credit unions by asset size. Columns show the baseline solvency Z-score and alternative Z-scores computed under assumed capital ratios of 7.5%, 10.0%, and 12.5%, respectively.

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. Credit unions which have an occupational/associational common bond have a higher ROA but a 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 relative to community-based credit unions.

In Table 5, *Z-Scores* by common bond type are presented for the respective 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%.

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TABLE 4 – *Return on Assets and Capital Ratio (by Common Bond Type)*

Common Bond Category	No. CUs (avg.)	ROA Mean (%)	ROA SD (%)	Capital Ratio Mean (%)	Capital Ratio SD (%)
Community	322	0.73	1.09	16.37	3.58
Occupational / Associational	15	0.86	0.84	16.05	7.19

Notes: The table reports the mean and standard deviation of return on assets (ROA) and capital ratios across credit unions, grouped by common bond type. The number of credit unions reflects the average over the sample period.

TABLE 5 – Z-*Score (by Common Bond Type)*

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

Notes: The table reports mean values and standard deviations of Z-scores across credit unions by common bond type. Columns present the baseline solvency Z-score and alternative Z-scores computed under assumed capital ratios of 7.5%, 10.0%, and 12.5%.

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

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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 2012h1–2023h2)*

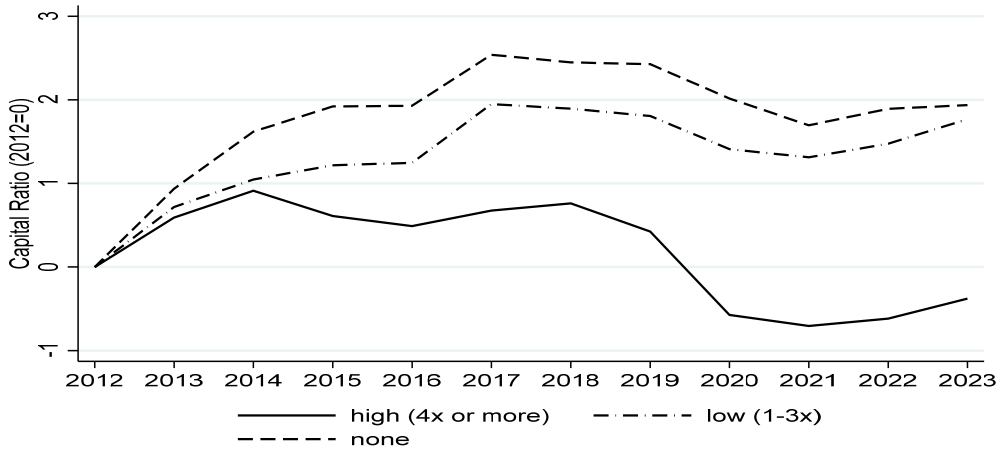
Merger Category	Capital Ratio (Mean)	ROA (Mean)	Z-Score (Mean)	No. Observations	No. CUs
Acquired	15.37	1.25	22.25	2,266	195
No Transfers	16.20	1.25	24.21	3,490	148
Acquiring – 1 Merger	15.09	1.09	21.51	594	24
Acquiring – 2 Mergers	15.71	1.23	31.35	373	15
Acquiring – 3 Mergers	16.60	1.31	23.84	200	8
Acquiring – 4 Mergers	15.53	1.14	23.35	168	7
Acquiring – 5+ Mergers	14.28	1.26	22.65	175	6

Notes: The table reports mean capital ratios, ROA, and Z-scores for credit unions, distinguishing between acquired institutions and those with no transfers, as well as for acquiring credit unions grouped by number of mergers undertaken.

Figure 2 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 2 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.

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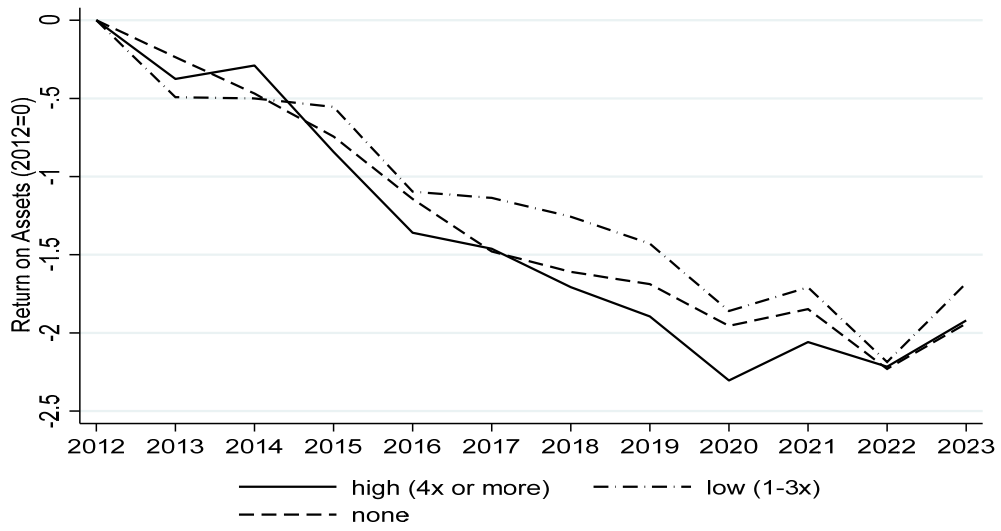
FIGURE 2 – *Capital Ratio and Merger Activity*



Notes: The figure shows the evolution of capital ratios indexed to 2012 for credit unions with no mergers, low merger activity (1–3 mergers), and high merger activity (four or more mergers).

Figure 3 profiles the ROA benchmarked at 2012h1 (2012h1 = 0) for 2012h1 to 2023h2. Figure 3 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 3 – *Return on Assets (ROA) and Merger Activity*

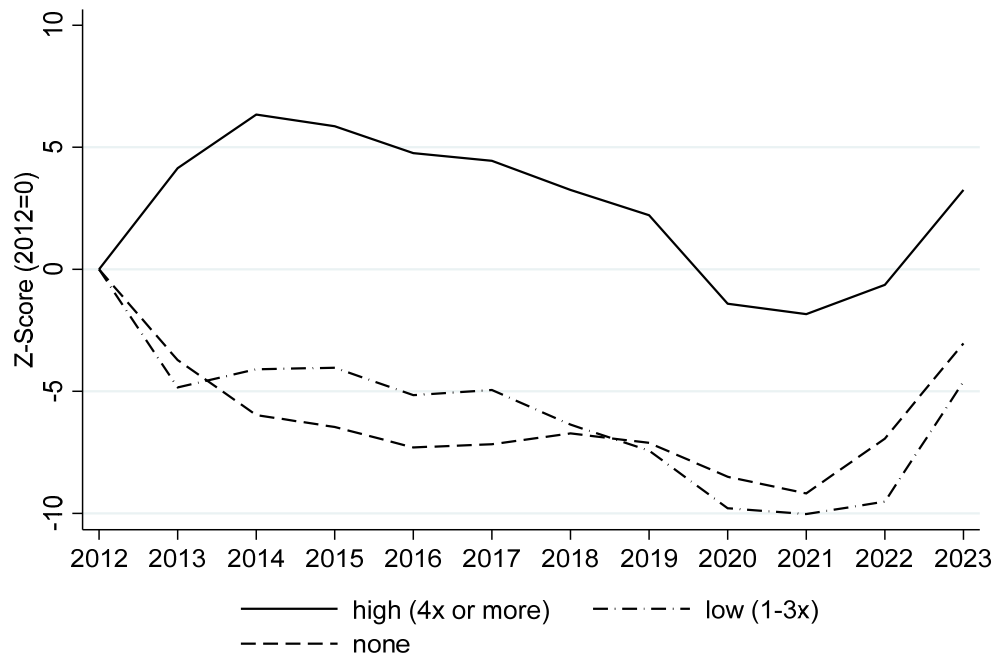


Notes: The figure plots return on assets indexed to 2012 for credit unions with no mergers, low merger activity (1–3 mergers), and high merger activity (four or more mergers) over the period 2012–2023.

Figure 4 profiles *Z-Score* benchmarked at 2012h1 (2012h1 = 0) for 2012h1 to 2023h2. Figure 4 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 4 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.

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FIGURE 4 – *Z-Score and Merger Activity*



Notes: The figure shows the evolution of Z-scores indexed to 2012 for credit unions with no mergers, low merger activity (1–3 mergers), and high merger activity (four or more mergers).

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 >=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 >=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)*

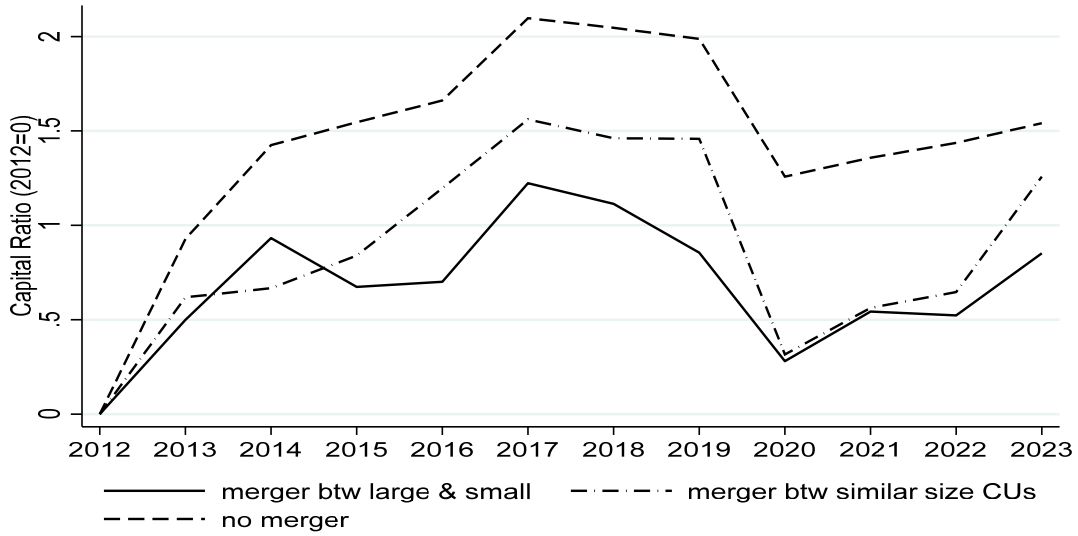
Average merger size	Capital Ratio (Mean)	Return on Assets (ROA) (Mean)	*Z-Score* (Mean)	Number of observations
No mergers	16.49	1.41	24.14	1409
Comparable size brackets <2	15.98	1.42	22.04	180
Size bracket diff >=2	15.66	1.22	26.19	428

Figure 5 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 6 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.

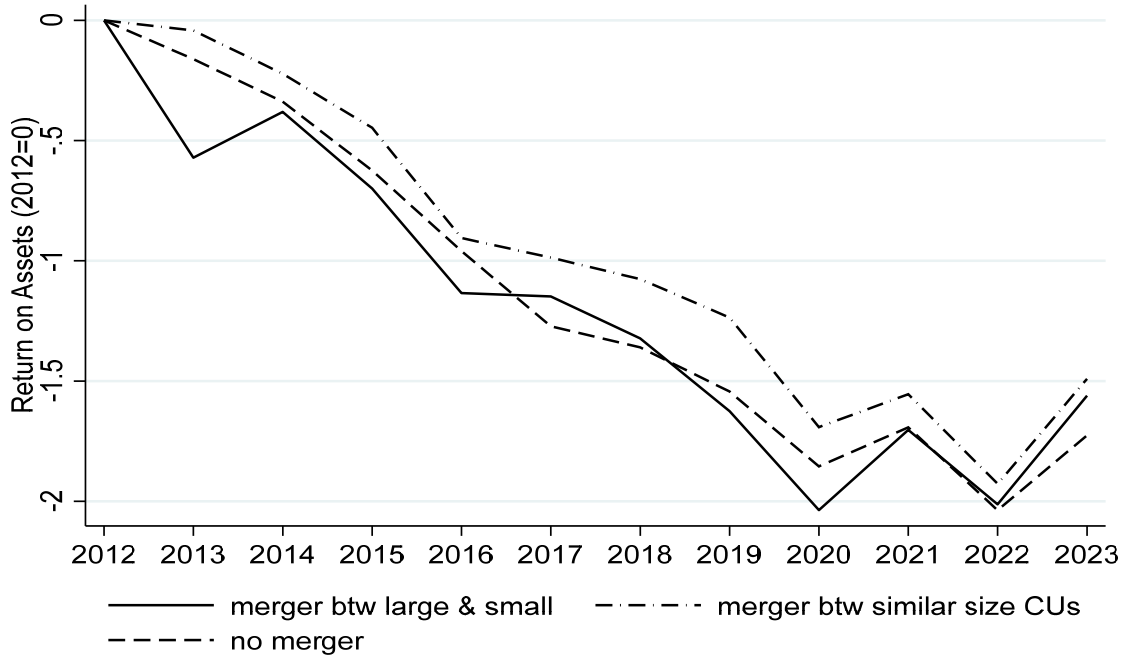
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FIGURE 5 - *Capital Ratio and Merger Activity by Relative Size of Merging Credit Unions*



Notes: The figure shows capital ratios indexed to 2012 for credit unions with no mergers, mergers between similarly sized credit unions, and mergers between large and small credit unions over the period 2012–2023.

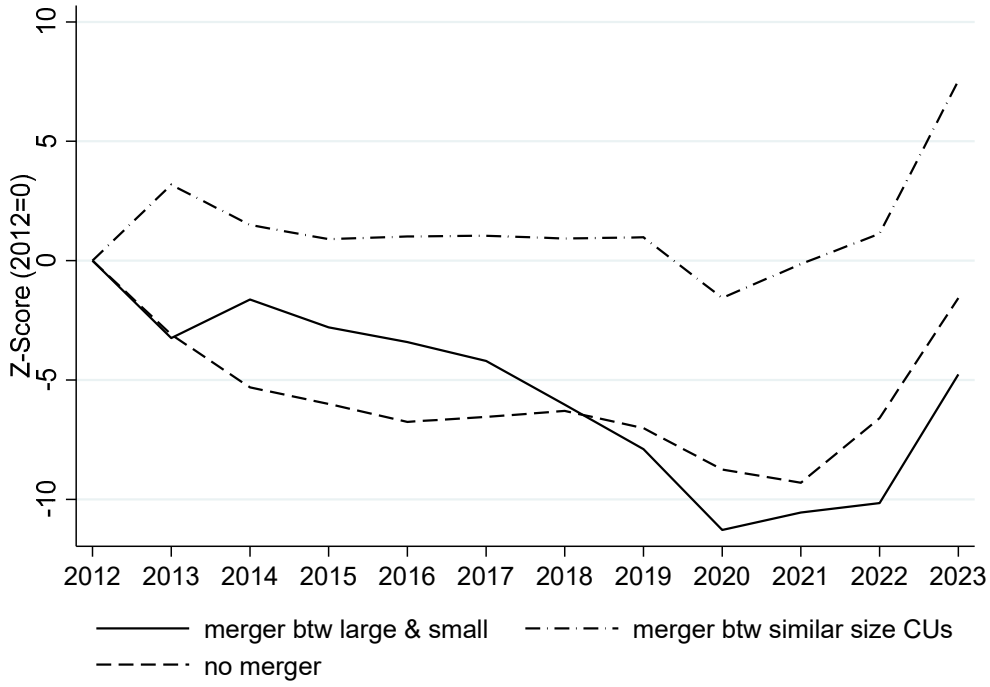
FIGURE 6 – Return on Assets (ROA) and Mergers by Relative Size of Merging Credit Unions



Notes: The figure shows return on assets indexed to 2012 for credit unions with no mergers, mergers between similarly sized credit unions, and mergers between large and small credit unions over the period 2012-2023.

Figure 7 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 7 – Z-Score and Merger Activity by Relative Size of Merging Credit Unions



Notes: The figure shows Z-scores indexed to 2012 for credit unions with no mergers, mergers between similarly sized credit unions, and mergers between large and small credit unions over the period 2012–2023.

Taken together, the patterns observed suggest that the weaker ROA and Capital Ratios exhibited by credit unions engaging in four or more mergers may reflect a set of economic and organisational mechanisms inherent to rapid consolidation. First, repeated mergers generate substantial temporary integration costs, as acquiring institutions must absorb administrative, governance, and technological expenses associated with harmonising varying systems, policies

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and operational approaches. These integration demands can elevate short term operating costs and divert managerial attention away from revenue generating activities, thus depressing ROA. Second, multi merger credit unions may be required to undertake significant post-merger investment in technology, risk management systems, and regulatory compliance systems. Such investments, while conducive to long run efficiency and resilience, exert downward pressure on profitability and capital in the short run. Third, repeated acquirers often take on smaller credit unions with poorer loan books, higher cost bases, or preexisting balance sheet fragilities. The process of resolving inherited asset quality issues or restructuring inefficient operations can further erode short run financial performance. Finally, credit unions undergoing successive mergers may face adjustment frictions and managerial diseconomies with leadership teams stretched by the operational complexity of integrating multiple entities within compressed timeframes. This can slow the realisation of expected scale economies, impede the rollout of strategic initiatives, and create temporary inefficiencies that manifest in weaker capital and profitability metrics. Thus, the observed financial patterns are consistent with a consolidation process that yields stability benefits reflected in higher Z Scores, but simultaneously imposes transitional strains on ROA and capital ratios. These mechanisms highlight the importance of distinguishing between short term integration effects and longer term performance trajectories when evaluating the implications of merger intensity for credit unions. Building on these descriptive insights into how merger intensity shapes short and medium term financial outcomes, Section 5 formalises the analysis by estimating panel regression models that isolate the independent effects of consolidation dynamics on viability, profitability, and capital adequacy.

5. Statistical analysis

In this section, we extend the descriptive patterns documented earlier by estimating a series of multivariate panel regression models over the period 2011-2023 designed to quantify the contribution of merger activity to credit union performance. The regression based analysis allows us to disentangle the impacts of merger intensity (the number of mergers a credit union entered into during the investigative period) from broader institutional characteristics that also shape financial outcomes, including: asset size (log of total assets); diversification ((1-interest income as a proportion of total income (where total income is defined as interest income + investment income + other income)); operational efficiency (cost to income ratio); liquidity management (cash & current account assets/total assets); and common bond type (Dummy, community

common bond=0, non-community common bond=1). By modelling ROA, capital adequacy, and alternative Z-Score–based viability measures as dependent variables, in Section 4 we evaluate whether the transitional dynamics observed among high-frequency acquirers persist once these factors are controlled for, and whether consolidation exhibits differential effects across multiple dimensions of financial health. This approach allows us to assess the extent to which merger-related frictions, scale economies, or inherited balance-sheet conditions drive performance heterogeneity across Irish credit unions. We provide summary statistics of all variables in Table 8. The summary statistics indicate substantial heterogeneity across credit unions in terms of size, risk, and operating characteristics. The average Z-Score is 23.4, with a wide dispersion, reflecting considerable variation in solvency across institutions. Diversity and size exhibit relatively high means with moderate dispersion, suggesting meaningful cross-sectional differences in portfolio composition and scale. Cost-to-income ratios are high on average and vary substantially, indicating heterogeneity in operational efficiency. Liquidity shows strong right-skewness, with a low mean but a large maximum, pointing to a small number of highly liquid institutions. Common bond status and transfer intensity are infrequent on average, consistent with most credit unions being community-based and experiencing limited merger activity during the sample period.

We consider 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 9 and for ROA and the Capital Ratio in Table 10. We acknowledge that there is the potential for selection bias arising from the non-random nature of merger participation. Specifically, credit unions that engage in mergers may differ systematically (in governance quality, managerial ambition, underlying financial health, technological preparedness, regulatory compliance) from counterparts that do not. These pre-existing differences may influence subsequent performance outcomes. Our econometric approach controls for observable characteristics such as size, diversification, efficiency, liquidity, and common bond type. However, unobserved factors may correlate with both merger decisions and performance outcomes. As our primary objectives are descriptive and policy-oriented rather than strictly causal, we do not attempt to isolate exogenous variation in merger activity or apply identification strategies such as instrumental variables or matching estimators. Consequently, the results should not be interpreted as establishing causal effects of mergers on performance, but rather associations that offer valuable empirical insights

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regarding how consolidation correlates with multiple dimensions of financial health within the sector. Recognising these limitations ensures appropriate interpretation of our findings, while still allowing them to inform regulatory and practitioner discussions regarding the evolving structure of the Irish credit union movement.

From Table 9 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. An explanation for this finding is that credit unions which derive a greater share of their income from interest are often more viable as they are more effectively fulfilling their core mission which is lending to members. *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. This finding may in part be because the lower cost to income ratio enables the credit union to offer preferential loan and saving rates encouraging member loyalty which stabilizes income streams thus strengthening the credit union's viability. *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. In part this can be explained by the ability of larger credit unions to avail themselves of scale economies and more effectively engage in risk dispersion relative to smaller counterparts. *Z-Scores* are negatively related to the liquidity ratio. The negative relationship between liquidity levels and viability can be explained by the liquidity-profitability trade-off and the opportunity cost of holding idle cash. *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. One possible explanation for this finding is that occupational and associational credit unions often benefit from the support of a sponsoring employer, who can provide administrative resources or payroll deduction services resulting in more consistent cash flows and lower administrative costs compared to community credit unions.

TABLE 8 – *Summary Statistics*

Panel A: All CUs	N	Mean	Standard Deviation	5th percentile	95th percentile
Z-Score	6847	23.432	16.866	6.212	50.851
Return on Assets	6847	1.258	1.453	-0.091	3.405
Capital Ratio	6847	15.932	4.244	11.223	22.269
Diversity	6847	64.965	14.591	38.993	87.747
Size	6847	1728.729	111.832	1538.194	1914.043
Cost/Income	6847	72.171	21.212	39.751	102.793
Liquidity	6847	3.619	3.745	0.396	11.339
Common Bond	6847	0.040	0.197	0.000	1.000
Transfer Intensity	6847	0.050	0.275	0.000	5.000
Panel B: CUs with transfer-intensity = 0					
Z-Score	6581	23.289	16.892	6.083	50.723
Return on Assets	6581	1.257	1.471	-0.104	3.425
Capital Ratio	6581	15.934	4.300	11.152	22.360
Diversity	6581	65.177	14.593	39.059	87.914
Size	6581	1723.645	110.233	1537.109	1909.017
Cost/Income	6581	72.328	21.395	39.690	103.288
Liquidity	6581	3.659	3.790	0.388	11.569
Common Bond	6581	0.039	0.194	0.000	0.000
Panel C: CUs with transfer-intensity > 0					
Z-Score	266	26.970	15.827	9.247	51.537
Return on Assets	266	1.284	0.908	0.202	2.942
Capital Ratio	266	15.866	2.470	12.658	20.087
Diversity	266	59.724	13.550	36.932	79.222
Size	266	1854.514	69.626	1736.100	1967.184
Cost/Income	266	68.291	15.557	41.777	92.893
Liquidity	266	2.647	2.160	0.625	7.261
Common Bond	266	0.068	0.252	0.000	1.000

Notes: Panel A reports summary statistics for all credit unions in the regression sample. Panels B and C report summary statistics separately for credit unions with zero transfer intensity and positive transfer intensity, respectively. The table reports the number of observations, mean, standard deviation, and the 5th and 95th percentiles for each variable. For transfer intensity and common bond, the 5th percentile corresponds to the minimum value and the 95th percentile corresponds to the maximum value.

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TABLE 9 – *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	0.056	0.042	0.028
	(0.015)***	(0.009)***	(0.008)***	(0.006)***
Size	0.015	0.007	0.005	0.002
	(0.002)***	(0.001)***	(0.001)***	(0.001)***
Cost/Income	-0.164	-0.135	-0.126	-0.118
	(0.010)***	(0.006)***	(0.005)***	(0.004)***
Liquidity	-0.235	-0.111	-0.066	-0.026
	(0.053)***	(0.033)***	(0.026)**	(0.022)
Common Bond	6.001	3.484	2.611	1.895
	(1.403)***	(0.824)***	(0.635)***	(0.512)***
Merger Intensity	0.436	0.108	0.014	-0.112
	(0.689)	(0.385)	(0.290)	(0.208)
Number of Observations	6,847	6,847	6,847	6,847

Notes: The table reports OLS regression results with Z-score–based measures of solvency as the dependent variable. Columns (1)–(4) use alternative Z-score definitions computed under assumed capital ratios of 7.5%, 10%, and 12.5%, respectively. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

In Table 10 we consider the component parts of *Z-Score* (ROA and the Capital Ratio) as separate dependent variables. The analysis takes the form of a panel regression for 2011 to 2023 with potential explanatory variables as detailed in Table 9. Table 10 (Regression 5) reveals that ROA is positively related to merger intensity. Mergers enable credit unions to spread fixed costs, such as technology and regulatory compliance, over a larger pool of assets. This operating leverage reduces costs per member thus boosting ROA. Table 10 (Regression 6) highlights that the Capital Ratio is negatively related to merger intensity, suggesting that credit unions involved in greater numbers of mergers have weaker capital positions. This finding is because many acquired credit

unions enter a merger because of depleted capital reserves which results in the healthy acquirer's capital ratio being diluted by the target's weaker position.

TABLE 10 – *Factors Influencing ROA and Capital Adequacy (2012–2023)*

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

Notes: The table reports OLS regression results with return on assets (ROA) and the capital ratio as dependent variables in columns (5) and (6), respectively. Explanatory variables include diversification, size, cost efficiency, liquidity, common bond type, and merger intensity. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

The regression results in Table 10 suggest that diversification does not impact on either ROA or the Capital Ratio. That credit unions with lower cost to income ratios have both a stronger ROA and Capital Ratio emphasising that low costs create a competitive loop which reinforces both metrics. That asset size negatively impacts on ROA but not on the Capital Ratio which may be a consequence of the fact that the Capital Ratio often remains stable despite a lower ROA because of how these institutions are regulated and managed. That credit unions with higher liquidity levels have higher Capital Ratios but that liquidity levels do not affect the ROA. In situations

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where a credit union maintains high liquidity, it is essentially choosing a safety-first approach which invariably also reflects in a stronger Capital Ratio. 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. The latter may be because community credit unions lend to a wider range of members, including those with slightly lower credit scores, allowing them to charge higher interest rates.

6. Conclusion

This study explored mergers across 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 declined 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), signaling 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 panaceas. For small open economies within the EU, these findings highlight the importance of proportionate and institution-specific regulatory design. While EU-wide supervisory frameworks enhance financial stability and consistency, their interaction with nationally rooted cooperative models can generate consolidation pressures that reshape market structure. Policymakers must

therefore balance the benefits of regulatory harmonisation with the need to preserve institutional diversity and the depth of local financial intermediation.

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. More broadly, the Irish experience offers lessons for other small EU member states where cooperative and mutual financial institutions face similar adjustment challenges under evolving European regulatory architectures.

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